MC3 Unit 4 – Blueprint Reading Online Student Toolkit

Module 2 (8 Hours)

This module is intended to be completed after the 4-hour Blueprint Reading Module. If you have not yet done so please refer to the 4-hour Flipbook and Online Toolkit before proceeding.

Learning Objectives

At the end of this unit, students will be able to

- Identify the various views of a drawing that are included in a set of plans and their relationship to each other.
- Identify and define the various parts of a set of plans, such as details, etc.
- Identify and define material symbols, abbreviations, and lines used in drawings.
- Demonstrate proper handling procedures for a printed set of plans and drawings.
- Define the meaning of "scale."
- Use a fractional rule to calculate measurements.

Why Study This Topic?

Construction workers need to understand and apply the information given on blueprints with a minimum of error and a maximum of speed. In order to do so workers must be able to mentally visualize, in three dimensions, the ***orthographic*** information presented on those blueprints.

This Blueprint Plans and Drawings course will provide the basis for using a set of architectural plans. You will explore the various views of plan drawings and how to visualize and interpret those drawings. You will use a set of prints or pages from a set of prints to locate symbols, abbreviations, and other project information and understand the relationship between the drawings and the information found on the construction documents. You will learn about scale, fractional rule and how to use the architect's scale to determine dimensions on a set of plans.

READ ME!

Instructions for competing this unit:

- In the MC3 Learning Management System (website), locate the Blueprint Reading section.
- Click on the link for the Blueprint Reading Student Toolkit – 8 hours and save this document to your computer. Be sure to include your last name in the filename (ex: SmithBlueprintReading8hoursStudentToolkit.docx).
- To open the PowerPoint presentations for this Section, click on the Blue "GO" button (right).
- Links for the videos are contained in this Toolkit – see below.
- When it comes time to submit your work (all Learning Assessments and Assignments are contained in this Toolkit), depending on your school district policies, you will:
    - Upload and submit your Student Toolkit using Google Classroom or other similar programs;
    - Email this file to your teacher using your regular email; or
    - Print and mail this file to your teacher.
    - ***Your teacher will explain this process.***

Blueprint Reading

Assignment One

As a refresher, before proceeding, carefully review and complete the Basic Blueprint Reading Exercises questions found below. If there is anything you are unfamiliar with, review the Module 1 Basic Blueprint Reading 4 hours PowerPoint and/or contact your instructor before moving on.

ASSIGNMENT – Answer the Basic Blueprint Reading Exercise Questions in the sheet (below) before you proceed with the PowerPoint from Module 2. This will provide a review of terminology and basic skills from Module 1.

Assignment Two

Carefully review the PowerPoint presentation called ***BCTD 8 Hour Blueprint Reading Principles*** *and the notes on each slide.* When you read this presentation, keep these questions in mind:

1. What are the various views of a drawing that are included in a set of plans and their relationship to each other?
2. Can I identify and define the various parts of a set of plans, such as details, etc.?
3. Can I identify and define material symbols, abbreviations, and lines used in drawings?
4. What are the proper handling procedures for a printed set of plans and drawings?
5. What is the meaning of "scale?"
6. Can I use a fractional rule to calculate measurements?

Assignment Three

Locate and view the *Projecting the View slide* (slide 7) in the ***BCTD 8 Hour Blueprint Reading Principles*** *PowerPoint.* The views of an orthographic drawing are projected at right angles (90°) to each other and have a definite relationship. The best way to visualize the views is by cutting and unfolding a cardboard box.

ASSIGNMENT - Using a small cardboard box at home (Amazon box, soap box, cereal box, etc.) cut and unfold your box as seen in the picture on slide 7. Notice the front view has remained in position. The four adjoining views have revolved on their "hinges" 90° with the front view bringing them into the same plane. In other words, the top view is above, the right side is to the right, the bottom view is below and the left side is to the left. The rear view can be shown in various ways. Label the box as seen in the picture on slide 7, open and fold it several times taking note of the different views.

Assignment Four

The *scale* is a ratio of the size of the drawing to the size of the original object being drawn. Blueprints contain miniature drawings of a building. The actual measurements are scaled down so they would fit on the paper. Simply put, scaling a building blueprint means creating a floor plan that is proportional to the structure that is going to be constructed.

ASSIGNMENT – Click the link below to view the video and gain a deeper understanding of scale.
Scale of Blueprints

Assignment Five

Carefully review the slides 9-16 of the PowerPoint presentation ***BCTD 8 Hour Blueprint Reading Principles.*** Keep in mind the 5 basic elevation views:

- Plot Plan
- Elevation
- Floor Plan or Plan View
- Section or Cross Section
- Detail

ASSIGNMENT – fill in the definition sheet (below) as you go through the presentations. When you have filled in the definition, provide an accompanying illustration for each.

Assignment Six

It is vital to your success on a job to be able to read and understand the symbols, abbreviations and lines that appear on a drawing.

ASSIGNMENT – Using the **MC3 Blueprint – IUPAT HQ Plans, Jan 2020** PDF, study the plans and locate (like *a Where's Waldo*) as many of the symbols, abbreviations and lines as possible. You can find these symbols beginning on page 10 of this toolkit.

Assignment Seven

Using the ***BCTD 8 Hour Blueprint Reading Principles*** *PPT*, carefully review the Knowledge Check questions located on slides 59-69.

ASSIGNMENT – Using the Knowledge Check Student Record Sheet, record your answers to the 10 Knowledge Check questions from slides 59-69. Review the answers to your questions and then submit to your instructor.

Assignment Eight

Locate the Module 2: Plans and Drawings - Blueprint Reading Assessment on page 12.

ASSIGNMENT – Complete the Module 2: Plans and Drawings – Basic Blueprint Reading Assessment and turn into your instructor.

Basic Blueprint Reading Principles Review Questions

Directions: C*ircle the letter of the correct answer. Where directed, refer to the set of plans to answer the questions.*

1. Blueprint reading is the process of interpreting a drawing for an accurate mental picture of how the object will look when completed.

   a. True
   b. False

2. The term "set of plans" is one name for construction drawings and blueprints. Other commonly used terms include prints, plans, or construction drawings.

   a. True
   b. False

3. The architect is responsible for the overall design of the building.

   a. True
   b. False

4. When the structure is completed (construction is finished), the plans or drawings are called _____.

   a. Record drawing
   b. As built
   c. Working drawings
   d. A & B
   e. B & C

5. Refer to the set of plans - What letter code is used to identify an architectural drawing in a set of plans? Write the full alpha numeric code you find on the prints. _____

   a. E
   b. S
   c. M
   d. A
   e. P

6. Symbols generally resemble the object or material they represent.

a. True
b. False

7. Refer to the set of plans. Draw freehand, a symbol from the prints and write its description _____. On what page number did you find the symbol _____?

8. Break lines are used to show that an object has not been drawn in its entirety. This is sometimes necessary to save space.

a. True
b. False

Refer to the plans. Find a break line and write down the page number and sections where you found it. _____

9. The _____ is responsible for the overall design of a building.

a. Engineer
b. Foreman
c. General Contractor
d. Architect

10. _____ identify the project with information such as the name of the project, the name of the owner, and the name of the major firms that have designed the project.

a. Reference pages
b. Appendices
c. Cover/Title Sheets
d. Table of Contents

11. Refer to the information on the plan page provide below and record your answers, as follows:

a. What is the name of the project?

b. On what date was this plan printed?

c. What type of sheet is this? (What is it called?)

d. What is the name of the architect who designed these plans?

e. Who is the owner of the project?

f. In what county is the project located?

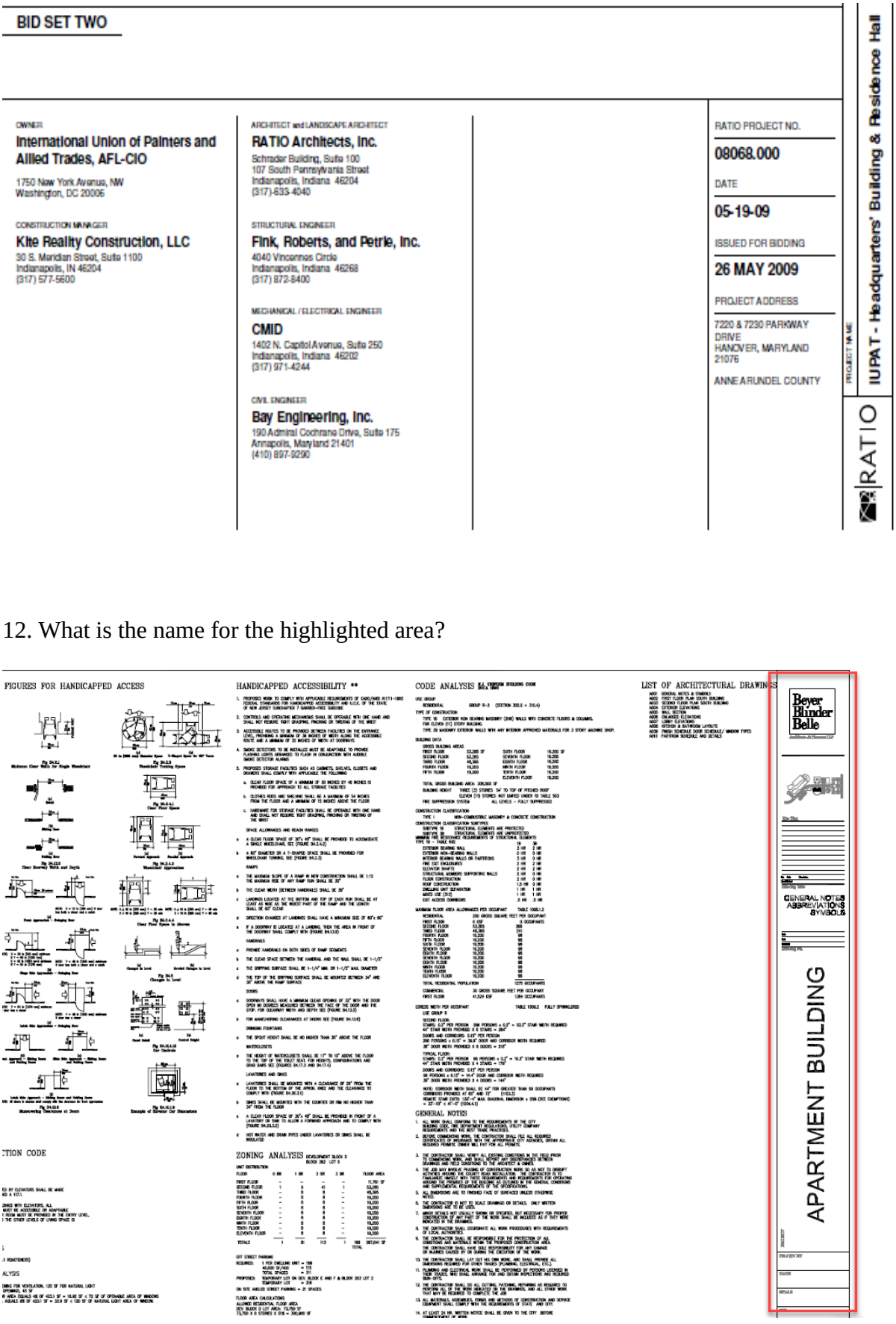
g. Who will manage the construction?

h. What are Fink, Roberts, and Petrie, Inc. responsible for?

i. In what state is the company providing the mechanical and electrical engineering services?

j. What is the project number?





BID SET TWO

OWNER
International Union of Painters and Allied Trades, AFL-CIO
1750 New York Avenue, NW
Washington, DC 20006

CONSTRUCTION MANAGER
Kite Reality Construction, LLC
30 S. Meridian Street, Suite 1100
Indianapolis, IN 46204
(317) 577-5600

ARCHITECT and LANDSCAPE ARCHITECT
RATIO Architects, Inc.
Schrader Building, Suite 100
107 South Pennsylvania Street
Indianapolis, Indiana 46204
(317)-633-4040

STRUCTURAL ENGINEER
Fink, Roberts, and Petrie, Inc.
4040 Vincennes Circle
Indianapolis, Indiana 46268
(317) 872-8400

MECHANICAL / ELECTRICAL ENGINEER
CMID
1402 N. Capitol Avenue, Suite 250
Indianapolis, Indiana 46202
(317) 971-4244

CIVIL ENGINEER
Bay Engineering, Inc.
190 Admiral Cochrane Drive, Suite 175
Annapolis, Maryland 21401
(410) 897-9290

RATIO PROJECT NO.
08068.000
DATE
05-19-09
ISSUED FOR BIDDING
26 MAY 2009
PROJECT ADDRESS
7220 & 7230 PARKWAY DRIVE
HANOVER, MARYLAND 21076
ANNE ARUNDEL COUNTY

PROJECT NAME
IUPAT - Headquarters' Building & Residence Hall

RATIO

FIGURES FOR HANDICAPPED ACCESS

HANDICAPPED ACCESSIBILITY **

CODE ANALYSIS

LIST OF ARCHITECTURAL DRAWINGS

ZONING ANALYSIS

GENERAL NOTES

Beyer Blinder Belle

GENERAL NOTES ABBREVIATIONS SYMBOLS

APARTMENT BUILDING

12. What is the name for the highlighted area?

Blueprint Reading Definitions

Fill in the definition sheet as you go through slides 9-16 of the presentations. When you have filled in the definition, provide an accompanying illustration for each.

Plot Plan –

Elevation –

Floor Plan or Plan View –

Section or Cross Section -

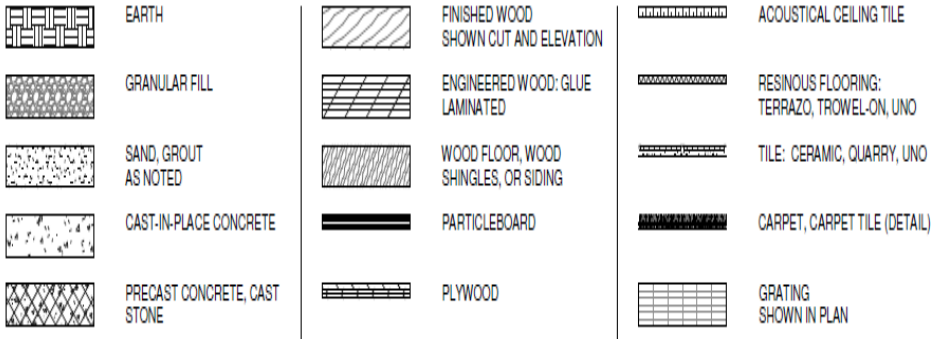
Detail –

Symbols, Abbreviations and Lines

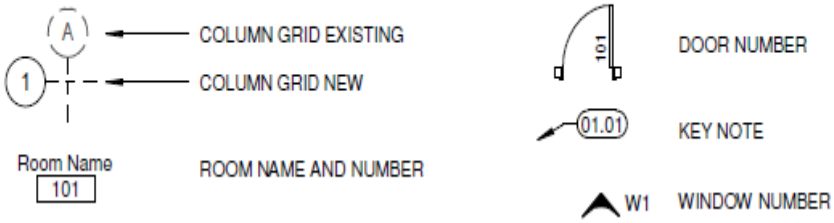
Use these images in conjunction with the **MC3 Blueprint – IUPAT HQ Plans, Jan 2020** PDF study the plans and locate as many of the symbols, abbreviations as lines as possible.

ARCHITECTURAL MATERIAL LEGEND

NOTE: PATTERNS SHOWN REPRESENT CUT MATERIALS IN PLAN OR SECTION, UNLESS NOTED OTHERWISE BELOW.



DRAWING SYMBOLS



ABBREVIATIONS

A	
A/C	AIR CONDITIONING
ACOUS.	ACOUSTICAL
A.C.T.	ACOUSTICAL CEILING TILE
ACP	ACOUSTICAL CEILING PANEL
ADA	AMERICANS W/DISABILITIES ACT
ADAAG	AMERICANS W/DISABILITIES ACT ACCESSIBILITY GUIDELINES
ADJ.	ADJUSTABLE
A/E	ARCHITECT/ENGINEER
A.F.F.	ABOVE FINISHED FLOOR
ALT.	ALTERNATE
ALUM.	ALUMINUM
A.P.	ACCESS PANEL
ARCH.	ARCHITECT/ARCHITECTURAL
A.V.	AUDIO/VISUAL

B	
BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
B/O	BOTTOM OF
B.O.W.	BOTTOM OF WALL
BSMT.	BASEMENT

F	
F-R	FIRE-RESISTIVE
FAB.	FABRICATE/FABRICATOR
F.C.U.	FAN COIL UNIT
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	
F.F.E.	FIRE EXTINGUISHER CABINET
F.F.&E.	FINISH FLOOR ELEVATION FURNISHINGS, FIXTURES
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH(ED)
FLR.	FLOOR
FLUOR.	FLUORESCENT
F.O.	FINISH OPENING
F.O.B.	FACE OF BLOCK
F.O.BR.	FACE OF BRICK
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.G.	FACE OF GYPSUM BD.
F.O.S.	FACE OF STUD
FP	FAUX PAINT FINISH
FPRF.	FIREPROOF
FT.	FOOT/FEET
F.V.	FIELD VERIFY

Knowledge Check Answers

Record your answers to the Knowledge Check questions found in the **B*CTD 8 Hour Blueprint Reading Principles*** PPT slides 59-59 below.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Module 2: Plans and Drawings – Basic Blueprint Reading Assessment

Directions: C*ircle the letter of the correct answer.*

1. The views of an orthographic drawing are projected at _____ angles.

    a) 180 degrees
    b) 90 degrees
    c) 45 degrees
    d) 1360 degrees

2. _____ is the ability to see the size and shape of the structure form a set of plans.

    a) Estimate
    b) Visualization
    c) Project
    d) Interpretation

3. _____ is the ability to read line, symbols, dimensions, notes, and other information on the print or plan.

    a) Estimate
    b) Visualization
    c) Project
    d) Interpretation

4. Reading and understanding construction blueprints and plans begin with recognizing the various _____.

    a) Symbols, abbreviations, lines
    b) Abbreviations, lines, drawings
    c) Symbols, lines, CAD drawings
    d) CAD drawings, symbols, abbreviations

5. The _____ is the basis of all industrial drawings.

    a) Blueprint
    b) Plan
    c) Line
    d) Angle

6. A _____ line is an extra heavy line made up of two short dashed alternating with long dashes and it shown on a site plan.

    a) Property
    b) Object
    c) Hidden
    d) Break

7. A _____ line is a heavy continuous line that shows the outline structure of an object, such as rooms, doors, and windows.

    a) Property
    b) Object
    c) Hidden
    d) Break

8. A_____ line is made up of medium weight, evenly spaced, short dashes and are used to show objects, edges, or surfaces that are not visible to a particular view.

    a) Property
    b) Object
    c) Hidden
    d) Break

9. A_____ line is used to show that an object has not been drawn in its entirety.

    a) Property
    b) Object
    c) Hidden
    d) Break

10. The _____ is considered to be the most important part of the drawing.

    a) Site plan
    b) Floor plan
    c) Specifications
    d) Show drawing

11. _____drawings show the exterior view of a building as seen by a person looking at each side.

a) Elevation
b) Cross-sectional
c) Interior
d) None of the answers provided

12. _____drawings show the type and construction of a particular interior wall or area.

a) Elevation
b) Cross-sectional
c) Interior
d) None of the answers provided

13. _____drawings are made by imagining that a cut has been made through an object at right angles.

a) Elevation
b) Cross-sectional
c) Interior
d) None of the answers provided

14. When storing and transporting blueprints, it is recommended that they be _____.

a) Folded
b) Stapled
c) Rolled
d) Bent