Drafting III - Architectural

TRADE, TECHNOLOGY, ENGINEERING, AND INDUSTRIAL EDUCATION | Career and Technical Education

IC63

PUBLIC SCHOOLS OF NORTH CAROLINA
State Board of Education | Department of Public Instruction
www.dpi.nc.gov

Introduction

This curriculum guide for IC63 Drafting III - Architectural, was developed to assist teachers in preparing students to meet the North Carolina State Board of Education's guiding vision, "Every public school student in North Carolina will be empowered to accept academic challenges, prepared to pursue their chosen path after graduating high school, and encouraged to become lifelong learners with the capacity to engage in a globally-collaborative society." This course is based on state and national content standards and it is rigorous and relevant. Business and industry representatives reviewed the standards and provided input on the content for this course as one that helps to prepare students for high-skill, high-wage, or in demand occupational opportunities. It also infuses technology and active learning tools throughout the curriculum to teach today's generation of students. The CTE Course Management System includes the course standards and information, the career pathway, and equipment list. As presented in the course essential standards 1.00-8.00, an understanding of Architectural Drafting Concepts is covered including the following topics.

1.00 Understand Foundation Design, Calculations and Construction.

2.00 Apply Procedures to Create Basic Electrical Design Concepts.

3.00 Apply Procedures to Create Stair/Railing Designs for Construction.

4.00 Apply Procedures to Create Advanced Kitchen and Bath Details.

5.00 Apply Procedures to Create Multi-level Residential Floor Plans.

6.00 Apply procedures to create a Site Development Plan.

7.00 Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.

8.00 Apply Procedures to Create Rendering and Walkthroughs.

Aligned to the course standards and each indicator, this guide contains a culminating question, essential question(s), unpacked content, resources, instructional activities and additional online

resources as needed. It incorporates and enhances appropriate content outlined in the North Carolina Standard Course of Study. The proof-of-learning will be either a 100-item multiple choice post-assessment at the standard level and administered through the NC Instructional Management System or an obtained Industry Credential (Autodesk Certified Professional-Revit).

Culminating Question

This question is central to the purpose of the standard. It requires students to think about the knowledge that will be learned.

Essential Questions

Essential questions are used to guide students' learning and are geared toward uncovering a topic. All essential questions for this course are derived directly from the unpacked content.

Unpacked Content and Resources

The unpacked content comes from the objectives listed on the course blueprint. Autodesk provides online resources used to develop the unpacked content specific to the software provided by each PSU.

Instructional Activities

Individual and group activities will be listed in the Instructional Activities section. Instructional activities reflect "best practice" as determined by highly qualified and successful teachers. The activities follow the unpacked content that is designed to build understanding of the indicator.

Vocabulary/Content Literacy Terminology

There are a variety of research-based activities that effectively introduce and reinforce vocabulary for any subject. This course provides instructional flexibility to utilize any tool that achieves the intended result which is to understand and recall key terms necessary for further development of objectives. When learning a new vocabulary, it is critical that students know how to recognize/read a word, spell the word, define it and obtain a visual clue for context. Sample

activities are provided in the file below. Also provided in this guide are the Content Literacy Terminology for each indicator.

Vocabulary Activity Options.docx

Guest Speakers, Virtual Field Trips and Field Experiences

Industry involvement is critical for a deeper student understanding of content/concepts. Educators can help participants receive the most from these visits by preparing for the visit, having participants take notes during the visit, and then reflecting on the visit. These types of activities are not limited to just one standard/objective.

Additional Resources

Textbook and Online

Autodesk provides content. Previous Curriculum Guides for course and Architectural Codes (international, national and state) also provided content. Additional textbooks can be selected by individual PSUs for content; however, no specific textbook was referenced for this Guide. Referenced websites are functional as of the publication date of this curriculum guide. No guarantee can be made as to the continued functionality, but a generic internet search may yield additional resources and websites.

Curriculum Projects

Teachers should incorporate hands-on projects that become the instructional method through which students acquire understanding of the content. Students may address these learning outcomes simultaneously, rather than in the sequential manner occurring in traditional courses. The learning outcomes are not outlined for coverage during a specific time in the course framework, but are tied to projects which can be acquired at any point. This guide references one overarching project for multiple objectives. Adjustments can be made to project

specifications for class/learning needs at Teacher discretion. Students should cover the curriculum as they move through the project or before. Supplemental software tutorials and/or instruction is recommended to take place throughout projects.

Recommended Project Pacing
Project Introduction
Site Plans
Floor Plans
Foundations
Kitchen Plans
Stair Plans
Additional Construction Documents
Walk-throughs/Rendering

Project-Based Learning- Model Ho

For more information on successful projects visit Autodesk Revit and/or the shared Moodle for the course.

CTSO

This course emphasizes Career and Technical Student Organization (CTSO) competitive events for SkillsUSA; however, these were not directly written into the Curriculum Guide. For more information on SkillsUSA visit: https://www.skillsusa.org/.

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Course	**IC63 Drafting III - Architectural**			
Essential Standard	1.00	B2	10%	Understand Foundation Design, Calculations and Construction.
Indicator	1.01	N/A	N/A	Understand terms and definitions relating to foundation design, calculations, and construction.
Culminating Question **Essential Questions**	**What are some of the major concepts related to residential foundation design, calculations, and construction?** ● What are the main types of foundations used in residential Design? ● What base terminology is needed to understand residential foundation design? ● How are calculations determined for residential Foundation Design?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Review the main types of foundations used in residential design.
c. Define major terms associated with residential foundation design.
d. Understand basic calculation for residential foundation design.

INSTRUCTIONAL ACTIVITIES-1.01	
A. Content Literacy Terminology	
Resource(s)	**(See 1.01.1)**
B. Review the main types of foundations used in residential design.	
Activity	Guided Peer Thinking-Residential Foundation Design Types and Factors
Teacher Instructions	● Place students in heterogeneous pairs or small groups. Facilitate sharing and student progression through PowerPoint Presentation *Guided Peer Thinking- Residential Foundation Design Types and Factors*. Provide access to the internet and large paper or white board(s). ● Facilitate students working in pairs/small groups to complete activities and/or discussion questions on gray slides in presentation. Answers should be written on large paper or white boards. ● Facilitate whole-class discussion once students have had time to complete in pairs/small groups.
Student Directions	● As a group progress through the PowerPoint Presentation *Guided Peer Thinking- Residential Foundation Design Types and Factors*. ● Discern the differences in the major types of residential foundations by completing activities and/or discussion questions on gray slides. Answers should be written on large paper or white boards. ● Participate in a whole-class discussion.
Resource(s)	 Guided Peer Thinking- Residentia
C. Define major terms associated with residential foundation design.	
Activity	Content Literacy Term Exploration
Teacher Instructions	● Provide digital copy of *Content Literacy Term Exploration-Activity-Foundations*. Facilitate student collection of information using the internet. Students will define each term in a table, paste an image example they find online best outlining/identifying that term, and two additional media examples for more related information. Examples of additional media can be music, videos, websites, podcasts, etc. ● Facilitate students checking the technical definitions with *Content Literacy Term Exploration-Technical Definitions-Foundations* document. Definitions do not have to match exactly, but should be similar. Students should be provided a chance to revise any images or media once they have checked definitions. ● Facilitate students comparing documents in small groups or pairs. Compile best examples to share with class as review. *Note:* Activity can be broken into smaller or related groupings of terms as needed.

Student Directions	● Identify major terms related to residential foundations by defining each term in a table, pasting an image example you find online best outlining/identifying that term, and two additional media examples for more related information. Examples of additional media can be music, videos, websites, podcasts, etc. ● Check the technical definitions with *Content Literacy Term Exploration-Technical Definitions- Foundations* document. Definitions do not have to match exactly, but should be similar. Revise any images or media once you have checked definitions. ● Compare documents in small groups or pairs.
Resource(s)	 Content Literacy Term Exploration- A  Content Literacy Term Exploration- T
D. Understand basic calculation for residential foundation design. *Notes: Activity 1 combines with Indicator 1.02. Activity 2 combines with Indicator 5.05.*	
Activity 1	Authentic Code Research- Foundation Calculations and Design
Teacher Instructions	● Provide digital copy of *Authentic Code Research- Foundation Calculations and Design* and internet access to the North Carolina Residential Building Code. ● Facilitate students selecting, modifying or designing 1 Bedroom/ 1 Bathroom Auxiliary Apartment in the software per instructions. ● Facilitate student modeling floor plan in the software. ● Facilitate student research using provided code for foundation calculations for apartment for each foundation type and in answering questions for part three of activity. Pair students for help as needed. ● Facilitate student selection in foundation type to model in the software for part four of activity. Aadditional types can be added as separate projects. ● Facilitate student modeling the foundation in the software. ● Students will be able to locate calculation information for various foundation designs and apply it in the software.
Student Directions	● Selecting, modifying or designing a 1 Bedroom/ 1 Bathroom Auxiliary Apartment in the software per instructions. ● Locate calculation information for various foundation designs by completing research using provided code for foundation calculations for apartment for each foundation type and in answering questions for part three of activity. Select foundation type to model in the software for part four of activity. ● Modeling the foundation in the software.
Resource(s)	 Authentic Code Research- Foundati
Activity 2	Model Home Project

Teacher Instructions	● Facilitate students determining proper calculations and type of foundation for Model Home Project using selected floor plan, site, and NC Residential Building Code information when appropriate for project pace. ● Facilitate students adding a foundation to digital the project using software tutorials and/or direct instruction. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Determine proper calculations and type of foundation for Model Home Project using selected floor plan, site, and NC Residential Building Code information. ● Add a foundation to digital the project using software tutorials and/or direct instruction. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-1.01.1	
Aggregate	Granular materials such as sand, gravel, or crushed stone that, along with water and cement, are an essential ingredient in concrete.
Basement	The portion of a building that is partly or completely below grade with the combination of an extended T-foundation and concrete slab.
Cement	A powdery substance made with calcined lime and clay. It is mixed with water to form mortar or mixed with aggregate and water to make concrete.
CMU	Concrete Masonry Unit- Standard Nominal Size 8x8x16 and actual size 7 5/8" x 7 5/8" x 15 5/8" (also referred to as a "cinderblock").
Concrete	Composite material composed of fine and coarse aggregate bonded together with cement and water that hardens over time.
Concrete Chairs	Support is used to hold rebar in place before concrete is poured.
Crawl Space	An area of limited height under a floor giving access to wiring and plumbing with a constructed with a T-foundation wall with a height of 3'-0" to 5'-0".
Cubic Yard	Unit of volume used to measure concrete.
Curing	Maintaining of an adequate moisture content and temperature in concrete at early ages so that it can develop properties the mixture was designed to achieve.
Dead Load	Weight of all materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding, and other similarly incorporated architectural and structural items, and fixed service equipment.
Deflection	Amount of bending that occurs when a structural member is loaded.
Engineered Fill	*Specifically designed soil/grade* which is selected, placed, and compacted to an appropriate specification so that it will exhibit the required engineering behavior.
Excavation	A cavity formed by cutting, digging, or scooping.
Expansion Joint	Joints placed in concrete construction to reduce cracking due to expansion and contraction.
FHA Formula	Formula based upon the thickness of the foundation wall used to design proper footing size. It calculates the foundation wall thickness to be half of the foundation wall footing width.
Foundation Wall	Frequently constructed of reinforced masonry or poured concrete, supported by a continuous, reinforced-concrete spread footing (also referred to as "continuous foundation wall" or "stem foundation wall").
Foundation Wall Footing	Concrete pad used to provide a stable base around the entire perimeter of a structure (also referred to as "continuous spread footing").

Frost Line	The maximum depth of ground below which the soil does not freeze in winter.
Girder	Support beam used in construction as the main horizontal support of a structure to support smaller beams (i.e., floor joists).
Grade	The finished ground level adjoining the building at all exterior walls.
Gravel	A loose aggregation of small stones and pebbles, or a mixture of these with sand.
Kip	Customary unit of force (equal to 1000 pounds-force) used primarily by American architects and engineers to measure engineering loads such as the maximum allowable loads for beams.
Lintel	Horizontal structural member over an opening in a masonry wall.
Live Load	Loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.
Mortar	Workable paste used to bind building blocks such as stones, bricks, and concrete masonry units together, fill and seal the irregular gaps between them, and sometimes add decorative colors or patterns in masonry walls.
Mortar Joint	The spaces between bricks, concrete blocks, or glass blocks, that are filled with mortar or grout (Typically 3/8”).
Pier	Vertical foundations supports, commonly constructed of reinforced masonry (brick or concrete block) supported by individual, reinforced-concrete pad footings or by continuous, reinforced-concrete spread footings.
Pier Footing	Concrete pad used to support a single point of contact, such as under a pier or post (Also referred to as “Spot Footing”) Notes Example for drawing: 2'-0" × 2'-0" × 10" conc pier.
Pilaster	Vertical foundations supports commonly constructed of reinforced masonry (brick or concrete block) supported by individual, reinforced-concrete pad footings or by continuous, reinforced-concrete spread footings usually connected to the exterior foundation wall of a structure.
Pile	Vertical foundation support driven into the ground used to provide support in areas of loose soil and/or flood prone areas.
Poured in Place Concrete	Ready mixed concrete transported in an unhardened state, primarily as ready-mix, and placed in forms to cure on site.
Pressure-treated Lumber	Wood that has been infused with chemical preservatives to protect the wood from rot and insects. It is used when wood is in direct contact with elements, the ground, or concrete.
PSF	Pounds Per Square Foot- unit which is directly related to the psi pressure unit by a factor of 144 (1 sq ft = 12 in x 12 in = 144 sq in).
R- Value	Measured value of resistance to heat flow.

Rebar	Short for reinforcing bar, Reinforcing steel and reinforcement steel, it is a steel bar or mesh of steel wires used as a tension device in reinforced concrete and reinforced masonry structures to strengthen and hold the concrete in compression. When placed in the footing it should be placed in the bottom 1/3.
Slab Foundation	A large, thick monolithic *bed* of concrete that is typically 4"-6" thick in the center and poured directly on the ground all at one time. The edges of the *slab* are thicker (as wide as 24") in order to allow for extra strength around the perimeter. (also referred to as "slab-on-grade" foundation).
Soil Bearing Capacity	Design value specifying the amount of weight a square foot of soil can support.
Span	Horizontal distance between two supporting members.
Stepped Footing	Footing which allows house foundations to change grades from shallow to deeper depths. Used on sloped sites.
T-Foundation	Foundation construction commonly used in areas that freeze that consists of a foundation footing and foundation wall which resembles an inverted "T".
Types of soil	Combination of just three types of weathered rock particles that make up the soil: sand, silt, and clay.
Unbalanced Fill	The difference in height between the exterior and interior finish ground levels.
Vapor Barrier	A thin layer of impermeable material, typically polyethylene sheeting, included in building construction to prevent moisture from damaging the fabric of the building. It is applied to the heated side of insulation.
Foundation Vent	Perforated opening in foundation wall for the process of supplying conditioned or unconditioned air to, or removing such air from, any space.
Welded wire mesh	Grid consisting of a series of perpendicular longitudinal and transverse rebar placed inside concrete for added support.

Course	**IC63 Drafting III - Architectural**			
Essential Standard	1.00	B2	10%	Understand Foundation Design, Calculations and Construction.
Indicator	1.02	N/A	N/A	Understand use of footings, foundation walls, girders, piers, ventilation, and slab floor/foundations.
Culminating Question **Essential Questions**	**What is the purpose and use of footings, foundation walls, girders, piers, ventilation, and slab floor/foundations?** ● What is the purpose and use of footings? ● What is the purpose and use of foundation walls? ● What is the purpose and use of girders? ● What is the purpose and use of piers? ● What is the purpose and use of ventilation for a foundation? ● What is the purpose and use of slab floor/foundations?			

UNPACKED CONTENT

a. Understand the use of footings.
b. Understand the use of foundation walls.
c. Understand the use of girders.
d. Understand the use of piers.
e. Understand the use of ventilation.
f. Understand the use of slab floor/foundations.

INSTRUCTIONAL ACTIVITIES-1.02	
A. Content Literacy Terminology	
Resource(s)	**(See 1.02.1)**
B. Understand the use of footings. **C. Understand the use of foundation walls.** **D. Understand the use of girders.** **E. Understand the use of piers.** **F. Understand the use of ventilation.** **G. Understand the use of slab floor/foundations.** *Note: Activity covers all unpacked content for Indicator and combines with Indicator 1.01.*	
Activity	Content Literacy Term Exploration
Teacher Instructions	● Provide digital copy of *Content Literacy Term Exploration-Activity-Foundations*. Facilitate student collection of information using the internet. Students will define each term in a table, paste an image example they find online best outlining/identifying that term, and two additional media examples for more related information. Examples of additional media can be music, videos, websites, podcasts, etc. ● Facilitate students checking the technical definitions with *Content Literacy Term Exploration-Technical Definitions-Foundations* document. Definitions do not have to match exactly, but should be similar. Students should be provided a chance to revise any images or media once they have checked definitions. ● Facilitate students comparing documents in small groups or pairs. Compile best examples to share with class as review. *Note:* Activity can be broken into smaller or related groupings as needed.
Student Directions	● Identify major terms related to residential foundations by defining each term in a table, pasting an image example you find online best outlining/identifying that term, and two additional media examples for more related information. Examples of additional media can be music, videos, websites, podcasts, etc. ● Check the technical definitions with *Content Literacy Term Exploration-Technical Definitions- Foundations* document. Definitions do not have to match exactly, but should be similar. Revise any images or media once you have checked definitions. ● Compare documents in small groups or pairs.
Resource(s)	 Content Literacy Term Exploration- A  Content Literacy Term Exploration- Te

Content Literacy Terminology-1.02.1	
Aggregate	Granular materials such as sand, gravel, or crushed stone that, along with water and cement, are an essential ingredient in concrete.
Basement	The portion of a building that is partly or completely below grade with the combination of an extended T-foundation and concrete slab.
Crawl Space	An area of limited height under a floor giving access to wiring and plumbing with a constructed with a T-foundation wall with a height of 3'-0" to 5'-0".
Foundation Wall	Frequently constructed of reinforced masonry or poured concrete, supported by a continuous, reinforced-concrete spread footing (also referred to as "continuous foundation wall" or "stem foundation wall").
Foundation Wall Footing	Concrete pad used to provide a stable base around the entire perimeter of a structure (also referred to as "continuous spread footing").
Girder	Support beam used in construction as the main horizontal support of a structure to support smaller beams (i.e., floor joists).
Pier	Vertical foundation supports, commonly constructed of reinforced masonry (brick or concrete block) supported by individual, reinforced-concrete pad footings or by continuous, reinforced-concrete spread footings.
Pier Footing	Concrete pad used to support a single point of contact, such as under a pier or post (Also referred to as "Spot Footing"). Notes Example for drawing: 2'-0" × 2'-0" × 10" conc. pier.
Pilaster	Vertical foundation supports, commonly constructed of reinforced masonry (brick or concrete block) supported by individual, reinforced-concrete pad footings or by continuous, reinforced-concrete spread footings usually connected to the exterior foundation wall of a structure.
Pile	Vertical foundation support driven into the ground used to provide support in areas of loose soil and/or flood prone areas.
Slab Foundation	A large, thick monolithic *bed* of concrete that is typically 4"-6" thick in the center and poured directly on the ground all at one time. The edges of the *slab* are thicker (as wide as 24") in order to allow for extra strength around the perimeter (also referred to as "slab-on-grade" foundation).
Span	Horizontal distance between two supporting members.
Stepped Footing	Footing which allows house foundations to change grades from shallow to deeper depths. Used on sloped sites.
T-Foundation	Foundation construction commonly used in areas that freeze that consists of a foundation footing and foundation wall which resembles an inverted "T".
Foundation Vent	Perforated opening in foundation wall for the process of supplying conditioned or unconditioned air to, or removing such air from, any space.

Course	IC63 Drafting III - Architectural			
Essential Standard	2.00	C3	5%	Apply Procedures to Create Basic Electrical Design Concepts.
Indicator	2.01	N/A	N/A	Apply terms and symbols used to indicate electrical fixtures in a residential design.
Culminating Question **Essential Questions**	**How are terms and symbols used to indicate electrical fixtures in a residential design applied?** ● What are the main terms associated with residential electrical fixtures? ● What are the main symbols associated with residential electrical fixtures in plan views?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand main terms associated with residential electrical fixtures.
c. Identify main symbols associated with residential electrical fixtures in plan views.

INSTRUCTIONAL ACTIVITIES-2.01	
A. Content Literacy Terminology	
Resource(s)	**(See 2.01.1)**
B. Understand major terms associated with residential electrical fixtures. **C. Identify main symbols associated with residential electrical fixtures in plan views.** *Note: Activity covers all unpacked content for Indicator and part of Indicator 8.02.*	
Activity	Content Literacy Term Exploration
Teacher Instructions	● Provide digital copy of *Content Literacy Term Exploration-Activity-Electrical*. Facilitate student collection of information using the internet. Students will read the definition of each term in the table, paste the symbol for each term if shown in plan view, and paste an image example they find online best outlining/identifying each term. ● Facilitate students comparing documents in small groups or pairs. Compile best examples to share with class as review. Note: *Extension* available at the bottom of table on Lighting Careers. Activity can be broken into smaller or related groupings of terms as needed.
Student Directions	● Identify major terms related to residential electrical fixtures by reading the definition of each term in the table, pasting the symbol for each term if shown in plan view, and pasting an image example you find online best outlining/identifying each term. ● Compare documents in small groups or pairs.
Resource(s)	 Content Literacy Term Exploration- A

Content Literacy Terminology-2.01.1	
240V Outlet	Outlet carrying extra voltage. Used for high voltage needs such as for range and clothes dryer.
Accent Lighting	Adds drama to a room by creating visual interest. As part of an interior design scheme, it is used to draw the eye to houseplants, paintings, sculptures, and other prized possessions. It can also be used to highlight the texture of a brick or stone wall, window treatments or outdoor landscaping.
Ambient Lighting	Provides an area with overall illumination. Also known as general lighting, it radiates a comfortable level of brightness without glare and allows you to see and walk about safely.
Ceiling Fan	Mechanical fan mounted on the ceiling of a room or space that uses hub-mounted rotating blades to circulate air.
Branch or Switch Connections	Curved dashed lines on electrical plans which show connections between electrical fixtures.
Dimmer Switch	Devices connected to a light fixture and used to lower the brightness of light by changing the voltage waveform applied.
Double-Pole Switch	Controls a device or equipment from one location for higher-demand appliances, motors, and machinery.
Duplex Outlet	Standard voltage outlet carrying 120 Volts with 2 plug-ins.
Exhaust Fan	Fans installed in bathrooms or other areas of the residence to help absorb the moisture in the atmosphere within the room and as a result one will benefit from a reduction in problems such as mold and its resultant negative effects. An exhausted fan MUST be installed in all bathrooms without an operating window but are commonly installed in ALL bathrooms.
Foot-candle	A unit of illumination equal to that given by a source of one candela at a distance of one foot.
GFI Outlet	(Ground Fault Interrupted) Used in Bathrooms, Kitchens, and other wet areas. Designed to protect from electrical shock by interrupting a household circuit when there is a difference detected in the current.
Junction Box	An enclosure that houses electric wires or cables that are joined together and protects the connections.
Legend	Table used to explain or define a symbol or special mark placed on a blueprint.
Pendant Light	A lone light fixture that hangs from the ceiling usually suspended by a cord, chain, or metal rod (also referred “drop” or “suspended”, light).
Recessed Can Light	A light fixture that is installed into a hollow opening in a ceiling (also referred to as a “pot light”, “can light”, or “downlight”).
Reflected Ceiling Plan	Plan view of the ceiling as if looking up at it that shows the lighting, sprinklers, smoke detectors, and any other objects that are located in or on the ceiling, such as the mechanical air diffusers and grilles.
Single Pole Switch	Used to control a light, receptacle, or other device from a single location.
Smoke Detector	A fire-protection electrical device that automatically detects and gives a warning of the presence of smoke.

Special Purpose Outlet	Used for purposes other than ordinary lighting and power, usually fused separately.
Split Wired Duplex Outlet	Used to control a table or floor lamp with a wall switch near the room entrance. Half of the duplex is connected to the switch and the other half is always hot. Switched duplex receptacles are rotated 180 degrees from the orientation of other receptacles in the house for identification.
Surfaced Mounted Light	Single lighting fixture attached directly to the ceiling.
Task Lighting	Helps illuminate for performing specific tasks, such as reading, grooming, preparing, and cooking food, doing homework, working on hobbies, playing games and balancing your checkbook. It can be provided by recessed and track lighting, pendant lighting and under cabinet lighting, as well as by portable floor and desk lamps.
Thermostat	An electrical device that automatically regulates temperature, or that activates a device when the temperature reaches a certain point.
Three-Way Switch	Used in pairs and allow you to control a light or receptacle from two different locations.
Track Lighting	A lighting system in which the lights are fitted on tracks, allowing variable positioning.
Triplex Outlet	Outlet carrying 120 Volts with three plug-ins.
Wall Mounted Light	Type of light fixture affixed to a wall in such a way that it uses only the wall for support, and the light is usually directed upwards, but not always (sometimes referred to as “sconce”).
Weatherproof Outlet	Outlet designed of materials specifically to handle the elements and usually installed on the exterior of residence.

Course	**IC63 Drafting III - Architectural**			
Essential Standard	2.00	C3	5%	Apply Procedures to Create Basic Electrical Design Concepts.
Indicator	2.02	N/A	N/A	Apply the rules and standards for electrical fixture placement.
Culminating Question **Essential Questions**	**How are the rules and standards for residential electrical placement applied?** ● What are the rules and standards for residential outlet placement? ● What are the rules and standards for residential switch placement? ● What are the rules and standards for residential lighting placement?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand rules and standards for residential outlet placement.
c. Understand rules and standards for residential switch placement.
d. Understand rules and standards for residential lighting placement.
e. Apply the rules and standards for electrical fixture placement.

INSTRUCTIONAL ACTIVITIES-2.02	
A. Content Literacy Terminology	
Resource(s)	**(See 2.02.1)**
B. Understand rules and standards for residential outlet placement. **C. Understand rules and standards for residential switch placement.** **D. Understand rules and standards for residential lighting placement.** *Note: Activity includes Unpacked Content for B, C and D and parts of Indicator 2.03.*	
Activity	Guided Small Group Discussions-Electrical Placement-Residential
Teacher Instructions	● Break students into heterogeneous groups of 3-4 students. Provide digital copies of *Guided Small Group Discussions-Electrical Placement-Residential- Presentation* and *Guided Small Group Discussions-Electrical Placement-Residential-Questions*. ● Facilitate groups answering all questions using the provided presentation and the internet. ● Facilitate whole-class review of information. ● Students will be able to place electrical fixtures according to accepted Industry Practice.
Student Directions	● Demonstrate an understanding of electrical fixture placement according to accepted Industry Practice by answering all questions using the provided presentation and the internet as a group. ● Participate in a whole-class review of information.
Resource(s)	Guided Small Group Discussions- Guided Small Group Discussions-
E. Apply the rules and standards for electrical fixture placement. *Note: Activity combines with part of Indicator 2.03.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining proper electrical layout for Model Home Project when appropriate for project pace. ● Facilitate students adding electrical components and floor plan drawings to the project using software tutorials and/or direct instruction. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Locate information to determine appropriate electrical layout and fixture selections for the project. ● Create electrical floor plan drawings in the software for the project. ● Review and revise.
Resource(s)	Project-Based Learning- Model Ho

	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-2.02.1	
240V Outlet	Outlet carrying extra voltage. Used for high voltage needs such as for range and clothes dryer.
Accent Lighting	Adds drama to a room by creating visual interest. As part of an interior design scheme, it is used to draw the eye to houseplants, paintings, sculptures and other prized possessions. It can also be used to highlight the texture of a brick or stone wall, window treatments or outdoor landscaping.
Ambient Lighting	Provides an area with overall illumination. Also known as general lighting, it radiates a comfortable level of brightness without glare and allows you to see and walk about safely.
Ceiling Fan	Mechanical fan mounted on the ceiling of a room or space that uses hub-mounted rotating blades to circulate air.
Branch or Switch Connections	Curved dashed lines on electrical plans which show connections between electrical fixtures.
Dimmer Switch	Devices connected to a light fixture and used to lower the brightness of light by changing the voltage waveform applied.
Double-Pole Switch	Controls a device or equipment from one location for higher-demand appliances, motors, and machinery.
Duplex Outlet	Standard voltage outlet carrying 120 Volts with two plug-ins.
Exhaust Fan	Fans installed in bathrooms or other areas of the residence to help absorb the moisture in the atmosphere within the room and as a result one will benefit from a reduction in problems such as mold and its resultant negative effects. An exhausted fan MUST be installed in all bathrooms without an operating window but are commonly installed in ALL bathrooms.
Foot-candle	A unit of illumination equal to that given by a source of one candela at a distance of one foot.
GFI Outlet	(Ground Fault Interrupted) Used in Bathrooms, Kitchens, and other wet areas. Designed to protect from electrical shock by interrupting a household circuit when there is a difference detected in the current.
Junction Box	An enclosure that houses electric wires or cables that are joined together and protects the connections.
Legend	Table used to explain or define a symbol or special mark placed on a blueprint.
Pendant Light	A lone light fixture that hangs from the ceiling usually suspended by a cord, chain, or metal rod (also referred “drop” or “suspended”, light).
Recessed Can Light	A light fixture that is installed into a hollow opening in a ceiling (also referred to as a “pot light”, “can light”, or “downlight”).
Reflected Ceiling Plan	Plan view of the ceiling as if looking up at it that shows the lighting, sprinklers, smoke detectors, and any other objects that are located in or on the ceiling, such as the mechanical air diffusers and grilles.
Single Pole Switch	Used to control a light, receptacle, or other device from a single location.
Smoke Detector	A fire-protection electrical device that automatically detects and gives a warning of the presence of smoke.

Special Purpose Outlet	Used for purposes other than ordinary lighting and power, usually fused separately.
Split Wired Duplex Outlet	Used to control a table or floor lamp with a wall switch near the room entrance. Half of the duplex is connected to the switch and the other half is always hot. Switched duplex receptacles are rotated 180 degrees from the orientation of other receptacles in the house for identification.
Surface Mounted Light	Single lighting fixture attached directly to the ceiling.
Task Lighting	Helps illuminate for performing specific tasks, such as reading, grooming, preparing, and cooking food, doing homework, working on hobbies, playing games and balancing your checkbook. It can be provided by recessed and track lighting, pendant lighting and under cabinet lighting, as well as by portable floor and desk lamps.
Thermostat	An electrical device that automatically regulates temperature, or that activates a device when the temperature reaches a certain point.
Three-Way Switch	Used in pairs and allow you to control a light or receptacle from two different locations.
Track Lighting	A lighting system in which the lights are fitted on tracks, allowing variable positioning.
Triplex Outlet	Outlet carrying 120 Volts with three plug-ins.
Wall Mounted Light	Type of light fixture affixed to a wall in such a way that it uses only the wall for support, and the light is usually directed upwards, but not always (sometimes referred to as “sconce”).
Weatherproof Outlet	Outlet designed of materials specifically to handle the elements and usually installed on the exterior of residence.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	2.00	C3	5%	Apply Procedures to Create Basic Electrical Design Concepts.
Indicator	2.03	N/A	N/A	Apply the rules and standards for electrical fixture placement and create an electrical/lighting plan using 3D CAD software, such as Revit Architecture.
Culminating Question **Essential Questions**	**How are the rules and standards for electrical fixture placement applied when creating an Electrical/Lighting plan using 3D CAD software, such as Revit Architecture?** ● How are electrical fixtures placed according to standards in the software? ● What is the purpose of an Electrical Plan in a set of Construction Documents? ● How are lighting fixtures placed according to standards in the software? ● What is the purpose of a Lighting Plan in a set of Construction Documents? ● How are procedures applied to create an Electrical Plan in the software? ● How are procedures applied to create a Lighting Plan in the software?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply procedures for electrical fixture placement in the software.
c. Understand Electrical Plans as part of a Construction Document Set.
d. Apply procedures for lighting fixture placement in the software.
e. Understand Lighting Plans as part of a Construction Document Set.
f. Apply procedures to create Electrical Plans in the software.
g. Apply procedures to create Lighting Plans in the software.

INSTRUCTIONAL ACTIVITIES-2.03	
A. Content Literacy Terminology	
Resource(s)	**(See 2.03.1)**
B. Apply procedures for electrical fixture placement in the software. *Note: Activity combines with Unpacked Content F and part of Indicator 2.03.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining proper electrical layout for Model Home Project when appropriate for project pace. ● Facilitate students adding electrical components and floor plan drawings to the project using software tutorials and/or direct instruction. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Locate information to determine appropriate electrical layout and fixture selections for the project. ● Create electrical floor plan drawings in the software for the project. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources
C. Understand Electrical Plans as part of a Construction Document Set. *Note: Activity includes Unpacked Content for C and E and parts of Indicator 2.02.*	
Activity	Guided Small Group Discussions-Electrical Placement-Residential
Teacher Instructions	● Break students into heterogeneous groups of 3-4 students. Provide digital copies of *Guided Small Group Discussions-Electrical Placement-Residential- Presentation* and *Guided Small Group Discussions-Electrical Placement-Residential-Questions*. ● Facilitate groups answering all questions using the provided presentation and the internet. ● Facilitate whole-class review of information. ● Students will be able to place electrical fixtures according to accepted Industry Practice.
Student Directions	● Demonstrate an understanding of electrical fixture placement according to accepted Industry Practice by answering all questions using the provided presentation and the internet as a group. ● Participate in a whole-class review of information.
Resource(s)	 Guided Small Group Discussions-  Guided Small Group Discussions-

D. Apply procedures for lighting fixture placement in the software. *Note: Activity combines with Unpacked Content G and part of Indicator 8.02*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining proper lighting layout/placement and fixture selection for Model Home Project when appropriate for project pace. ● Facilitate students adding lighting components and reflected ceiling plan drawings to digital the project using software tutorials and/or direct instruction. ● Facilitate students' renderings of the project to apply interior lighting. These renderings can be used as additional presentation(s). ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Locate information to determine appropriate lighting layout/placement and fixture selections. ● Create Lighting Plan drawings. ● Create renderings which apply interior lighting in the software. These renderings can be used as additional presentation(s). ● Review and revise.
Resource(s)	Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources
E. Understand Lighting Plans as part of a Construction Document Set. *Note: Activity includes Unpacked Content for C and E and parts of Indicator 2.02.*	
Activity	Guided Small Group Discussions-Electrical Placement-Residential
Teacher Instructions	● Break students into heterogeneous groups of 3-4 students. Provide digital copies of *Guided Small Group Discussions-Electrical Placement-Residential- Presentation* and *Guided Small Group Discussions-Electrical Placement-Residential-Questions*. ● Facilitate groups answering all questions using the provided presentation and the internet. ● Facilitate whole-class review of information. ● Students will be able to place electrical fixtures according to accepted Industry Practice.
Student Directions	● Demonstrate an understanding of electrical fixture placement according to accepted Industry Practice by answering all questions using the provided presentation and the internet as a group. ● Participate in a whole-class review of information.

Resource(s)	Guided Small Group Discussions- Guided Small Group Discussions-
F. Apply procedures to create Electrical Plans in the software. *Note: Activity combines with Unpacked Content B and part of Indicator 2.03.*	
Activity	Model Home Project
Teacher Instructions	• Facilitate students determining proper electrical layout for Model Home Project when appropriate for project pace. • Facilitate students adding electrical components and floor plan drawings to the digital project using software tutorials and/or direct instruction. • Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	• Locate information to determine appropriate electrical layout and fixture selections for the project. • Create electrical floor plan drawings in the software for the project. • Review and revise.
Resource(s)	Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources
G. Apply procedures to create Lighting Plans in the software. *Note: Activity combines with Unpacked Content G and part of Indicator 8.02*	
Activity	Model Home Project
Teacher Instructions	• Facilitate students determining proper lighting layout/placement and fixture selection for Model Home Project when appropriate for project pace. • Facilitate students adding lighting components and reflected ceiling plan drawings to the project using software tutorials and/or direct instruction. • Facilitate students' renderings of the project to apply interior lighting. These renderings can be used as additional presentation(s). • Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	• Locate information to determine appropriate lighting layout/placement and fixture selections. • Create Lighting Plan drawings. • Create renderings which apply interior lighting in the software. These renderings can be used as additional presentation(s). • Review and revise.

Resource(s)	Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-2.03.1	
240V Outlet	Outlet carrying extra voltage. Used for high voltage needs such as for range and clothes dryer.
Accent Lighting	Adds drama to a room by creating visual interest. As part of an interior design scheme, it is used to draw the eye to houseplants, paintings, sculptures, and other prized possessions. It can also be used to highlight the texture of a brick or stone wall, window treatments or outdoor landscaping.
Ambient Lighting	Provides an area with overall illumination. Also known as general lighting, it radiates a comfortable level of brightness without glare and allows you to see and walk about safely.
Ceiling Fan	Mechanical fan mounted on the ceiling of a room or space that uses hub-mounted rotating blades to circulate air.
Branch or Switch Connections	Curved dashed lines on electrical plans which show connections between electrical fixtures.
Dimmer Switch	Devices connected to a light fixture and used to lower the brightness of light by changing the voltage waveform applied.
Double-Pole Switch	Controls a device or equipment from one location for higher-demand appliances, motors, and machinery.
Duplex Outlet	Standard voltage outlet carrying 120 Volts with two plug-ins.
Exhaust Fan	Fans installed in bathrooms or other areas of the residence to help absorb the moisture in the atmosphere within the room and as a result one will benefit from a reduction in problems such as mold and its resultant negative effects. An exhausted fan MUST be installed in all bathrooms without an operating window but are commonly installed in ALL bathrooms.
Foot-candle	A unit of illumination equal to that given by a source of one candela at a distance of one foot.
GFI Outlet	(Ground Fault Interrupted) Used in Bathrooms, Kitchens, and other wet areas. Designed to protect from electrical shock by interrupting a household circuit when there is a difference detected in the current.
Junction Box	An enclosure that houses electric wires or cables that are joined together and protects the connections.
Legend	Table used to explain or define a symbol or special mark placed on a blueprint.
Pendant Light	A lone light fixture that hangs from the ceiling usually suspended by a cord, chain, or metal rod (also referred “drop” or “suspended”, light).
Recessed Can Light	A light fixture that is installed into a hollow opening in a ceiling (also referred to as a “pot light”, “can light”, or “downlight”).
Reflected Ceiling Plan	Plan view of the ceiling as if looking up at it that shows the lighting, sprinklers, smoke detectors, and any other objects that are located in or on the ceiling, such as the mechanical air diffusers and grilles.
Single Pole Switch	Used to control a light, receptacle, or other device from a single location.
Smoke Detector	A fire-protection electrical device that automatically detects and gives a warning of the presence of smoke.

Special Purpose Outlet	Used for purposes other than ordinary lighting and power, usually fused separately.
Split Wired Duplex Outlet	Used to control a table or floor lamp with a wall switch near the room entrance. Half of the duplex is connected to the switch and the other half is always hot. Switched duplex receptacles are rotated 180 degrees from the orientation of other receptacles in the house for identification.
Surface Mounted Light	Single lighting fixture attached directly to the ceiling.
Task Lighting	Helps illuminate for performing specific tasks, such as reading, grooming, preparing, and cooking food, doing homework, working on hobbies, playing games and balancing your checkbook. It can be provided by recessed and track lighting, pendant lighting and under cabinet lighting, as well as by portable floor and desk lamps.
Thermostat	An electrical device that automatically regulates temperature, or that activates a device when the temperature reaches a certain point.
Three-Way Switch	Used in pairs and allow you to control a light or receptacle from two different locations.
Track Lighting	A lighting system in which the lights are fitted on tracks, allowing variable positioning.
Triplex Outlet	Outlet carrying 120 Volts with three plug-ins.
Wall Mounted Light	Type of light fixture affixed to a wall in such a way that it uses only the wall for support, and the light is usually directed upwards, but not always (sometimes referred to as “sconce”).
Weatherproof Outlet	Outlet designed of materials specifically to handle the elements and usually installed on the exterior of residence.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

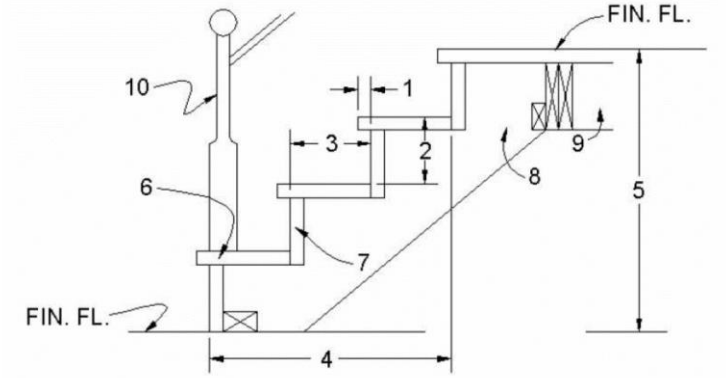
Course	IC63 Drafting III - Architectural			
Essential Standard	3.00	C3	10%	Apply Procedures to Create Stair/Railing Designs for Construction.
Indicator	3.01	N/A	N/A	Apply terms and definitions relating to stair design and construction.
Culminating Question **Essential Questions**	**What are the terms and definitions related to stair design and construction?** ● What are the terms related to stair design and construction? ● What are definitions related to stair design and construction?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand terms that relate to stair design and construction.
c. Understand definitions that relate to stair design and construction.

INSTRUCTIONAL ACTIVITIES-3.01	
A. Content Literacy Terminology	
Resource(s)	**(See 3.01.1)**
B. Understand terms that relate to stair design and construction. **C. Understand definitions that relate to stair design and construction.** *Note: Activity covers all Unpacked Content for Indicator.*	
Activity	Content Terminology Labeling and Representation-Stair System Components
Teacher Instructions	● Provide digital or hard copy of *Content Terminology Labeling and Representation-Stair System Components* and 16 flashcards (or students can make flashcards by cutting up regular paper). ● Facilitate students using the internet to research provided terms. On one side of the flashcard students will write a term, on the other students will define and sketch the term. ● Facilitate students selecting a set of real life stairs to diagram. Students will take a picture of the stairs, pull it into software of some kind (i.e. Publisher or Slides), and label the parts. *Optional:* Teacher can allow student time (or access) to study diagrams and flashcards before a formal assessment.
Student Directions	● Use the internet to research provided terms. On one side of the flashcard write term, on the other define and sketch term. ● Identify major parts of a stair system by selecting a set of real life stairs to diagram. Take a picture of the stairs, pull it into software of some kind (i.e. Publisher or Slides), and label the parts.
Resource(s)	 Content Terminology Labelin

Content Literacy Terminology-3.01.1	
Baluster	Small, evenly spaced members which support the handrail on open stairs (maximum of 4” spacing).
Banister	The structure formed by handrail, newel, and balusters at the side of a staircase to aid in safe travel.
Guardrail	Railing installed on landings/platforms at least 30” above grade or finished floor.
Handrail	Rail for hand grip that follows the slope of the stairs with four or more risers.
Landing	Intermittent platforms in a staircase.
Newel	Main post in handrail construction.
Nosing	The part of the tread that extends past the rise.
Rise	The vertical distance from the top surface of one tread to the top surface of the next tread.
Riser	The vertical face of a step.
Run	The distance from the face of one riser to the face of the next riser.
Stringer	Structural member(s) of the stairs used to support the treads.
Total Rise	The total vertical height (finished floor to finished floor) of stairs.
Total Run	The total horizontal distance (tread width multiplied by the # of treads) of stairs.
Tread	The horizontal member of a stair system (minimum depth of 9”).



1. Nosing
2. Rise
3. Run
4. Total Run
5. Total Rise
6. Tread
7. Riser
8. Stringer
9. Floor Joist
10. Newel

Course	**IC63 Drafting III - Architectural**			
Essential Standard	3.00	C3	10%	Apply Procedures to Create Stair/Railing Designs for Construction.
Indicator	3.02	N/A	N/A	Apply the parts and standards used to construct various stair systems and types (Straight, Curved, with landings and turns).
Culminating Question **Essential Questions**	**What are the parts and standards used to construct various stair systems and types?** ● What are the parts used to construct various stair systems and types? ● What are the standards used to construct various stair systems and types?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the parts used to construct various stair systems and types.
c. Understand the standards used to construct various stair systems and types.

INSTRUCTIONAL ACTIVITIES-3.02	
A. Content Literacy Terminology	
Resource(s)	**(See 3.02.1)**
B. Understand the parts used to construct various stair systems and types. **C. Understand the standards used to construct various stair systems and types.** Note: Activity covers all Unpacked Content for Indicator.	
Activity	Individual Guided Notes-Stair System Types
Teacher Instructions	● Provide digital copy of *Individual Guided Notes- Stair Systems Types-Presentation* and hard copy of *Individual Guided Notes-Stair Systems Types-Guided Notes*. ● Facilitate students completing blanks on handout as they read through the PowerPoint Presentation. It is recommended to "play" the presentation instead of scrolling through. *Extension Activity:* Have students create a slide presentation with real life representation of each stair system type and their characteristics.
Student Directions	● Identify stair system types and their characteristics by completing blanks on handout as you read through the PowerPoint Presentation. It is recommended to "play" the presentation instead of scrolling through.
Resource(s)	 Individual Guided Notes- Stair Systems  Individual Guided Notes- Stair Systems

Content Literacy Terminology-3.02.1	
Circular staircase	Type of stairs makes use of trapezoid shaped steps in an irregular curve or arc design.
Closed Staircase	Stairs with walls on both sides.
Double-L Staircase	Stairs that have two 90° turns at landings.
Landing	Intermittent platforms in a staircase.
L-Shaped Staircase	Stairs that have one 90° turn at a landing.
Main staircase	Designed to be the most used staircase in a residence and usually a focal point. Must have a minimum width of 36" and a lot of times assembled with high-quality, pre-fabricated parts.
Open Staircase	Stairs without walls on one or both sides.
Secondary Staircase(s)	Additional staircase to main staircase used for more private traffic flow within a residence.
Service Staircase	Staircase that usually extends to the basement or attic in a residence.
Spiral Staircase	Type of stairs makes use of trapezoid shaped steps in a regular, tight circular shape. Commonly used when needing to conserve space.
Straight-Run Staircase	Stairs that travel in only one direction (no turns) and are the easiest to construct but take up the most floor space (or a long open space).
U- Shaped	Stairs with one landing on which you make a 180-degree turn.
Winder Staircase	Stair system uses pie-shaped treads in place of a landing and is considered the most unsafe b/c shape of treads at landing.

Course	IC63 Drafting III - Architectural			
Essential Standard	3.00	C3	10%	Apply Procedures to Create Stair/Railing Designs for Construction.
Indicator	3.03	N/A	N/A	Apply the calculations for rise, run, total rise, total run, and floor cutout.
Culminating Question **Essential Questions**	**How are calculations for rise, run, total rise, total run and floor cutout applied?** ● What are the standard measurements used in stair systems? ● How are calculations for stair systems determined? ● How are calculations for stair systems applied?			

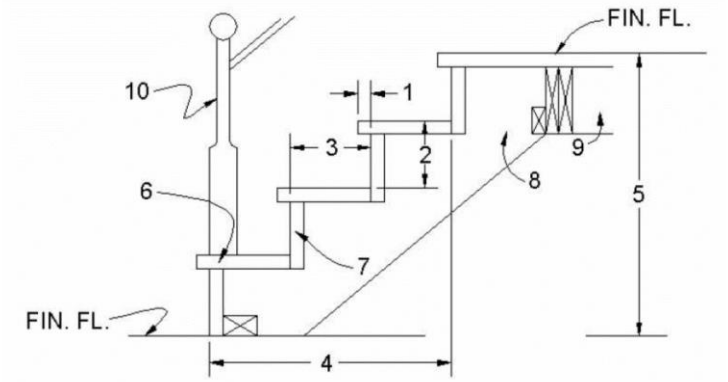
UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand standard measurements used in stair systems.
c. Understand calculations of stair systems including rise, run, total rise, total run, and floor cutout.
d. Apply calculations for stair systems including rise, run, total rise, total run, and floor cutout.

INSTRUCTIONAL ACTIVITIES-3.03	
A. Content Literacy Terminology	
Resource(s)	**(See 3.03.1)**
B. Understand standard measurements used in stair systems.	
Activity	Direct Instruction with Guided Notes- Stair Systems Standards
Teacher Instructions	● Provide hardcopy of Direct Instruction with *Guided Notes-Stair Systems Standards-Guided Notes*. ● Facilitate class discussion and completion of guided notes with *Direct Instruction with Guided Notes-Stair Systems Standards-Presentation*.
Student Directions	● Identify standard measurements used with stair systems by completing guided notes.
Resource(s)	Direct Instruction with Guided Notes- Direct Instruction with Guided Notes-
C. Understand calculations of stair systems including rise, run, total rise, total run, and floor cutout.	
Activity	Direct Instruction with Guided Notes-Stair Systems Calculations
Teacher Instructions	● Provide a calculator and hardcopy of Direct Instruction with *Guided Notes-Stair Systems Calculations-Guided Notes*. ● Facilitate class discussion and completion of guided notes with *Direct Instruction with Guided Notes-Stair Systems Calculations-Presentation*.
Student Directions	● Identify standard calculations used with stair systems by completing guided notes.
Resource(s)	Direct Instruction with Guided Notes- Direct Instruction with Guided Notes-
D. Apply calculations for stair systems including rise, run, total rise, total run, and floor cutout. *Note: Activity combines with part of Indicators 3.04 & 3.05.*	
Activity	Practicum-Stair Systems Model Home Project
Teacher Instructions	● Provide hardcopy of *Practicum-Stair Systems-Handout* and access to calculator if needed. ● Facilitate direct instruction using *Practicum-Stair Systems-PowerPoint Presentation* and students completing the calculation examples. ● Facilitate students determining proper calculations of a stair system for Model Home Project when appropriate for project pace. ● Facilitate students adding stairs in the software using software tutorials and/or direct instruction. ● Facilitate students locating appropriate placement and sizing of guards for Model Home Project. ● Facilitate students adding guards in the software using software tutorials and/or direct instruction

	● Facilitate students annotating and dimensioning stair plans. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Participate in whole-class instruction on stair systems. ● Complete the calculation examples along with the PowerPoint Presentation. ● Locate information to determine stair system design/calculations for the project. ● Model a stair system in the software. ● Determine appropriate size and placement of guards. ● Add guards in the software. ● Create a stair plan with annotations and dimensions. ● Review and revise.
Resource(s)	 Practicum- Stair Systems- Handout.p  Practicum- Stair Systems- Presentatic
	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-3.03.1	
7/11 Rule	The best stair designs have the sum of one tread and one riser equal to between 17” and 18” (7 rise and 11 tread).
Baluster	Small, evenly spaced members which support the handrail on open stairs (maximum of 4” spacing).
Guardrail	Railing installed on landings/platforms at least 30” above grade or finished floor.
Handrail	Rail for hand grip that follows the slope of the stairs with four or more risers.
Rise	The vertical distance from the top surface of one tread to the top surface of the next tread.
Riser	The vertical face of a step is called.
Run	The distance from the face of one riser to the face of the next riser.
Slope	Ratio of rise to run and usually between 30 and 35 degrees for stairs.
Total Rise	The total vertical height (finished floor to finished floor) of stairs.
Total Run	The total horizontal distance (tread width multiplied by the # of treads) of stairs.
Tread	The horizontal member of a stair system (minimum depth of 9”).



1. Nosing
2. Rise
3. Run
4. Total Run
5. Total Rise
6. Tread
7. Riser
8. Stringer
9. Floor Joist
10. Newel

For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**

Course	**IC63 Drafting III - Architectural**			
Essential Standard	3.00	C3	10%	Apply Procedures to Create Stair/Railing Designs for Construction.
Indicator	3.04	N/A	N/A	Apply typical railing design and construction for stairs, landings and decks.
Culminating Question **Essential Questions**	**How is typical railing design and construction for stairs, landings and decks applied?** ● What are the code requirements specific to guards? ● Where are guards applied in construction? ● How are guards applied in the software?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand code requirements for guards.
c. Understand applications of guards.
d. Apply guards in the software.

INSTRUCTIONAL ACTIVITIES-3.04	
A. Content Literacy Terminology	
Resource(s)	**(See 3.04.1)**
B. Understand code requirements for guards. **C. Understand applications of guards.** *Note: Activity covers Unpacked Content for B and C*	
Activity	Independent Code and Application Identification-Guards
Teacher Instructions	● Provide digital copy of *Independent Code and Application Identification-Guards*. ● Facilitate students using code to answer questions in Part One, independently or in pairs. Facilitate students using the internet to find image examples of guard applications in Part Two. ● Facilitate class review of questions and/or sharing of examples by students. ● Students will be able to recall guard code information and identify proper usage.
Student Directions	● Using code, answer questions in Part One, independently or in pairs. Using the internet, find image examples of guard applications in Part Two. ● Participate in class review of questions and/or sharing of examples.
Resource(s)	 Independent Code and Application Ide
D. Apply guards in the software. *Note: Activity combines with part of Indicators 3.03 & 3.04.*	
Activity	Model Home Project
Teacher Instructions	● Provide hardcopy of *Practicum-Stair Systems-Handout* and access to calculator if needed. ● Facilitate direct instruction using *Practicum-Stair Systems-PowerPoint Presentation* and students completing the calculation examples. ● Facilitate students determining proper calculations of a stair system for the Model Home Project when appropriate for project pace. ● Facilitate students adding stairs in the software using software tutorials and/or direct instruction. ● Facilitate students locating appropriate placement and sizing of guards for Model Home Project. ● Facilitate students adding guards in the software using software tutorials and/or direct instruction ● Facilitate students annotating and dimensioning stair plans. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Participate in whole-class instruction on stair systems. ● Complete the calculation examples along with the PowerPoint Presentation.

	● Locate information to determine stair system design/calculations for the project. ● Model a stair system in the software. ● Determine appropriate size and placement of guards. ● Add guards in the software. ● Create a stair plan with annotations and dimensions. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-3.04.1	
Balcony	(Exterior) An exterior floor projecting from and supported by a structure without additional independent supports.
Baluster	Small, evenly spaced members which support the handrail on open stairs (maximum of 4” spacing).
Banister	The structure formed by handrail, newel, and balusters at the side of a staircase to aid in safe travel.
Deck	An exterior floor system supported on at least two opposing sides by an adjoining structure or posts, piers or other independent supports.
Guardrail	Railing installed on landings/platforms at least 30” above grade or finished floor.
Handrail	Rail for hand grip that follows the slope of the stairs with four or more risers.
Landing	Intermittent platforms in a staircase.
Newel	Main post in handrail construction.
Ramp	A walking surface that has a running slope steeper than one unit vertical in twenty units horizontal (5-percent slope).
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	**IC63 Drafting III - Architectural**			
Essential Standard	3.00	C3	10%	Apply Procedures to Create Stair/Railing Designs for Construction.
Indicator	3.05	N/A	N/A	Apply accepted procedures to draw plans for stair construction using 3D CAD software, such as Revit Architecture.
Culminating Question	**How are accepted procedures applied to draw plans for stair construction using 3D CAD software, such as Revit Architecture?**			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply accepted procedures to draw plans for stair construction in the software.

INSTRUCTIONAL ACTIVITIES-3.05	
A. Content Literacy Terminology	
Resource(s)	**(See 3.05.1)**
B. Apply accepted procedures to draw plans for stair construction in the software. *Note: Activity combines with part of Indicators 3.03 & 3.04.*	
Activity	Model Home Project
Teacher Instructions	● Provide hardcopy of *Practicum-Stair Systems-Handout* and access to calculator if needed. ● Facilitate direct instruction using *Practicum-Stair Systems-PowerPoint Presentation* and students completing the calculation examples. ● Facilitate students determining proper calculations of a stair system for the Model Home Project when appropriate for project pace. ● Facilitate students adding stairs in the software using software tutorials and/or direct instruction. ● Facilitate students locating appropriate placement and sizing of guards for Model Home Project. ● Facilitate students adding guards in the software using software tutorials and/or direct instruction ● Facilitate students annotating and dimensioning stair plans. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Participate in whole-class instruction on stair systems. ● Complete the calculation examples along with the PowerPoint Presentation. ● Locate information to determine stair system design/calculations for the project. ● Model a stair system in the software. ● Determine appropriate size and placement of guards. ● Add guards in the software. ● Create a stair plan with annotations and dimensions. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-3.05.1
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**

Course	IC63 Drafting III - Architectural			
Essential Standard	4.00	C3	10%	Apply Procedures to Create Advanced Kitchen and Bath Details.
Indicator	4.01	N/A	N/A	Apply terms, concepts and elements related to kitchen and bath details and design.
Culminating Question **Essential Questions**	**What terms, concepts and elements are related to kitchen and bath details and design?** ● What terms related to kitchen and bath details and design? ● What concepts related to kitchen and bath details and design? ● What elements related to kitchen and bath details and design?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand terms related to kitchen and bath details and design.
c. Understand concepts related to kitchen and bath details and design.
d. Understand elements related to kitchen and bath details and design.

INSTRUCTIONAL ACTIVITIES-4.01	
A. Content Literacy Terminology	
Resource(s)	**(See 4.01.1)**
B. Understand terms related to kitchen and bath details and design. **C. Understand concepts related to kitchen and bath details and design.** **D. Understand elements related to kitchen and bath details and design.** *Note: Activity covers all Unpacked Content for Indicator.*	
Activity	Real World Examples Content Literacy Terms-Kitchens and Baths
Teacher Instructions	● Provide digital copy of *Real World Examples Content Literacy Terms-Kitchens and Baths*. ● Facilitate students collecting real world image examples for each term using the internet. ● Review terms as a whole-class or in small groups and allow students to share examples. *Extensions*: Scavenger Hunt to find examples of terms on campus or at home (photos of these can also be added to *Real World Examples Content Literacy Terms-Kitchens and Baths*). Students can also create collage of terms from magazines.
Student Directions	● Identify terms, concepts and elements related to Kitchen and Bath details by collecting real world image examples for each term using the internet. ● Participate in a whole-class or small group review and share your examples.
Resource(s)	 Real World Examples Content Li

Content Literacy Terminology-4.01.1	
Apron Front Sink	Sink with exposed front-facing side that fits into cabinetry and countertop (also referred to as a “farmhouse” sink).
Backsplash	Vertical covering on a wall rising above a countertop or other work surface to protect the wall from spills and to decorate the wall.
Bar Height Counter	Standard height: 42”.
Base cabinet	Cabinetry that is affixed to the wall that sits directly on floor of a kitchen and is specified with “B”, standard height 34 1/2”, Standard depth 24”.
Baseboard	Finish molding attached at the corner of the wall and floor.
Blind Corner	Cabinet designed to install into a corner of a room where another cabinet will install directly adjacent to it hiding the blind portion giving access to an otherwise unusable corner, providing more storage.
Center Stile	Vertical strip of hardwood that is a component of the face frame usually divides a cabinet opening equally (also referred to as a “mullion”).
Chair Rail	Finish molding to protect where the chair would hit against the wall, can be used as decorative finish as well.
Compartmentalized	A water closet that is partitioned off from other bathroom fixtures.
Corbel	Decorative wooden bracket used as a support mechanism for mantels, bar tops, etc.
Corner Cabinet	Specially designed wall or base cabinet affixed to the wall that will maximize the usable space of a corner.
Countertop	Hard, flat working surface placed on top of base cabinetry or overhung, Common materials: granite, quartz, laminate, concrete, recycled glass, butcher block, marble, solid surface, tile, stainless steel.
Crown molding	Finish molding attached at the corner of the wall and ceiling or to the top of wall cabinets.
Drop-in Sink	Sink with lip or rim that rests on counter-top (also referred to as an “overmount” sink).
Fascia/Soffit	The area between the top of the cabinets and the ceiling which is sometimes converted into a shelf or extended cabinetry above the cabinets for added storage. Also known as a bulkhead if built out with drywall.
Filler	Pieces of hardwood matching a chosen cabinet color commonly used to fill the space where a modular cabinet does not fill a specific wall dimension, Sizes range from 1" to 6" wide and 30" to 96" long.
Framed Construction	Cabinet construction with face frames to which the cabinet doors are attached. The face frame has horizontal rails and vertical stiles.
Frameless Construction	Cabinet construction in which the hinges are secured to the inside of the cabinet, and the doors overlay the cabinet box, minimizing the space between the doors when closed.

Galley Kitchen	Cabinets run along on two opposite walls (also referred to as a "corridor" kitchen), ideal for small to medium sized kitchens, not for heavy traffic areas, Minimum distance across: 4'-0".
Grab Bar	Safety devices designed to enable a person to maintain balance, lessen fatigue while standing, hold some of their weight while maneuvering, or have something to grab onto in case of a slip or fall.
Interior Elevation	Detail Drawing used to show elevation details of casework in areas such as kitchens and baths.
Kitchen Island	Standalone cabinetry in the middle of kitchen space, can be used in any shaped kitchen, ideal for larger sized kitchens, Minimum clearance on all sides: 42".
Kitchen or Vanity Height Counter	Standard Height: 28"-30".
Kitchen Plan	Floor plan view of kitchen used to detail out casework.
Kitchen Work Triangle	A concept used to determine efficient kitchen layouts between the three main work points (cook top/range, sink, and refrigerator), Minimum distance of each leg: 4'-0", Maximum distance of each leg: 9'-0", Sum of all sides: 12'-0" to 26'-0".
Knob	Hardware item round or square, usually made of metal or plastic, attached to doors and drawers for function and decoration.
Lazy Susan	Rotating shelving on a center poll for easy access inside of cabinetry.
Left Hinge	Side of the cabinet door is affixed to and is specified with "L".
L-Shaped Kitchen	Cabinets run along on two adjacent walls, ideal for small to medium sized kitchens.
Millwork	Any type of machined woodwork.
Molding	An ornamental strip used as a finishing touch to decorate a surface.
Pedestal Sink	Bathroom lavatory supported by a leg.
Peninsula Kitchen	Cabinets run along at least one wall and additional connected cabinets into space (think connected island), ideal for medium to large sized kitchens.
Prefabricated	Components (such as cabinet boxes) that are built away from the job site and transported ready to use.
Pull/Handle	Piece of long hardware, usually made of metal or plastic, installed on a drawer front or door, used to open the cabinets and provide a touch of style.
Quarter Round	Finishing molding with a 90° angel on the backside with a perfect quarter radius on the showing side.
Rail	Horizontal pieces of the face frame.
Right Hinge	Side of the cabinet door is affixed to and is specified with "R".
Section	Kind of drawing shows an object as if it had been cut through to show the interior, sometimes used for cabinetry details.
Spectator Height Counter	Standard height: 48".
Standard/Eating Counter	Standard height: 36".
Stile	Vertical pieces of the face frame.
Straight Line Kitchen	Cabinets run along one wall, ideal for small spaces.
Tall Cabinet	A tall piece of cabinetry affixed to wall and is specified with "T".

Toe Kick	Recessed area below base cabinet which allows space for occupant to stand closer to cabinet.
Under Mount Sink	Sink that is installed by attaching under the countertop, there is no rim between sink and countertop.
U-Shaped Kitchen	Cabinets run along on three adjacent walls, considered high efficiency, ideal for medium to large sized kitchens, Minimum distance across, which is: 6'-0".
Vanity Cabinet	Bathroom cabinetry/casement.
Vessel Sink	Wall mounted sink/lavatory or one that sits on top of countertop.
Wainscot	Finishing facing or paneling that is generally applied to a wall or large end panel of a cabinet.
Wall Cabinet	Cabinetry that is affixed to the wall and is specified with "W" (also referred to as "upper" cabinets).

Course	IC63 Drafting III - Architectural			
Essential Standard	4.00	C3	10%	Apply Procedures to Create Advanced Kitchen and Bath Details.
Indicator	4.02	N/A	N/A	Apply plans for kitchen cabinet drawings, standard sizes, and configurations.
Culminating Question **Essential Questions**	**How are plans for kitchen cabinet drawings, standard sizes and configurations applied?** ● What types of drawings are used for kitchen details? ● What information is included in kitchen cabinet drawings? ● What are the standard sizes of kitchen cabinets? ● How are cabinet sizes and callouts applied to kitchen drawings?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the types of drawings used for kitchen details.
c. Understand the types of information included in kitchen cabinet drawings.
d. Understand standard sizes of kitchen cabinets.
e. Apply cabinet sizes and callouts to kitchen drawings.

INSTRUCTIONAL ACTIVITIES-4.02	
A. Content Literacy Terminology	
Resource(s)	**(See 4.02.1)**
B. Understand the types of drawings used for kitchen details. **C. Understand the types of information included in kitchen cabinet drawings.** *Note: Activity covers Unpacked Content for B and C.*	
Activity	Direct Instruction-Kitchen Drawings
Teacher Instructions	● Facilitate whole-class direct instruction/conversation following *Direct Instruction-Kitchen Drawings*. ● Provide real-world examples of kitchen and bath detail drawings for students to examine/discuss.Facilitate students identifying kitchen and bath detail drawings by type and general information included on each.
Student Directions	● Participate in whole-class direct instruction/conversation on Kitchen Drawings. ● Using provided real-world examples of kitchen and bath detail drawings, identify drawing by type and general information included on each.
Resource(s)	 Direct Instruction-Kitchen Drawings.pp
D. Understand standard sizes of kitchen cabinets.	
Activity	Guided Notation Table-Design and Cabinets
Teacher Instructions	● Provide hard copy of *Guided Notation Table-Design and Cabinets-Handout*. ● Facilitate whole-class direct instruction using *Guided Notation Table-Design and Cabinets-Presentation* while students fill in tables with measurement information on Handout. ● Facilitate follow up activity where students guess what codes might mean. Answers: MV- Microwave, ROT- roll-out Tray, LZS- Lazy Susan
Student Directions	● Participate in whole-class direct instruction on Cabinet Design and fill in tables with measurement information on Handout in order to recognize cabinet codes and standard dimensions. ● Participate in follow up activity and guess what codes might mean.
Resource(s)	 Guided Notation Table- Design and C
E. Apply cabinet sizes and callouts to kitchen drawings.	
Activity	Individual Kitchen Coding and Detail Activity
Teacher Instructions	● Provide hardcopy of *Individual Kitchen Coding and Detail Activity* and assist students in locating/accessing an online cabinet Spec Guide (any company).

	● Facilitate students using Spec Guide to detail out each cabinet identified by letter in diagram. Students can be grouped in pairs for activity. *Note:* The oven is assumed 36" for estimation of other cabinets.
Student Directions	● Locate/access an online cabinet Spec Guide (any company). ● Use Spec Guide to detail out each cabinet identified by letter in diagram in Handout.
Resource(s)	 Individual Kitchen Coding and Detail A

Content Literacy Terminology-4.02.1	
Apron Front Sink	Sink with exposed front-facing side that fits into cabinetry and countertop (also referred to as a “farmhouse” sink).
Backsplash	Vertical covering on a wall rising above a countertop or other work surface to protect the wall from spills and to decorate the wall.
Bar Height Counter	Standard height: 42”.
Base cabinet	Cabinetry that is affixed to the wall that sits directly on the floor of a kitchen and is specified with “B”, standard height 34 1/2”, Standard depth 24”.
Baseboard	Finish molding attached at the corner of the wall and floor.
Blind Corner	Cabinet designed to install into a corner of a room where another cabinet will install directly adjacent to it hiding the blind portion giving access to an otherwise unusable corner, providing more storage.
Center Stile	Vertical strip of hardwood that is a component of the face frame usually divides a cabinet opening equally (also referred to as a “mullion”).
Chair Rail	Finish molding to protect where the chair would hit against the wall, can be used as decorative finish as well.
Compartmentalized	A water closet that is partitioned off from other bathroom fixtures.
Corbel	Decorative wooden bracket used as a support mechanism for mantels, bar tops, etc.
Corner Cabinet	Specially designed wall or base cabinet affixed to the wall that will maximize the usable space of a corner.
Countertop	Hard, flat working surface placed on top of base cabinetry or overhung, Common materials: granite, quartz, laminate, concrete, recycled glass, butcher block, marble, solid surface, tile, stainless steel.
Crown molding	Finish molding attached at the corner of the wall and ceiling or to the top of wall cabinets.
Drop-in Sink	Sink with lip or rim that rests on counter-top (also referred to as an “overmount” sink).
Fascia/Soffit	The area between the top of the cabinets and the ceiling which is sometimes converted into a shelf or extended cabinetry above the cabinets for added storage. Also known as a bulkhead if built out with drywall.
Filler	Pieces of hardwood matching a chosen cabinet color commonly used to fill the space where a modular cabinet does not fill a specific wall dimension, Sizes range from 1" to 6" wide and 30" to 96" long.
Framed Construction	Cabinet construction with face frames to which the cabinet doors are attached. The face frame has horizontal rails and vertical stiles.
Frameless Construction	Cabinet construction in which the hinges are secured to the inside of the cabinet, and the doors overlay the cabinet box, minimizing the space between the doors when closed.

Galley Kitchen	Cabinets run along on two opposite walls (also referred to as a "corridor" kitchen), ideal for small to medium sized kitchens, not for heavy traffic areas, Minimum distance across: 4'-0".
Grab Bar	Safety devices designed to enable a person to maintain balance, lessen fatigue while standing, hold some of their weight while maneuvering, or have something to grab onto in case of a slip or fall.
Interior Elevation	Detail Drawing used to show elevation details of casework in areas such as kitchens and baths.
Kitchen Island	Standalone cabinetry in the middle of kitchen space, can be used in any shaped kitchen, ideal for larger sized kitchens, Minimum clearance on all sides: 42".
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Kitchen Plan	Floor plan view of kitchen used to detail out casework.
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Knob	Hardware item round or square, usually made of metal or plastic, attached to doors and drawers for function and decoration.
Lazy Susan	Rotating shelving on a center poll for easy access inside of cabinetry.
Left Hinge	Side of the cabinet door is affixed to and is specified with "L".
L-Shaped Kitchen	Cabinets run along on two adjacent walls, ideal for small to medium sized kitchens.
Millwork	Any type of machined woodwork.
Molding	An ornamental strip used as a finishing touch to decorate a surface.
Pedestal Sink	Bathroom lavatory supported by a leg.
Peninsula Kitchen	Cabinets run along at least one wall and additional connected cabinets into space (think connected island), ideal for medium to large sized kitchens.
Prefabricated	Components (such as cabinet boxes) that are built away from the job site and transported ready to use.
Pull/Handle	Piece of long hardware, usually made of metal or plastic, installed on a drawer front or door, used to open the cabinets and provide a touch of style.
Quarter Round	Finishing molding with a 90° angel on the backside with a perfect quarter radius on the showing side.
Rail	Horizontal pieces of the face frame.
Section	Kind of drawing shows an object as if it had been cut through to show the interior, sometimes used for cabinetry details.
Spectator Height Counter	Standard height: 48".
Standard/Eating Counter	Standard height: 36".
Stile	Vertical pieces of the face frame.
Straight Line Kitchen	Cabinets run along one wall, ideal for small spaces.
Tall Cabinet	A tall piece of cabinetry affixed to wall and is specified with "T".

Toe Kick	Recessed area below base cabinet which allows space for occupant to stand closer to cabinet.
Under Mount Sink	Sink that is installed by attaching under the countertop, there is no rim between sink and countertop.
U-Shaped Kitchen	Cabinets run along on three adjacent walls, considered high efficiency, ideal for medium to large sized kitchens, Minimum distance across, which is: 6'-0".
Vanity Cabinet	Bathroom cabinetry/casement.
Vessel Sink	Wall mounted sink/lavatory or one that sits on top of countertop.
Wainscot	Finishing facing or paneling that is generally applied to a wall or large end panel of a cabinet.
Wall Cabinet	Cabinetry that is affixed to the wall and is specified with "W" (also referred to as "upper" cabinets).
For more information on Content Literacy Terminology for this Indicator please visit: Revit Glossary	

Course	IC63 Drafting III - Architectural			
Essential Standard	4.00	C3	10%	Apply Procedures to Create Advanced Kitchen and Bath Details.
Indicator	4.03	N/A	N/A	Apply procedures to draw enlarged detailed plans and interior elevations for kitchens and baths using 3D CAD software, such as Revit Architecture.
Culminating Question	**How are accepted procedures applied to draw enlarged detailed plans and interior elevations for kitchens and baths using 3D CAD software, such as Revit Architecture?**			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply accepted procedures to draw enlarged detailed plans and interior elevations for kitchens and baths using 3D CAD software, such as Revit Architecture.

INSTRUCTIONAL ACTIVITIES-4.03	
A. Content Literacy Terminology	
Resource(s)	**(See 4.03.1)**
B. Apply accepted procedures to draw enlarged detailed plans and interior elevations for kitchens and baths using 3D CAD software, such as Revit Architecture.	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining proper kitchen layout, appliances and casement selection for Model Home Project when appropriate for project pace. ● Facilitate students adding kitchen components and kitchen detail drawings to digital the project using software tutorials and/or direct instruction. ● Facilitate students creating Kitchen Plans. ● Facilitate personal, peer, and/or teacher review and revisions. *Extension:* Students can create cabinet schedule using codes from a provided or selected Spec Guide.
Student Directions	● Determine proper kitchen layout, appliances, and casement selection for Model Home Project when appropriate for project pace. ● Add kitchen components and kitchen detail drawings to digital the project using software tutorials and/or direct instruction. ● Create Kitchen Plans in the software. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-4.03.1
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**

Course	**IC63 Drafting III - Architectural**			
Essential Standard	5.00	C3	30%	Apply Procedures to Create Multi-level Residential Floor Plans.
Indicator	5.01	N/A	N/A	Understand terms, definitions and accepted principles related to 2-story or multi-level residential space planning.
Culminating Question **Essential Questions**	**What terms, definitions and accepted principles are related to 2-story or multi-level residential space planning?** ● What are the advantages and disadvantages of multi-level space planning? ● What terms are associated with multi-level space planning? ● What are the accepted principles of multi-level space planning?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the advantages and disadvantages of multi-level space planning.
c. Understand terms associated with multi-level space planning.
d. Understand accepted principles to multi-level space planning.

INSTRUCTIONAL ACTIVITIES-5.01	
A. Content Literacy Terminology	
Resource(s)	**(See 5.01.1)**
B. Understand the advantages and disadvantages of multi-level space planning.	
Activity	Agree or Disagree Statements-Multi-Level Design
Teacher Instructions	● Label or assign one side of the classroom as "Agree" and the other as "Disagree." Read aloud each statement in *Agree or Disagree Statements- Multi-Level Design-Statements*. Allow time for students to make a decision as to whether they agree or disagree with each statement individually. Facilitate students silently moving to the side of the room labeled with their choice. Ask students to verbalize why they chose a specific side. ● Read aloud the correct answer and explanation before posing the next statement. ● Facilitate whole-class review/discussion using *Agree or Disagree Statements- Multi-Level Design- Presentation*.
Student Directions	● Listen to each statement as it is read aloud. Make a decision as to whether you agree or disagree with each statement individually. Silently moving to the side of the room labeled with your choice. Verbalize why you chose a specific side if prompted. ● Listen to the correct answer and explanation for each statement. ● Participate in whole-class review/discussion to distinguish between advantages and disadvantages of multi-level design.
Resource(s)	 Agree or Disagree Statements- Multi-L  Agree or Disagree Statements- Multi-L
C. Understand terms associated with multi-level space planning. **D. Understand accepted principles to multi-level space planning.** *Note: Activity covers Unpacked Content for E and F*	
Activity	Real World Examples Content Literacy Terms-Multi-Level
Teacher Instructions	● Provide digital copy of *Real World Examples Content Literacy Terms-Multi-Level*. ● Facilitate students collecting real world image examples for each term using the internet. ● Review terms and allow students to share examples. ● Facilitate small-group or whole-class discussion of Expansion Questions. ● Facilitate students creating bubble diagrams for Expansion activity.
Student Directions	● Collect real world image examples for each term using the internet. ● Review terms and share examples with whole-class. ● Discussion of Expansion Questions. ● Create bubble diagrams for Expansion activity.

Resource(s)	 Real World Examples Content Li

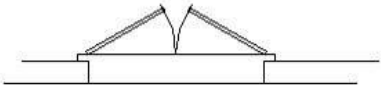
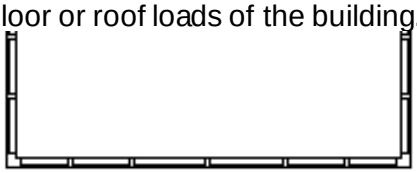
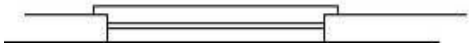
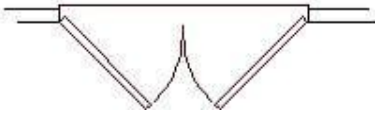
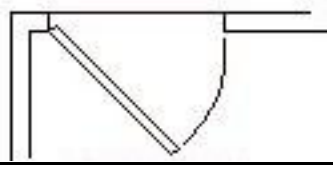
Content Literacy Terminology-5.01.1	
Egress	Describes access to a structure.
FROG	A finished room or space over a garage.
Level	Defines a vertical height or story within a building.
Main staircase	Designed to be the most used staircase in a residence and usually a focal point. Must have a minimum width of 36" and a lot of times assembled with high-quality, pre-fabricated parts.
One-and-a-half story	A floor area that is partially or wholly built into the framing of the roof where the upper level is less than 70% of the lower and frequently contains dormers.
One-Story Home	A house in which all square footage is located on a single story.
Secondary Staircase(s)	Additional staircase to main staircase used for more private traffic flow within a residence.
Service Staircase	Staircase that usually extends to the basement or attic in a residence.
Split-level	A house in which various sections of the floor plan have different floor and ceiling heights.
Square footage	Area measurement between the boundaries of a space (1'-0" x 1'-0").
Story	Portion of a residence included between the upper surface of a floor and the upper surface of the floor or roof next above.
Two-Story Home	A house in which the second story hosts as much, or close to as much, square footage as the first.
Zoning	Grouping areas of the home.

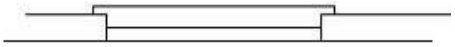
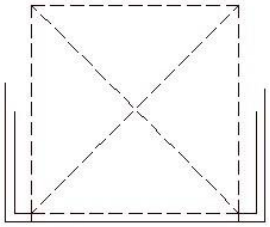
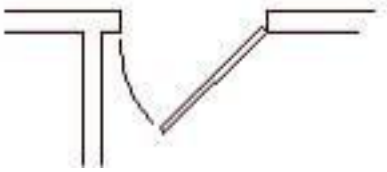
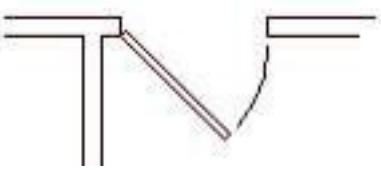
Course	IC63 Drafting III - Architectural			
Essential Standard	5.00	C3	30%	Apply Procedures to Create Multi-level Residential Floor Plans.
Indicator	5.02	N/A	N/A	Understand residential door and window types (review of Level II Arch).
Culminating Question **Essential Questions**	**What are common residential door and window types?** ● What are common residential door types? ● What are common residential window types?			

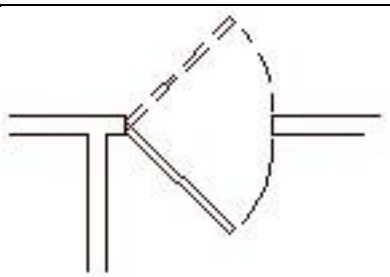
UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand common residential door types.
c. Understand common residential window types.

INSTRUCTIONAL ACTIVITIES-5.02	
A. Understand common residential door types. **B. Understand common residential window types.** *Note: Activity covers all Unpacked Content for this Indicator.*	
Activity	Direct Instruction-Doors and Windows Class Review
Teacher Instructions	● Facilitate direct instruction review using *Direct Instruction-Doors and Windows Class Review- Presentation*. Allow students access to the internet (or conduct as a class on projected screen) to search for images of each type of door or window as mentioned. *Extension*: Facilitate campus tour, or ask students while off campus, to identify different types of doors and windows.
Student Directions	● Participate in direct instruction review on Doors and Windows. Search for images of each type of door or window as mentioned.
Resource(s)	 Direct Instruction- Doors and Window

Content Literacy Terminology-5.02.1	
Angled Bay Window	Window space projecting outward from the main walls of a building and forming a bay in a room. 
Awning Window	Window hinged on the top and swung out. 
Cased Opening or Archway	Opening in the wall which is trimmed out; an archway has an arch at the top. 
Casement Windows	Window hinged on the side and swings out. 
Curtain Wall	An exterior wall usually constructed with aluminum-framed walls containing in-fills of glass, metal panels, or thin stone that is attached to the building structure, but which does not carry the floor or roof loads of the building. 
Double Hung Window	Window which slides up and down. 
Exterior French Door with Threshold	Double swinging doors which include a strip across the bottom as a seal to prevent air, water, and other elements from crossing. 
Exterior Single Swing Door with Threshold	One swinging door which includes a strip across the bottom as a seal to prevent air, water, and other elements from crossing. 

Exterior Sliding Doors with Threshold	Doors which slide past or over on another and include a strip across the bottom as a seal to prevent air, water, and other elements from crossing. 
Fixed Widow	Window that does not open. 
Garage Door	Standard height: 7'-0". 
Hopper Window	Window that is hinged on the top and swings in. 
Interior Accordion Door or Partition	Door which has a series of alternating folds with panels of similar size. 
Interior Door with Backwards Swing	Door which swings opposite the standard direction. 
Interior Door with Standard Swing	Door which swings towards the corner of the room it serves. 
Interior Double Action Door	Door which swings into both rooms.

	
Interior Double Bi-fold Doors	Double doors that slide open, made from a series of common sized panels that fold up against each other. 
Interior French doors	Double swinging doors. 
interior single bi-fold door	Door that slides open, made from a series of common sized panels that fold up against each other. 
Interior sliding Doors	Doors which slide past or over on another. 
Pocket Door	Door which slides into a compartment in the wall. 
Revolving Door	Door which rotates around center point/support. 
Sliding Windows	Windows which slide past or over on another. 
Surface Sliding or Bard Door	Door which slides across outside of the wall.

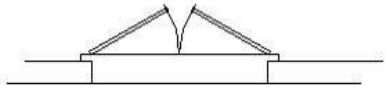
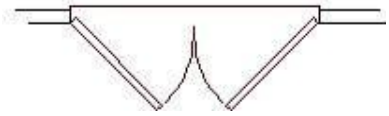
	

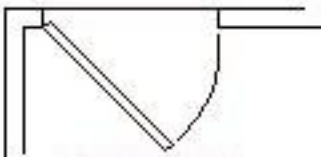
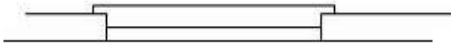
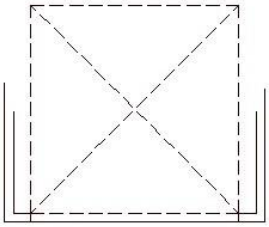
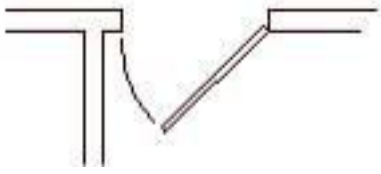
Course	IC63 Drafting III - Architectural			
Essential Standard	5.00	C3	30%	Apply Procedures to Create Multi-level Residential Floor Plans.
Indicator	5.03	N/A	N/A	Understand floor plan symbols for doors, windows, and room identification.
Culminating Question **Essential Questions**	**What floor plan symbols for doors, windows and room identification are used on construction drawings?** ● What symbols are used to represent doors on construction drawing floor plans? ● What symbols are used to represent windows on construction drawing floor plans? ● How are rooms identified on construction drawing floor plans?			

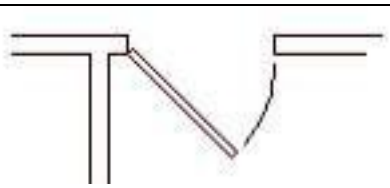
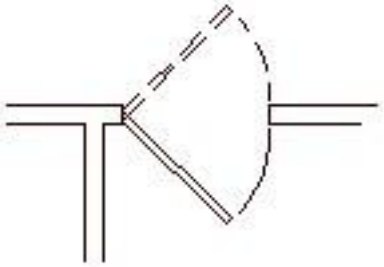
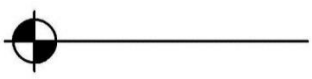
UNPACKED CONTENT

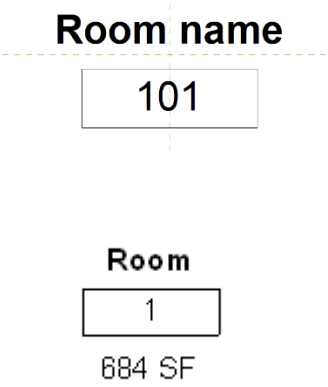
a. Content Literacy Terminology
b. Understand floor plan symbols for doors.
c. Understand floor plan symbols for windows.
d. Understand floor plan symbols for room identification.

INSTRUCTIONAL ACTIVITIES-5.03	
A. Content Literacy Terminology	
Resource(s)	**(See 5.03.1)**
B. Understand floor plan symbols for doors. **C. Understand floor plan symbols for windows.** **D. Understand floor plan symbols for room identification.** *Note: Activity covers all Unpacked Content for this Indicator.*	
Activity	Symbol Matching and Annotating-Doors, Windows and Tags-Answers
Teacher Instructions	● Provide hard copy of *Symbol Matching and Annotating-Doors Windows and Tags-Symbols*, scissors and digital copy of S*ymbol Matching and Annotating-Doors Windows and Tags-Activity*. ● Facilitate students cutting out symbols and labeling the back of each using the word list in Part One of the activity. ● Facilitate students checking and correcting their work using *Symbol Matching and Annotating-Doors, Windows and Tags-Answers*. ● Facilitate students answering Review Questions in Part Two and whole-class or small group discussion on answers. ● Facilitate students observing floor plans online for noted differences and/or symbols they may not recognize. Monitor student progress. *Extension:* Students can write up or create a presentation on their findings.
Student Directions	● Provide hard copy of *Symbol Matching and Annotating-Doors Windows and Tags-Symbols*, scissors and digital copy of S*ymbol Matching and Annotating-Doors Windows and Tags-Activity*. ● Demonstrate your recognition of common symbols for doors, windows, and room identifications by cutting out symbols and labeling the back of each using the word list in Part One of the activity. ● Check and correct your work. ● Answer Review Questions in Part Two of activity and participate in whole-class or small group discussion on answers. ● Observe floor plans online for noted differences and/or symbols you may not recognize.
Resource(s)	 Symbol Matching and Annotating- D  Symbol Matching and Annotating- D  Symbol Matching and Annotating- Dc

Content Literacy Terminology-5.03.1	
Angled Bay Window	Window space projecting outward from the main walls of a building and forming a bay in a room. 
Awning Window	Window hinged on the top and swings out. 
Cased Opening or Archway	Opening in the wall which is trimmed out; an archway has an arch at the top. 
Casement Windows	Window hinged on the side and swings out. 
Curtain Wall	An exterior wall usually constructed with aluminum-framed walls containing in-fills of glass, metal panels, or thin stone that is attached to the building structure, but which does not carry the floor or roof loads of the building. 
Door Tag	Symbol which marks a door to corresponding information contained in schedule. 
Double Hung Window	Window which slides up and down. 
Exterior French Door with Threshold	Double swinging doors which include a strip across the bottom as a seal to prevent air, water, and other elements from crossing. 

Exterior Single Swing Door with Threshold	One swinging door which includes a strip across the bottom as a seal to prevent air, water, and other elements from crossing. 
Exterior Sliding Doors with Threshold	Doors which slide past or over on another and include a strip across the bottom as a seal to prevent air, water, and other elements from crossing. 
Fixed Widow	Window that does not open. 
Garage Door	Standard height: 7’-0”. 
Hopper Window	Window that is hinged on the top and swings in. 
Interior Accordion Door or Partition	Door which has a series of alternating folds with panels of similar size. 
Interior Door with Backwards Swing	Door which swings opposite the standard direction. 
Interior Door with Standard Swing	Door which swings towards the corner of the room it serves.

	
Interior Double Action Door	Door which swings into both rooms. 
Interior Double Bi-fold Doors	Double doors that slide open, made from a series of common sized panels that fold up against each other. 
Interior French Doors	Double swinging doors. 
Interior Single Bi-fold Door	Door that slides open, made from a series of common sized panels that fold up against each other. 
Interior Sliding Doors	Doors which slide past or over on another. 
Level	Symbol which defines a vertical height or story within a building. 
Pocket Door	Door which slides into a compartment in the wall. 

Revolving Door	Door which rotates around center point/support. 
Room Tag	Annotation elements that can be added and displayed in plan views and section views and can display values for related parameters, such as room number, room name, computed area, and volume. 
Sliding Windows	Windows which slide past or over on another. 
Surface Sliding or Bard Door	Door which slides across outside of the wall. 
Window Tag	Symbol which marks a window to corresponding information contained in schedule. 

Course	**IC63 Drafting III - Architectural**			
Essential Standard	5.00	C3	30%	Apply Procedures to Create Multi-level Residential Floor Plans.
Indicator	5.04	N/A	N/A	Understand the steps in drawing, dimensioning, and annotating a 2 story or multi-level floor plan.

Culminating Question **Essential Questions**	**What are the steps to drawing, dimensioning, and annotating a 2 story or multi-level floor plan?** ● What are the steps to drawing a multi-level floor plan? ● What are the steps to dimensioning a multi-level floor? ● What are the steps to annotating a multi-level floor plan?

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the steps to drawing a multi-level floor plan.
c. Understand the steps to dimensioning a multi-level floor plan.
d. Understand the steps to annotating a multi-level floor plan.

INSTRUCTIONAL ACTIVITIES-5.04	
A. Content Literacy Terminology	
Resource(s)	**(See 5.04.1)** *Note:* Additional Content Terminology and Review Activities for indicator can be found in Curriculum Guide for prerequisite (Drafting-Architecture II-Essential Standard 2.00).
B. Understand the steps to drawing a multi-level floor plan. **C. Understand the steps to dimensioning a multi-level floor plan.** **D. Understand the steps to annotating a multi-level floor plan.** *Note: Activity includes all Unpacked Content for this indicator. Activity is an introduction to new material and review of material from prerequisites.*	
Activity	Teacher-led Concept Understanding-Multi-Level Residential Floor Plans- Procedures to Create
Teacher Instructions	● Facilitate whole-class direct instruction review using *Teacher-led Concept Understanding-Multi-Level Residential Floor Plans-Procedures to Create-PowerPoint Presentation*. ● Provide students access to the internet (or conduct as a class on projected screen) to search for examples of multi-level floor plans.
Student Directions	● Participate in class review. ● Identify examples of multi-level floor plans.
Resource(s)	 Teacher-led Concept Understanc

Content Literacy Terminology-5.04.1	
Egress	Describes access to a structure.
FROG	A finished room or space over a garage.
Level	Defines a vertical height or story within a building.
Main staircase	Designed to be the most used staircase in a residence and usually a focal point. Must have a minimum width of 36” and a lot of times assembled with high-quality, pre-fabricated parts.
One-and-a-half story	A floor area that is partially or wholly built into the framing of the roof where the upper level is less than 70% of the lower and frequently contains dormers.
One-Story Home	A house in which all square footage is located on a single story.
Secondary Staircase(s)	Additional staircase to main staircase used for more private traffic flow within a residence.
Service Staircase	Staircase that usually extends to the basement or attic in a residence.
Split-level	A house in which various sections of the floor plan have different floor and ceiling heights.
Square footage	Area measurement between the boundaries of a space (1’-0” x 1’-0”).
Story	Portion of a residence included between the upper surface of a floor and the upper surface of the floor or roof next above.
Two-Story Home	A house in which the second story hosts as much, or close to as much, square footage as the first.
Zoning	Grouping areas of the home.

Course	IC63 Drafting III - Architectural			
Essential Standard	5.00	C3	10%	Apply Procedures to Create Multi-level Residential Floor Plans.
Indicator	5.05	N/A	N/A	Apply procedures to design, draw and annotate a 2 story or multi-level residential floor plan, including foundation plan using 3D CAD, BIM software.
Culminating Question **Essential Questions**	**How are accepted procedures applied to design, draw, and annotate a 2 story or multi-level residential floor plan, including foundation plan using 3D CAD, BIM software?** ● How are accepted procedures applied to design a 2 story or multi-level residential floor plans using 3D CAD, BIM software? ● How are accepted procedures applied to draw a 2 story or multi-level residential floor plan using 3D CAD, BIM software? ● How are accepted procedures applied to annotate a 2 story or multi-level residential floor plan using 3D CAD, BIM software? ● How are accepted procedures applied to design a 2 story or multi-level residential foundation plans using 3D CAD, BIM software? ● How are accepted procedures applied to draw a 2 story or multi-level residential foundation plan using 3D CAD, BIM software? ● How are accepted procedures applied to annotate a 2 story or multi-level residential foundation plan using 3D CAD, BIM software?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply procedures to design a 2 story or multi-level residential floor plan using 3D CAD, BIM software.
c. Apply procedures to draw a 2 story or multi-level residential floor plan using 3D CAD, BIM software.
d. Apply procedures to annotate a 2 story or multi-level residential floor plan using 3D CAD, BIM software.
e. Apply procedures to design a 2 story or multi-level residential foundation plan using 3D CAD, BIM software.
f. Apply procedures to draw a 2 story or multi-level residential foundation plan using 3D CAD, BIM software.

g. Apply procedures to annotate a 2 story or multi-level residential foundation plan using 3D CAD, BIM software.

INSTRUCTIONAL ACTIVITIES-5.05	
A. Content Literacy Terminology	
Resource(s)	See all included Content Literacy Terms for other Indicators in Essential Standard. For additional information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**
B. Apply procedures to design a 2 story or multi-level residential floor plan using 3D CAD, BIM software. **C. Apply procedures to draw a 2 story or multi-level residential floor plan using 3D CAD, BIM software.** **D. Apply procedures to annotate a 2 story or multi-level residential floor plan using 3D CAD, BIM software.** *Note: Activity includes Unpacked Content A, B, and C.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students selecting multi-level floor plan Model Home Project that follows accepted design principles when appropriate for project pace. ● Facilitate students creating (drawing) multi-level floor plans for Model Home Project using selected design when appropriate for project pace in the software. ● Facilitate students annotating multi-level floor plans for Model Home Project using selected design when appropriate for project pace. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Select a multi-level floor plan Model Home Project that follows accepted design principles. ● Create (draw) multi-level floor plans for Model Home Project using selected design when appropriate for project pace in the software. ● Annotate multi-level floor plans for Model Home Project using selected design when appropriate for project pace. ● Review and revise.
Resource(s)	 Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources
E. Apply procedures to design a 2 story or multi-level residential foundation plan using 3D CAD, BIM software. **F. Apply procedures to draw a 2 story or multi-level residential foundation plan using 3D CAD, BIM software.** **G. Apply procedures to annotate a 2 story or multi-level residential foundation plan using 3D CAD, BIM software.** *Note: Activity includes Unpacked Content E, F and G and combines with part of Indicator 1.01.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining proper calculations and type of foundation for Model Home Project using selected floor plan, site, and NC Residential Building Code information when appropriate for project pace. ● Facilitate students adding foundation to the project using software tutorials and/or direct instruction.

	● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Determine proper calculations and type of foundation for Model Home Project using selected floor plan, site, and NC Residential Building Code information. ● Add foundation to the project using software tutorials and/or direct instruction. ● Review and revise.
Resource(s)	Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-5.05.1
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**

Course	**IC63 Drafting III - Architectural**			
Essential Standard	6.00	C3	15%	Apply procedures to create a Site Development Plan.
Indicator	6.01	N/A	N/A	Apply terms related to site development.
Culminating Question	**How are terms related to site development applied?** ● What are some major terms related to site development?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand terms related to site development.
c. Apply terms related to site development.

INSTRUCTIONAL ACTIVITIES-6.01	
A. Content Literacy Terminology	
Resource(s)	**(See 6.01.1)**
B. Understand terms related to site development.	
Activity	Small Group Connecting Terms-Site Planning
Teacher Instructions	● Provide digital or hard copy of *Small Group Connecting Terms- Site Planning* and 39 flashcards (or students can make flashcards by cutting up regular paper). ● Facilitate students writing terms on one side of flashcard and given definition on the other. ● Predetermine heterogeneous small groups of 3-4 students. Facilitate students organizing terms in piles of related terms. ● Facilitate students working to create a flowchart or bubble diagram using the terms and how they relate to each other. Groups can share graphic organizers when completed and/or recreate with sidewalk chalk outside.
Student Directions	● Write terms on one side of the flashcard and the given definition on the other. ● In teams, organize terms in piles of related terms. ● Define and understand the relationship between words associated with site development by working as a team to create a flowchart or bubble diagram using the terms and how they relate to each other. Share your graphic organizer when complete.
Resource(s)	 Small Group Connecting Terms- S
C. Apply terms related to site development. *Note: Activity combines with Indicators 6.03, 6.04, & 6.05.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Facilitate students adding site and site plan drawing for the project using software tutorials and/or direct instruction.
Student Directions	● Determine information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Model a site and create a site plan drawing for the project using software tutorials and/or direct instruction.
Resource(s)	Project-Based Learning- Model Ho

	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. ● Autodesk Revit Resources

Content Literacy Terminology-6.01.1	
Acre	The English acre is a unit of area equal to 43,560 square feet.
Aggregate	Granular materials such as sand, gravel, or crushed stone that, along with water and cement, are an essential ingredient in concrete.
Backfill	Earth, gravel, or sand placed in the trench around the footing and stem wall after the foundation has cured.
Bearings and Distances	Directional and distance information stated in degrees, minutes and seconds off North and South along the property lines. Bearings are based less than 90 degrees.
Benchmark	Starting elevation reference point used by surveyors to establish grades and construction heights.
Building	Any, one-and-two-family dwelling or portion thereof, including townhouses, that is used, or designed or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, and shall include accessory structures thereto.
Building Code	A set of rules that specify standards to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures.
Building Line	The line established by law, beyond which a building shall not extend, except as specifically provided by law.
Building Outline	Proposed or existing location of structure shown as an object line on a site plan.
Catch Basin	Underground reservoir for water drained from a roof before it flows to a storm drain.
Contour	Aline that represents land formations
Corner	The beginning or end point of any survey line. The term corner does not imply the property was in any way square.
Contour Intervals (Lines)	Shown as hidden lines on site plan: usually every fifth line holds a heavier line weight; they connect points of the same elevation.
Deed	Written contract that conveys the title of ownership of real estate and identifies restrictions on property such as the style, size, and minimum cost of the house to be built and any legal claims against property (also referred to as a “title”).
Dwelling	Any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.
Easement	An area set aside as a right to cross a site or otherwise use land for a specific purpose (such as Utilities, road right-of-way, and areas of a property to which another has certain rights to access).
Elevations	Vertical distances above sea level.
Fill	Material, typically gravel or sand, used to raise an area for construction or level building areas.
Flood Plain	An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.

Grading	The process of ensuring a level base, or one of a specified slopes in terms of elevation for future construction on a site.
International Residential Building Code	(IRC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings.
Landmark	A survey mark made on a 'permanent' feature of the land such as a tree, pile of stones, etc.
North Arrow	A map symbol that shows the direction of *north* on the map, thereby showing how the map is oriented.
North Carolina Residential Building Code	(NCRBC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings adapted from the International Residential Building Code to meet specific needs of the region.
Plat	A drawing of a parcel of land. More specifically, the drawing created by the surveyor that shows the field work, with bearings, distances, etc.
Point-of-Beginning	The starting point of the survey.
Profile	The vertical section of the surface of the ground, and/or of underlying earth that is taken along any desired fixed line.
Property Line	Phantom lines that mark the outermost boundary of a building site.
Retaining Wall	A structure designed and constructed to resist the lateral pressure of soil, when there is a desired change in ground elevation that exceeds the angle of repose of the soil.
Seismic Design Category	A classification assigned to a structure based on its occupancy category, and the severity of the design earthquake ground motion.
Set Back	A given minimum distance from the property line that a structure is prohibited from being built that is determined by local Building Codes represented with a hidden line on a site plan.
Site Considerations Examples	● Price Range ● Neighborhood ● Site Access (Utilities and Transportation) ● Community Growth ● Schools ● Amenities ● Water Access
Site Orientation	The act or process of orienting or positioning with relation to the points of the compass, other specific directions, or site features.
site plan	Plan provides a description of the property, building location, driveway, and other features (also referred to as a “plot plan”).
Survey	Type of property map shows its size, boundaries, and topography.
Swale	Recessed area formed in the ground to help divert ground water away from a structure.
Topography	A detailed description or representation of the natural and artificial physical features of an area such as hills, mountains, rivers, or lakes.

Wind Zone	A classification assigned to a structure based on its location and susceptibility to wind speeds most of the U.S. is in Zone I, with coastal and southern, hurricane-prone areas upgraded to Zones II (rated to withstand 100-mph winds) and III (up to 110-mph winds).
Zoning	Local laws specifying the types of buildings that can be built in a specified area.

Course	IC63 Drafting III - Architectural			
Essential Standard	6.00	C3	15%	Apply procedures to create a Site Development Plan.
Indicator	6.02	N/A	N/A	Apply factors to be considered when developing a site for residential construction.
Culminating Question **Essential Questions**	**What factors are to be considered when developing a site for residential construction?** ● What are the site factors to be considered when developing a site for residential construction? ● What are the cost factors to be considered when developing a site for residential construction? ● What are the legal and zoning factors to be considered when developing a site for residential construction? ● What are the types of professionals to be considered when developing a site for residential construction? ● How are factors applied when developing a site for a residential build?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand site factors to be considered when developing a site for residential construction.
c. Understand cost factors to be considered when developing a site for residential construction.
d. Understand legal and zoning factors to be considered when developing a site for residential construction.
e. Understand the types of professionals to be considered when developing a site for residential construction.
f. Apply factors when developing a site analysis for a specific residential site.

INSTRUCTIONAL ACTIVITIES-6.02	
A. Content Literacy Terminology	
Resource(s)	**(See 6.02.1)**
B. Understand site factors to be considered when developing a site for residential construction. **C. Understand cost factors to be considered when developing a site for residential construction.** **D. Understand legal and zoning factors to be considered when developing a site for residential construction.** **E. Understand the types of professionals to be considered when developing a site for residential construction.** *Note: Activity includes all Unpacked Content for this Indicator.*	
Activity	Leading Questions-Site Development Factors-Questions
Teacher Instructions	● Facilitate whole-class introduction and discussion of material using *Leading Questions-Site Development Factors-Presentation*. ● Provide digital copy of *Leading Questions-Site Development Factors-Questions* and *Leading Questions-Site Development Factors-Presentation*. Facilitate students using PowerPoint Presentation and the internet to answer questions. ● Review answers as whole-class or in small groups.
Student Directions	● Participate in whole-class introduction and discussion of material. ● Identify site factor considerations for developing a site for residential construction by using the PowerPoint Presentation and the internet to answer questions. ● Review answers as whole-class or in small groups.
Resource(s)	 Leading Questions- Site Development Fa  Leading Questions- Site Development Fa
F. Apply factors when developing a site analysis for a specific residential site. *Note: Activity should follow Leading Questions-Site Development Factors-Questions Activity and is linked to information needed for Model Home Project for this Essential Standard. Extension of activity also combines with part of Indicator 8.02.*	
Activity	Presentation Document Application-Model Home Site Analysis Activity
Teacher Instructions	● Provide a copy of *Presentation Document Application-Model Home Site Analysis Activity*. Review project specifications and details. ● Facilitate students gathering site information for the project. ● Facilitate students creating a presentation document ("poster") for their Model Home Project or another selected site. *Extension to cover 8.02-E:* Facilitate student renderings of Model Home or site to apply solar study and site information. These renderings can be used as additional presentation(s).

Student Directions	● Gather site information. ● Create a presentation document (“poster”) for your Model Home Project or another selected site.
Resource(s)	 Presentation Document Applicati

Content Literacy Terminology-6.02.1	
Acre	The English acre is a unit of area equal to 43,560 square feet.
Building	Any, one-and-two-family dwelling or portion thereof, including townhouses, that is used, or designed or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, and shall include accessory structures thereto.
Building Code	A set of rules that specify standards to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures.
Building Line	The line established by law, beyond which a building shall not extend, except as specifically provided by law.
Building Outline	Proposed or existing location of structure shown as an object line on a site plan.
Building Permit	An official approval issued by the local government agency that allows you or your contractor to proceed with a construction.
Civil Engineer	Arguably the oldest engineering profession they design structures, environmental systems, and various construction projects and may do analysis and design for materials and structural systems for buildings, aircraft, etc.
Covenant	Conditions or provision tied to the ownership or use of land.
Deed	Written contract that conveys the title of ownership of real estate and identifies restrictions on property such as the style, size, and minimum cost of the house to be built and any legal claims against property (also referred to as a “title”).
Dwelling	Any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.
Easement	An area set aside as a right to cross a site or otherwise use land for a specific purpose (such as Utilities, road right-of-way, and areas of a property to which another has certain rights to access).
Flood Plain	An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.
International Residential Building Code	(IRC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings.
Landscape Architect	Design attractive and functional public parks, gardens, playgrounds, residential areas, college campuses, and public spaces. They also plan the locations of buildings, roads, walkways, flowers, shrubs, and trees within these environments.
North Carolina Residential Building Code	(NCRBC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings adapted from the International Residential Building Code to meet specific needs of the region.

Plat	A drawing of a parcel of land. More specifically, the drawing created by the surveyor that shows the field work, with bearings, distances, etc.
Potable Water	Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects and conforming bacteriological and chemical quality.
Seismic Design Category	A classification assigned to a structure based on its occupancy category, and the severity of the design earthquake ground motion.
Set Back	A given minimum distance from the property line that a structure is prohibited from being built that is determined by local Building Codes represented with a hidden line on a site plan.
Site Analysis	Preliminary phase of architectural and urban design processes dedicated to the study of the climatic, geographical, historical, legal, and infrastructural context of a specific site. Commonly, information is placed on to a presentation document for clients/owners.
Site Considerations Examples	● Price Range ● Neighborhood ● Site Access (Utilities and Transportation) ● Community Growth ● Schools ● Amenities ● Water Access
Site Orientation	The act or process of orienting or positioning with relation to the points of the compass, other specific directions, or site features.
Soil Conditions	The capacity of a soil to function, within land use and ecosystem boundaries, to sustain biological productivity, maintain environmental health, and promote plant, animal, and human health.
Survey	Type of property map shows its size, boundaries, and topography.
Surveyor	Provide data and compile legal documents (surveys) for building, mapmaking, and real estate projects by determining site elements such as legal boundaries and topography.
Topography	A detailed description or representation of the natural and artificial physical features of an area such as hills, mountains, rivers or lakes.
Wind Zone	A classification assigned to a structure based on its location and susceptibility to wind speeds most of the U.S. is in Zone I, with coastal and southern, hurricane-prone areas upgraded to Zones II (rated to withstand 100-mph winds) and III (up to 110-mph winds).
Zoning	Local laws specifying the types of buildings that can be built in a specified area.

Course	IC63 Drafting III - Architectural			
Essential Standard	6.00	C3	15%	Apply procedures to create a Site Development Plan.
Indicator	6.03	N/A	N/A	Apply the lines, symbols, and features found on site plans.
Culminating Question **Essential Questions**	**How are lines, symbols, and features applied to site plans?** ● What is the purpose of a site plan? ● What types of features are found on a site plan? ● What do lines on a site plan represent? ● How is topography line placement determined? ● What do symbols represent on a site plan? ● How are lines applied to site plans? ● How are symbols applied to site plans? ● How are features applied to site plans?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the purpose of a site plan.
c. Understand the types of features found on site plans.
d. Understand the types of lines used on site plans.
e. Locate topography lines.
f. Understand the types of symbols used on site plans.
g. Apply lines found on site plans.
h. Apply symbols found on a site plan.
i. Apply features found on a site plan.

INSTRUCTIONAL ACTIVITIES-6.03	
A. Content Literacy Terminology	
Resource(s)	**(See 6.03.1)**
B. Understand the purpose of a site plan. **C. Understand the types of features found on site plans.** *Note: Activity covers Unpacked Content for B and C.*	
Activity	Direct Instruction-Site Plan Purpose and Features
Teacher Instructions	● Facilitate direct instruction, discussion and introduction using *Direct Instruction and Real-World Examples-Site Plan Purpose and Features-PowerPoint Presentation.* Provide examples of actual site plans for students to review and identify features.
Student Directions	● Participate in direct instruction, discussion and introduction of material. ● Identify lines on the provided site plan examples.
Resource(s)	 Direct Instruction-Site Plan Purpose ar
D. Understand the types of lines used on site plans.	
Activity	Direct Instruction and Real-World Examples-Site Plan-Topography and Lines
Teacher Instructions	● Facilitate direct instruction, discussion and introduction using *Direct Instruction and Real-World Examples-Site Plan-Topography and Lines.* Provide examples of actual site plans for students to review and identify lines.
Student Directions	● Participate in direct instruction, discussion and introduction of material. ● Identify lines on the provided site plan examples.
Resource(s)	 Direct Instruction and real World Exan
E. Locate topography lines.	
Activity	Practice-Contour Lines from Elevation Data
Teacher Instructions	● Provide hard copy of *Practice-Contour Lines from Elevation Data*. ● Facilitate students drawing contour lines and answering questions on handout. *Optional:* Post student work on wall and have students compare drawings. ● Review activity in small groups or with the whole class.
Student Directions	● Draw contour lines and discern data from those lines by answering questions on handout. ● Participate in review.
Resource(s)	 Practice- Contour Lines from Elevation

F. Understand the types of symbols used on site plans.	
Activity	Real World Example Gathering-Site Plan-Symbols and Notations
Teacher Instructions	● Provide access to digital copy of *Real-World Example Gathering-Site Plans-Symbols and Notations*. ● Facilitate students gathering image/clip symbol examples for each term and links to real-world site plan examples containing each. *Note:* Links can be used for multiple examples. Heterogeneous pairings of students can support learners if needed.
Student Directions	● Recognize and locate symbols on existing site plans by gathering image/clip symbol examples for each term and links to real-world site plan examples containing each.
Resource(s)	 Real-World Example Gathering-
G. Apply lines found on site plans. **H. Apply symbols found on a site plan.** **I. Apply features found on a site plan.** *Note: Activity combines with Indicators 6.01, 6.04 & 6.05.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Facilitate students adding site and site plan drawing for the project using software tutorials and/or direct instruction.
Student Directions	● Determine information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Model a site and create a site plan drawing for the project using software tutorials and/or direct instruction.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-6.03.1	
Acre	The English acre is a unit of area equal to 43,560 square feet.
Aggregate	Granular materials such as sand, gravel, or crushed stone that, along with water and cement, are an essential ingredient in concrete.
Backfill	Earth, gravel, or sand placed in the trench around the footing and stem wall after the foundation has cured.
Bearings and Distances	Directional and distance information stated in degrees, minutes and seconds off North and South along the property lines bearings are based less than 90 degrees.
Benchmark	Starting elevation reference point used by surveyors to establish grades and construction heights.
Building	Any, one-and-two-family dwelling or portion thereof, including townhouses, that is used, or designed or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, and shall include accessory structures thereto.
Building Code	A set of rules that specify standards to protect public health, safety, and general welfare as they relate to the construction and occupancy of buildings and structures.
Building Line	The line established by law, beyond which a building shall not extend, except as specifically provided by law.
Building Outline	Proposed or existing location of structure shown as an object line on a site plan.
Catch Basin	Underground reservoir for water drained from a roof before it flows to a storm drain.
Contour	Aline that represents land formations.
Corner	The beginning or end point of any survey line. The term corner does not imply the property was in any way square.
Contour Intervals (Lines)	Shown as hidden lines on site plan: usually every fifth line holds a heavier line weight; they connect points of the same elevation.
Deed	Written contract that conveys the title of ownership of real estate and identifies restrictions on property such as the style, size, and minimum cost of the house to be built and any legal claims against property (also referred to as a “title”).
Easement	An area set aside as a right to cross a site or otherwise use land for a specific purpose (such as Utilities, road right-of-way, and areas of a property to which another has certain rights to access).
Elevations	Vertical distances above sea level.
Fill	Material, typically gravel or sand, used to raise an area for construction or level building areas.
Flood Plain	An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.
Grading	The process of ensuring a level base, or one of a specified slopes, in terms of elevation for future construction on a site.
International Residential Building Code	(IRC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings.

Landmark	A survey mark made on a 'permanent' feature of the land such as a tree, pile of stones, etc.
North Arrow	A map symbol that shows the direction of *north* on the map, thereby showing how the map is oriented.
North Carolina Residential Building Code	(NCRBC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings adapted from the International Residential Building Code to meet specific needs of the region.
Plat	A drawing of a parcel of land. More specifically, the drawing created by the surveyor that shows the field work, with bearings, distances, etc.
Point-of-Beginning	The starting point of the survey.
Profile	The vertical section of the surface of the ground, and/or of underlying earth that is taken along any desired fixed line.
Property Line	phantom lines that mark the outermost boundary of a building site.
Retaining Wall	A structure designed and constructed to resist the lateral pressure of soil, when there is a desired change in ground elevation that exceeds the angle of repose of the soil.
Set Back	A given minimum distance from the property line that a structure is prohibited from being built that is determined by local Building Codes represented with a hidden line on a site plan.
Site Orientation	The act or process of orienting or positioning with relation to the points of the compass, other specific directions, or site features.
Site Plan	Plan provides a description of the property, building location, driveway, and other features (also referred to as a “plot plan”).
Survey	Type of property map shows its size, boundaries, and topography.
Swale	Recessed area formed in the ground to help divert ground water away from a structure.
Topography	A detailed description or representation of the natural and artificial physical features of an area such as hills, mountains, rivers or lakes.
Wind Zone	A classification assigned to a structure based on its location and susceptibility to wind speeds most of the U.S. is in Zone I, with coastal and southern, hurricane-prone areas upgraded to Zones II (rated to withstand 100-mph winds) and III (up to 110-mph winds).
Zoning	Local laws specifying the types of buildings that can be built in a specified area.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	6.00	C3	15%	Apply procedures to create a Site Development Plan.
Indicator	6.04	N/A	N/A	Apply how to develop a site plan drawing.
Culminating Question	**How is a site plan developed?**			

UNPACKED CONTENT

a. Content Literacy Terminology.
b. Develop a site plan drawing.

INSTRUCTIONAL ACTIVITIES-6.04	
A. Content Literacy Terminology	
Resource(s)	**(See 6.04.1)**
B. Develop a site plan drawing. *Note: Activity combines Indicators 6.01, 6.03 & 6.05.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Facilitate students adding site and site plan drawing for the project using software tutorials and/or direct instruction.
Student Directions	● Determine information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Model a site and create a site plan drawing for the project using software tutorials and/or direct instruction..
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-6.04.1	
Acre	The English acre is a unit of area equal to 43,560 square feet.
Aggregate	Granular materials such as sand, gravel, or crushed stone that, along with water and cement, are an essential ingredient in concrete.
Backfill	Earth, gravel, or sand placed in the trench around the footing and stem wall after the foundation has cured.
Bearings and distances	Directional and distance information stated in degrees, minutes and seconds off North and South along the property lines bearings are based less than 90 degrees.
Benchmark	Starting elevation reference point used by surveyors to establish grades and construction heights.
Building	Any, one-and-two-family dwelling or portion thereof, including townhouses, that is used, or designed or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, and shall include accessory structures thereto.
Building Code	A set of rules that specify standards to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures.
Building Line	The line established by law, beyond which a building shall not extend, except as specifically provided by law.
Building Outline	Proposed or existing location of structure shown as an object line on a site plan.
Catch Basin	Underground reservoir for water drained from a roof before it flows to a storm drain.
Contour	A line that represents land formations.
Corner	The beginning or end point of any survey line. The term corner does not imply the property was in any way square.
Contour Intervals (Lines)	Shown as hidden lines on site plan: usually every fifth line holds a heavier line weight; they connect points of the same elevation.
Deed	Written contract that conveys the title of ownership of real estate and identifies restrictions on property such as the style, size, and minimum cost of the house to be built and any legal claims against property (also referred to as a “title”).
Dwelling	Any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.
Easement	An area set aside as a right to cross a site or otherwise use land for a specific purpose (such as Utilities, road right-of-way, and areas of a property to which another has certain rights to access).
Elevations	Vertical distances above sea level.
Fill	Material, typically gravel or sand, used to raise an area for construction or level building areas.
Flood Plain	An area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding.

Grading	The process of ensuring a level base, or one of a specified slopes, in terms of elevation for future construction on a site.
International Residential Building Code	(IRC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings.
Landmark	A survey mark made on a 'permanent' feature of the land such as a tree, pile of stones, etc.
North Arrow	A map symbol that shows the direction of *north* on the map, thereby showing how the map is oriented.
North Carolina Residential Building Code	(NCRBC) Up-to-date residential rules and regulations addressing the design and constructions for one- and two-family dwellings adapted from the International Residential Building Code to meet specific needs of the region.
Plat	A drawing of a parcel of land. More specifically, the drawing created by the surveyor that shows the field work, with bearings, distances, etc.
Point-of-Beginning	The starting point of the survey.
Profile	The vertical section of the surface of the ground, and/or of underlying earth that is taken along any desired fixed line.
Property Line	Phantom lines that mark the outermost boundary of a building site.
Retaining Wall	A structure designed and constructed to resist the lateral pressure of soil, when there is a desired change in ground elevation that exceeds the angle of repose of the soil.
Seismic Design Category	A classification assigned to a structure based on its occupancy category, and the severity of the design earthquake ground motion.
Set Back	A given minimum distance from the property line that a structure is prohibited from being built that is determined by local Building Codes represented with a hidden line on a site plan.
Site Considerations Examples	● Price Range ● Neighborhood ● Site Access (Utilities and Transportation) ● Community Growth ● Schools ● Amenities ● Water Access
Site Orientation	The act or process of orienting or positioning with relation to the points of the compass, other specific directions, or site features.
Site Plan	Plan provides a description of the property, building location, driveway, and other features (also referred to as a “plot plan”).
Survey	Type of property map shows its size, boundaries, and topography.
Swale	Recessed area formed in the ground to help divert ground water away from a structure.
Topography	A detailed description or representation of the natural and artificial physical features of an area such as hills, mountains, rivers or lakes.

Wind Zone	A classification assigned to a structure based on its location and susceptibility to wind speeds most of the U.S. is in Zone I, with coastal and southern, hurricane-prone areas upgraded to Zones II (rated to withstand 100-mph winds) and III (up to 110-mph winds).
Zoning	Local laws specifying the types of buildings that can be built in a specified area.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	6.00	C3	15%	Apply procedures to create a Site Development Plan.
Indicator	6.05	N/A	N/A	Apply accepted procedures to draw a site plan for a residential structure using 3D CAD software, such as Revit Architecture.
Culminating Question	**How accepted procedures applied to draw a site plan for a residential structure using 3D CAD software, such as Revit Architecture?**			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply accepted procedures to draw a site plan for a residential structure using 3D CAD software, such as Revit Architecture.

INSTRUCTIONAL ACTIVITIES-6.05	
A. Content Literacy Terminology	
Resource(s)	**(See 6.05.1)**
B. Apply accepted procedures to draw a site plan for a residential structure using 3D CAD software, such as Revit Architecture. *Note: Activity combines with Indicators 6.01, 6.03 & 6.04.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Facilitate students adding site and site plan drawing for the project using software tutorials and/or direct instruction.
Student Directions	● Determine information and components needed for Model Home Project using selected site and NC Residential Building Code information when appropriate for project pace. ● Model a site and create a site plan drawing for the project using software tutorials and/or direct instruction..
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-6.05.1
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**

Course	IC63 Drafting III - Architectural			
Essential Standard	7.00	C3	10%	Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.
Indicator	7.01	N/A	N/A	Apply various types of small commercial design projects.
Culminating Question **Essential Question**	**How are various types of small commercial design projects applied?** ● What are the various types of occupancy classifications to consider for commercial design?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand occupancy classifications for commercial design.
c. Apply various types of small commercial design projects.

INSTRUCTIONAL ACTIVITIES-7.01 *Note: It is recommended to cover Essential Standard 7.00 after other Essential Standards in Blueprint.*	
A. Content Literacy Terminology	
Resource(s)	**(See 7.01.1)**
B. Understand occupancy classifications for commercial design. *Note: Activity combines with Indicators 7.02, 7.03, & 7.04.*	
Activity	Inquiry-Based Questioning-Small Commercial Building Design
Teacher Instructions	● Provide copy of *Inquiry-Based Questioning- Small Commercial Building Design*. ● Facilitate students working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Facilitate review as whole-class or in small-groups.
Student Directions	● Classify various commercial projects according to Industry by working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Participate in review.
Resource(s)	 Inquiry- Based Questioning- Small
C. Apply various types of small commercial design projects. *Note: Activity combines with all Indicators for Essential Standard and various other Essential Standards.*	
Activity	Application-Commercial Design Project
Teacher Instructions	● Provide a copy of *Application-Commercial Design Project*. Review project requirements. ● Assist students in selecting commercial project subject. Variety in subjects will ensure a collection of various types for indicator. ● Facilitate initial design phase of project into final designs including construction materials/types. Variety in construction methods/materials will ensure a collection of various types for Essential Standard. Lighting (Grid), columns, and stairs must be in scope of the project. ● Facilitate individual peer reviews with various classmates during design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Facilitate revisions. ● Facilitate student development of presentations for projects. Facilitate students sharing projects with peers and/or additional stakeholders.
Student Directions	● Review project requirements. ● Select commercial project subject. ● Create a small commercial design BIM model starting with the initial (manual) design phase into final designs including

	construction materials/types and Construction Documents. Lighting (Grid), columns, and stairs must be in scope of the project. ● Participate in peer reviews with various classmates during the design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Revise. ● Create and share a presentation for your project and share with peers and/or additional stakeholders.
Resource(s)	 Application-Commercial Design
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-7.01.1	
Assembly Classification	"A"; a commercial structure, or portion of a structure, classified for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption or awaiting transportation.
Business Classification	"B"; a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts.
Educational Classification	"E"; a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade.
Factory and Industrial Classification	"F"; a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations.
Grid/Column Design System	Sequential system (consisting of columns, girders, joists, decking, and beams) for steel frame construction which creates clarity/order, efficiency in installation and reduces overall design costs members are identified by letters (rows) and numbers (columns) on drawings.
Habitable Space	A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.
High-Hazard Classification	"H"; a building or structure, or a portion thereof, that involves the manufacturing, processing, generation, or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in control areas.
Institutional Classification	"I"; a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted.
Mercantile Classification	"M"; a building or structure or a portion thereof, for the display and sale of goods and involves stocks of goods, wares or products incidental to such purposes and accessible to the public.
Occupant Load	The number of persons for which the means of egress of a building or portion thereof is designed.
Occupiable Space	A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged at labor and which is equipped with means of egress and light and ventilation facilities.
Residential Classification	"R"; a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I.
Storage Classification	"S"; a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.
Types of Construction	The type of Building Material Classification (Type I, II, III, IV, and V) that must be used regarding its ability to resist fire.

Utility and Miscellaneous	Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped, and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	7.00	C3	10%	Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.
Indicator	7.02	N/A	N/A	Apply the different construction practices from residential to commercial, metal studs vs. wood construction, steel beams.
Culminating Question **Essential Questions**	**How are different construction practices including metal studs vs. wood construction and steel beams applied in commercial vs. residential design?** ● What are the differences and benefits between metal-stud and wood-stud construction? ● What is the purpose and benefits of steel beam construction? ● How are commercial practices for metal stud construction applied? ● How are commercial practices for wood stud construction applied? ● How are commercial practices for steel beam construction applied?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the differences and benefits between metal-stud and wood-stud construction.
c. Understand the purpose of steel beam construction.
d. Apply the practices for metal studs in commercial design.
e. Apply the practices for wood studs in commercial design.
f. Apply the practices for steel beams in commercial design.

INSTRUCTIONAL ACTIVITIES-7.02	
Note: It is recommended to cover Essential Standard 7.00 after other Essential Standards in Blueprint.	
A. Content Literacy Terminology	
Resource(s)	**(See 7.02.1)**
B. Understand the differences and benefits between metal-stud and wood-stud construction. **C. Understand the purpose of steel beam construction.** *Note: Activity combines with Indicators 7.01, 7.03, & 7.04..*	
Activity	Inquiry-Based Questioning-Small Commercial Building Design
Teacher Instructions	● Provide copy of *Inquiry-Based Questioning- Small Commercial Building Design*. ● Facilitate students working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Facilitate review as whole-class or in small-groups.
Student Directions	● Classify various commercial projects according to Industry by working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Participate in review.
Resource(s)	 Inquiry- Based Questioning- Small
D. Apply the practices for metal studs in commercial design. **E. Apply the practices for wood studs in commercial design.** **F. Apply the practices for steel beams in commercial design.** *Note: Activity combines with all Indicators for Essential Standard and various other Essential Standards.*	
Activity	Application-Commercial Design Project
Teacher Instructions	● Provide a copy of *Application-Commercial Design Project*. Review project requirements. ● Assist students in selecting commercial project subject. Variety in subjects will ensure a collection of various types for indicator. ● Facilitate initial design phase of project into final designs including construction materials/types. Variety in construction methods/materials will ensure a collection of various types for Essential Standard. Lighting (Grid), columns, and stairs must be in scope of the project. ● Facilitate individual peer reviews with various classmates during design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Facilitate revisions.

	● Facilitate student development of presentations for projects. Facilitate students sharing projects with peers and/or additional stakeholders.
Student Directions	● Review project requirements. ● Select commercial project subject. ● Create a small commercial design BIM model starting with the initial (manual) design phase into final designs including construction materials/types and Construction Documents. Lighting (Grid), columns, and stairs must be in scope of the project. ● Participate in peer reviews with various classmates during the design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Revise. ● Create and share a presentation for your project and share with peers and/or additional stakeholders.
Resource(s)	 Application-Commercial Design
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-7.02.1	
Awning	An architectural projection that provides weather protection, identity or decoration and is wholly supported by the building to which it is attached. An awning consists of a lightweight frame structure over which a covering is attached.
Bay	Space created between rows and columns in steel-frame grid construction.
Grid/Column Design System	Sequential system (consisting of columns, girders, joists, decking, and beams) for steel frame construction which creates clarity/order, efficiency in installation and reduces overall design costs members are identified by letters (rows) and numbers (columns) on drawings.
Light-frame Construction	A type of construction uses vertical and horizontal structural elements that are primarily formed by a system of repetitive wood or cold-formed steel framing members.
Steam Beam Construction	Pros: Recyclable, durable, corrosive, and rust resistant. Cons: High Maintenance Costs, Difficult to maneuver.
Types of Construction	The type of Building Material Classification (Type I, II, III, IV, and V) that must be used regarding its ability to resist fire.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	7.00	C3	10%	Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.
Indicator	7.03	N/A	N/A	Apply commercial reflected ceiling plans, including lighting layout, electrical and fire protection symbols.
Culminating Question **Essential Questions**	**How are reflected ceiling plans, including lighting layout, electrical and fire protection symbols applied in commercial design?** ● What are general concepts for commercial lighting needs and layout? ● What are general concepts for commercial electrical needs and layout? ● What are general concepts for commercial fire protection needs and layout? ● How are commercial reflected ceiling plans for lighting layout using Industry Standard symbols applied? ● How are commercial reflected ceiling plans for electrical layout using Industry Standard symbols applied? ● How are commercial reflected ceiling plans for fire protection layout using Industry Standard symbols applied?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand commercial lighting needs and layout.
c. Understand commercial electrical needs and layout.
d. Understand commercial fire protection and layout.
e. Apply commercial reflected ceiling plans for lighting layout using Industry Standard symbols.
f. Apply commercial reflected ceiling plans for electrical layout using Industry Standard symbols.
g. Apply commercial reflected ceiling plans for fire protection using Industry Standard symbols.

INSTRUCTIONAL ACTIVITIES-7.03	
Note: It is recommended to cover Essential Standard 7.00 after other Essential Standards in Blueprint.	
A. Content Literacy Terminology	
Resource(s)	**(See 7.03.1)**
B. Understand commercial lighting needs and layout. **C. Understand commercial electrical needs and layout.** **D. Understand commercial fire protection and layout.** *Note: Activity combines Indicators 7.01, 7.02, & 7.04.*	
Activity	Inquiry-Based Questioning-Small Commercial Building Design
Teacher Instructions	● Provide copy of *Inquiry-Based Questioning- Small Commercial Building Design*. ● Facilitate students working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Facilitate review as whole-class or in small-groups.
Student Directions	● Classify various commercial projects according to Industry by working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Participate in review.
Resource(s)	 Inquiry- Based Questioning- Small
E. Apply commercial reflected ceiling plans for lighting layout using Industry Standard symbols. **F. Apply commercial reflected ceiling plans for electrical layout using Industry Standard symbols.** **G. Apply commercial reflected ceiling plans for fire protection using Industry Standard symbols.** *Note: Activity combines with all Indicators for Essential Standard and various other Essential Standards.*	
Activity	Application-Commercial Design Project
Teacher Instructions	● Provide a copy of *Application-Commercial Design Project*. Review project requirements. ● Assist students in selecting commercial project subject. Variety in subjects will ensure a collection of various types for indicator. ● Facilitate initial design phase of project into final designs including construction materials/types. Variety in construction methods/materials will ensure a collection of various types for Essential Standard. Lighting (Grid), columns, and stairs must be in scope of the project. ● Facilitate individual peer reviews with various classmates during design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Facilitate revisions.

	● Facilitate student development of presentations for projects. Facilitate students sharing projects with peers and/or additional stakeholders.
Student Directions	● Review project requirements. ● Select commercial project subject. ● Create a small commercial design BIM model starting with the initial (manual) design phase into final designs including construction materials/types and Construction Documents. Lighting (Grid), columns, and stairs must be in scope of the project. ● Participate in peer reviews with various classmates during the design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Revise. ● Create and share a presentation for your project and share with peers and/or additional stakeholders.
Resource(s)	 Application-Commercial Design
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-7.03.1	
Accent Lighting	Adds drama to a room by creating visual interest.
Accessible means of Egress	An unenclosed exit access component that defines and provides a path of egress travel.
Ambient Lighting	Provides an area with overall illumination (also referred to as “general” lighting).
Corridor	An enclosed exit access component that defines and provides a path of egress travel to an exit.
Habitable Space	A space in a building for living, sleeping, eating, or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.
Occupant Load	The number of persons for which the means of egress of a building or portion thereof is designed.
Occupiable Space	A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged at labor and which is equipped with means of egress and light and ventilation facilities.
Public Entrance	An entrance that is not a service entrance or a restricted entrance.
Public Means of Egress	A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.
Public Way	A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).
Reflected Ceiling Plan	A drawing, which shows the items that are located on the ceiling of a room or space (such as lights, electrical, and fire protection).
Service Entrance	An entrance intended primarily for delivery of goods or services.
Task Lighting	Helps you perform specific tasks, such as reading, grooming, preparing, and cooking food, doing homework, working on hobbies, playing games and balancing your checkbook (also referred to as “local” lighting).
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	7.00	C3	10%	Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.
Indicator	7.04	N/A	N/A	Apply grid and column design and layout, labeling.
Culminating Question **Essential Questions**	**How are grid and column design, layout and labeling applied in commercial design?** ● Why is grid and column design used in commercial construction? ● How are grids and columns labeled on construction drawings? ● How is grid/column design applied in commercial design and the software? ● How are grid/column labeling applied in commercial design and the software?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand how to grid and column design and layout.
c. Understand grid/column design labeling.
d. Apply grid and column design and layout.
e. Apply grid and column design labeling.

INSTRUCTIONAL ACTIVITIES-7.04 *Note: It is recommended to cover Essential Standard 7.00 after other Essential Standards in Blueprint.*	
A. Content Literacy Terminology	
Resource(s)	**(See 7.04.1)**
B. Understand how to grid and column design and layout. **C. Understand grid/column design labeling.** *Note: Activity combines Indicators 7.01, 7.02, & 7.03.*	
Activity	Inquiry-Based Questioning-Small Commercial Building Design
Teacher Instructions	● Provide copy of *Inquiry-Based Questioning- Small Commercial Building Design*. ● Facilitate students working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Facilitate review as whole-class or in small-groups.
Student Directions	● Classify various commercial projects according to Industry by working individually or in pairs to answer questions and complete activities using the internet, Codes, and/or provided Industry Materials (i.e. text books). ● Participate in review.
Resource(s)	 Inquiry- Based Questioning- Small
D. Apply grid and column design and layout. **E. Apply grid and column design labeling.** *Note: Activity combines with all Indicators for Essential Standard and various other Essential Standards.*	
Activity	Application-Commercial Design Project
Teacher Instructions	● Provide a copy of *Application-Commercial Design Project*. Review project requirements. ● Assist students in selecting commercial project subject. Variety in subjects will ensure a collection of various types for indicator. ● Facilitate initial design phase of project into final designs including construction materials/types. Variety in construction methods/materials will ensure a collection of various types for Essential Standard. Lighting (Grid), columns, and stairs must be in scope of the project. ● Facilitate individual peer reviews with various classmates during design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Facilitate revisions. ● Facilitate student development of presentations for projects. Facilitate students sharing projects with peers and/or additional stakeholders.
Student Directions	● Review project requirements. ● Select commercial project subject.

	● Create a small commercial design BIM model starting with the initial (manual) design phase into final designs including construction materials/types and Construction Documents. Lighting (Grid), columns, and stairs must be in scope of the project. ● Participate in peer reviews with various classmates during the design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Revise. ● Create and share a presentation for your project and share with peers and/or additional stakeholders.
Resource(s)	 Application-Commercial Design
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-7.04.1	
Accessible means of Egress	An unenclosed exit access component that defines and provides a path of egress travel.
Ambient Lighting	Provides an area with overall illumination (also referred to as “general” lighting).
Awning	An architectural projection that provides weather protection, identity or decoration and is wholly supported by the building to which it is attached. An awning consists of a lightweight frame structure over which a covering is attached.
Bay	Space created between rows and columns in steel-frame grid construction.
Corridor	An enclosed exit access component that defines and provides a path of egress travel to an exit.
Grid/Column Design System	Sequential system (consisting of columns, girders, joists, decking, and beams) for steel frame construction which creates clarity/order, efficiency in installation and reduces overall design costs. Members are identified by letters (rows) and numbers (columns) on drawings.
Public Entrance	An entrance that is not a service entrance or a restricted entrance.
Public Means of Egress	A continuous and unobstructed path of vertical and horizontal egress traveling from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.
Public Way	A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).
Ramp	A walking surface that has a running slope steeper than one unit vertical in 20 units horizontal (5-percent slope).
Service Entrance	An entrance intended primarily for delivery of goods or services.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	**IC63 Drafting III - Architectural**			
Essential Standard	7.00	C3	10%	Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.
Indicator	7.05	N/A	N/A	Apply multi-story stair design for commercial buildings.
Culminating Question	**How is multi-story stair design applied in commercial design?**			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply multi-story stair design for commercial buildings.

INSTRUCTIONAL ACTIVITIES-7.05 *Note: It is recommended to cover Essential Standard 7.00 after other Essential Standards in Blueprint.*	
A. Content Literacy Terminology	
Resource(s)	**(See 7.05.1)**
B. Apply multi-story stair design for commercial buildings. *Note: Activity combines with multiple Indicators from Essential Standard and various other Essential Standards.*	
Activity	Application-Commercial Design Project
Teacher Instructions	● Provide a copy of *Application-Commercial Design Project*. Review project requirements. ● Assist students in selecting commercial project subject. Variety in subjects will ensure a collection of various types for indicator. ● Facilitate initial design phase of project into final designs including construction materials/types. Variety in construction methods/materials will ensure a collection of various types for Essential Standard. Lighting (Grid), columns, and stairs must be in scope of the project. ● Facilitate individual peer reviews with various classmates during design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Facilitate revisions. ● Facilitate student development of presentations for projects. Facilitate students sharing projects with peers and/or additional stakeholders.
Student Directions	● Review project requirements. ● Select commercial project subject. ● Create a small commercial design BIM model starting with the initial (manual) design phase into final designs including construction materials/types and Construction Documents. Lighting (Grid), columns, and stairs must be in scope of the project. ● Participate in peer reviews with various classmates during the design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Revise. ● Create and share a presentation for your project and share with peers and/or additional stakeholders.
Resource(s)	Application-Commercial Design
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-7.05.1	
Balcony	An exterior floor projecting from and supported by a structure without additional independent supports.
Baluster	Small, evenly spaced members which support the handrail on open stairs (maximum of 4” spacing).
Banister	The structure formed by handrail, newel, and balusters at the side of a staircase to aid in safe travel.
Deck	An exterior floor system supported on at least two opposing sides by an adjoining structure or posts, piers, or other independent supports.
Flight	A continuous run of rectangular treads, winders or combination thereof from one landing to another.
Guardrail	Railing installed on landings/platforms at least 30” above grade or finished floor.
Handrail	Rail for hand grip that follows the slope of the stairs with four or more risers.
High-rise	Structure that has an occupied floor located more than 75’-0” above the lowest level of fire department vehicle access.
Landing	Intermittent platforms in a staircase.
Newel	Main post in handrail construction.
Ramp	A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope).
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	IC63 Drafting III - Architectural			
Essential Standard	7.00	C3	10%	Apply Procedures and Construction Techniques to Create a Small Commercial Building Design.
Indicator	7.06	N/A	N/A	Apply procedures to draw a small commercial building using 3D CAD software, such as Revit Architecture.
Culminating Question	**How are procedures applied to draw a small commercial building using 3D CAD software, such as Revit Architecture?**			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Apply procedures to draw a small commercial building using 3D CAD software, such as Revit Architecture.

INSTRUCTIONAL ACTIVITIES-7.06 *Note: It is recommended to cover Essential Standard 7.00 after other Essential Standards in Blueprint.*	
A. Content Literacy Terminology	
Resource(s)	**(See 7.06.1)**
B. Apply multi-story stair design for commercial buildings. *Note: Activity combines with multiple Indicators from Essential Standard and various other Essential Standards.*	
Activity	Application-Commercial Design Project
Teacher Instructions	● Provide a copy of *Application-Commercial Design Project*. Review project requirements. ● Assist students in selecting commercial project subject. Variety in subjects will ensure a collection of various types for indicator. ● Facilitate initial design phase of project into final designs including construction materials/types. Variety in construction methods/materials will ensure a collection of various types for Essential Standard. Lighting (Grid), columns, and stairs must be in scope of the project. ● Facilitate individual peer reviews with various classmates during design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Facilitate revisions. ● Facilitate student development of presentations for projects. Facilitate students sharing projects with peers and/or additional stakeholders.
Student Directions	● Review project requirements. ● Select commercial project subject. ● Create a small commercial design BIM model starting with the initial (manual) design phase into final designs including construction materials/types and Construction Documents. Lighting (Grid), columns, and stairs must be in scope of the project. ● Participate in peer reviews with various classmates during the design phase of the project and additional peer reviews during software phases (Modeling and Construction Documents). ● Revise. ● Create and share a presentation for your project and share with peers and/or additional stakeholders.
Resource(s)	Application-Commercial Design
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-7.06.1
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**

Course	IC63 Drafting III - Architectural			
Essential Standard	8.00	C3	10%	Apply Procedures to Create Rendering and Walkthroughs.
Indicator	8.01	N/A	N/A	Apply the definition, purpose, and techniques for a 3D rendering of a building.
Culminating Question **Essential Questions**	**How are the definitions, purposes, and techniques for a 3D rendering of a building applied?** ● What are the definitions associated with a 3D Rendering of a building? ● What are the purposes of a 3D Rendering of a building? ● What are the techniques associated with a 3D Rendering of a building? ● How are the definitions for a 3D rendering of a building applied? ● How are the purposes for a 3D rendering of a building applied? ● How are the techniques for a 3D rendering of a building applied?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand the definitions associated with a 3D Rendering of a building.
c. Understand the purpose of a 3D Rendering of a building.
d. Understand the techniques associated with a 3D Rendering of a building.
e. Apply the definitions for a 3D rendering of a building.
f. Apply the purpose for a 3D rendering of a building.
g. Apply the techniques for a 3D rendering of a building.

INSTRUCTIONAL ACTIVITIES-8.01	
A. Content Literacy Terminology	
Resource(s)	**(See 8.01.1)**
B. Understand the definitions associated with a 3D Rendering of a building. **C. Understand the purpose of a 3D Rendering of a building.** *Note: Activity combines Unpacked Content B and C for Indicator and combines with part of Indicator 8.02.*	
Activity	Word-Learning Sketches-Renderings
Teacher Instructions	● Provide digital copy of *Word-Learning Sketches-Renderings*, pencils and blank white paper to students. ● Introduce the definition of renderings, share real examples, and discuss the purpose of including them in projects. ● Facilitate students researching image examples for each term and sketching their own on the provided blank paper. Facilitate students taking pictures of their examples and add them to the document.
Student Directions	● Explain the purpose of rendering a building and some of the major definitions associated with rendering by participating in introduction of the definition of renderings, sharing of real examples, and discussion on the purpose of including them in projects. ● Research image examples for each term and sketch your own example on the provided blank paper. ● Take pictures of your examples and add them to the document.
Resource(s)	 Word-Learning Sketches- Rendering
D. Understand the techniques associated with a 3D Rendering of a building.	
Activity 1	Student Selected Industry Research-Architectural Visualization
Teacher Instructions	● Facilitate student- led research and presentation creation on current trends in Architectural Visualization, including image renderings. Students can select how to report their findings (examples: written review, slide presentation, podcast, video, poster) citing resources.
Student Directions	● Research and create a presentation on current trends in Architectural Visualization, including image renderings. Select how to report your findings (examples: written review, slide presentation, podcast, video, poster) citing resources.
Resource(s)	Internet and Multimedia
Activity 2	Software Tutorials
Teacher Instructions	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU.
Resource(s)	Autodesk Revit Resources
E. Apply the definitions for a 3D rendering of a building.	

F. Apply the purpose for a 3D rendering of a building. **G. Apply the techniques for a 3D rendering of a building.** *Note: Activity covers Unpacked Content E, F, and G for Indicator and combines with Indicator 8.05.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students adding entourage and determining appropriate software settings/angles for renderings needed for Model Home Project when appropriate for project pace. These can be added as extra construction documents, presentations, and/or on the Cover Page for the project. ● Facilitate students creating renderings for the project using software tutorials and/or direct instruction. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Add entourage and determine appropriate software settings/angles for renderings needed for the Model Home Project. ● Apply techniques for appropriate renderings in the software by creating renderings for the project using software tutorials and/or direct instruction. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-8.01.1	
Camera (Revit)	Presentation 3D view which shows what would be seen if standing at any given location and height in our design.
Entourage	Components such as plantings, people, and cars used for purposes of presentation in renderings (these can be manual renderings or computer simulated).
Latitude	The angular distance of a place north or south of the earth's equator, or of a celestial object north or south of the celestial equator, usually expressed in degrees and minutes.
Longitude	The angular distance of a place east or west of the meridian at Greenwich, England, or west of the standard meridian of a celestial object, usually expressed in degrees and minutes.
Orthographic 3D View (Revit)	Presentation 3D view showing the building model where all components are the same size regardless of the camera's distance.
Perspective 3D View (Revit)	Presentation 3D view showing the building model where all components' height, width, depth, and position are skewed in relation to each other when viewed from a particular camera's point/location/distance.
Rendering	A realistic representation of a building, interior, etc., executed in perspective and usually done for purposes of presentation and considers lighting and shadows; includes material textures/colors, shadows, sunlight but does not show weather like rain or lightning.
Solar Altitude	The vertical angle the sun makes with the ground plane.
Solar Azimuth	The bearing angle from true north.
Summer Solar Study	Study of solar effects on a site/building to maximize passively cooling a building.
Walkthrough	A defined a path through a building model used to create an animation to show the model to clients.
Winter Solar Study	Study of solar effects on a site/building to maximize passively heating a building.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	**IC63 Drafting III - Architectural**			
Essential Standard	8.00	C3	10%	Apply Procedures to Create Rendering and Walkthroughs.
Indicator	8.02	N/A	N/A	Apply interior lighting and exterior solar effects on a building design.
Culminating Question **Essential Questions**	**How are interior lighting and exterior solar effects on a building design applied?** ● How does interior lighting affect a building? ● How do exterior solar effects on a building? ● How are interior lighting effects applied in the software? ● How are exterior solar effects applied in the software?			

UNPACKED CONTENT

a. Content Literacy Terminology
b. Understand how interior lighting affects a building.
c. Understand exterior solar effects on a building.
d. Apply interior lighting effects.
e. Apply exterior solar effects.

INSTRUCTIONAL ACTIVITIES-8.02	
A. Content Literacy Terminology	
Resource(s)	**(See 8.02.1)**
B. Understand how interior lighting affects a building. *Note: Activity combines with Indicator 2.01.*	
Activity	Content Literacy Term Exploration
Teacher Instructions	● Provide digital copy of *Content Literacy Term Exploration-Activity-Electrical*. Facilitate student collection of information using the internet. Students will read the definition of each term in the table, paste the symbol for each term if shown in plan view, and paste an image example they find online best outlining/identifying each term. ● Facilitate students comparing documents in small groups or pairs. Compile best examples to share with class as review. *Note*: Extension activity available as needed.
Student Directions	● Identify major terms related to residential electrical fixtures by reading the definition of each term in the table, pasting the symbol for each term if shown in plan view, and pasting an image example you find online best outlining/identifying each term. ● Compare documents in small groups or pairs.
Resource(s)	Content Literacy Term Exploration- A
C. Understand exterior solar effects on a building. *Note: Activity combines with part of Indicator 8.01.*	
Activity	Word-Learning Sketches-Renderings
Teacher Instructions	● Provide digital copy of *Word-Learning Sketches-Renderings*, pencils and blank white paper to students. ● Introduce the definition of renderings, share real examples, and discuss the purpose of including them in projects. ● Facilitate students researching image examples for each term and sketching their own on the provided blank paper. Facilitate students taking pictures of their examples and add them to the document.
Student Directions	● Explain the purpose of rendering a building and some of the major definitions associated with rendering by participating in introduction of the definition of renderings, sharing of real examples, and discussion on the purpose of including them in projects. ● Research image examples for each term and sketch your own example on the provided blank paper. ● Take pictures of your examples and add them to the document.
Resource(s)	Word-Learning Sketches- Renderinc

D. Apply interior lighting effects.	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining proper lighting layout for Model Home Project when appropriate for project pace. ● Facilitate students adding lighting components and lighting reflected ceiling plan drawings to the project using software tutorials and/or direct instruction. ● Facilitate student renderings of Model Home in the project to apply interior lighting. These renderings can be used as additional presentation(s). ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Determining proper lighting layout for Model Home Project. ● Add lighting components and lighting reflected ceiling plan drawings to the project using software tutorials and/or direct instruction. ● Create renderings of Model Home with applied interior lighting. These renderings can be used as additional presentation(s). ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources
E. Apply exterior solar effects. *Note: Activity combines with Extension of Unpacked Content F for Indicator 6.02.*	
Activity	Presentation Document Application-Model Home Site Analysis Activity
Teacher Instructions	● Provide a copy of *Presentation Document Application-Model Home Site Analysis Activity*. Review project specifications and details. ● Facilitate students gathering site information for the project. ● Facilitate students creating a presentation document ("poster") for their Model Home Project or another selected site. *Extension from 6.02 to cover Unpacked Content:* Facilitate students renderings of Model Home or site to apply solar study and site information. These renderings can be used as additional presentation(s).
Student Directions	● Gather site information. ● Create a presentation document ("poster") for your Model Home Project or another selected site. ● Render your Model Home or site and apply solar study and effects with site information. These renderings should be added to presentation(s).

Resource(s) **Activity**	 Presentation Document Applicati
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-8.02.1	
Accent Lighting	Adds drama to a room by creating visual interest. As part of an interior design scheme, it is used to draw the eye to houseplants, paintings, sculptures, and other prized possessions. It can also be used to highlight the texture of a brick or stone wall, window treatments or outdoor landscaping.
Ambient Lighting	Provides an area with overall illumination. Also known as general lighting, it radiates a comfortable level of brightness without glare and allows you to see and walk about safely.
Camera (Revit)	Presentation 3D view which shows what would actually be seen if standing at any given location and height in our design.
Entourage	Components such as plantings, people, and cars used for purposes of presentation in renderings (these can be manual renderings or computer simulated).
Foot-candle	A unit of illumination equal to that given by a source of one candela at a distance of one foot.
Latitude	The angular distance of a place north or south of the earth's equator, or of a celestial object north or south of the celestial equator, usually expressed in degrees and minutes.
Longitude	The angular distance of a place east or west of the meridian at Greenwich, England, or west of the standard meridian of a celestial object, usually expressed in degrees and minutes.
Orthographic 3D View (Revit)	Presentation 3D view showing the building model where all components are the same size regardless of the camera's distance.
Pendant Light	A lone light fixture that hangs from the ceiling usually suspended by a cord, chain, or metal rod (also referred "drop" or "suspended", light).
Perspective 3D View (Revit)	Presentation 3D view showing the building model where all components' height, width, depth, and position are skewed in relation to each other when viewed from a particular camera's point/location/distance.
Recessed Can Light	A light fixture that is installed into a hollow opening in a ceiling (also referred to as a "pot light", "can light", or "downlight").
Rendering	A realistic representation of a building, interior, etc., executed in perspective and usually done for purposes of presentation and considers lighting and shadows; includes material textures/colors, shadows, sunlight but does not show weather like rain or lightning.
Solar Altitude	The vertical angle the sun makes with the ground plane.
Solar Azimuth	The bearing angle from true north.
Summer Solar Study	Study of solar effects on a site/building to maximize passively cooling a building.
Task Lighting	Helps illuminate for performing specific tasks, such as reading, grooming, preparing, and cooking food, doing homework, working on hobbies, playing games and balancing your checkbook. It can be provided by recessed and track lighting, pendant lighting and under cabinet lighting, as well as by portable floor and desk lamps.

Track Lighting	A lighting system in which the lights are fitted on tracks, allowing variable positioning.
Walkthrough	A defined a path through a building model used to create an animation to show the model to clients.
Wall Mounted Light	Type of light fixture affixed to a wall in such a way that it uses only the wall for support, and the light is usually directed upwards, but not always (sometimes referred to as “sconce”).
Winter Solar Study	Study of solar effects on a site/building to maximize passively heating a building.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	**IC63 Drafting III - Architectural**			
Essential Standard	8.00	C3	10%	Apply Procedures to Create Rendering and Walkthroughs.
Indicator	8.03	N/A	N/A	Apply how camera angles affect perspective views of a building, interior and exterior.
Culminating Question	**How do camera angles affect perspective views of a building, interior and exterior on a building?**			

UNPACKED CONTENT

a. Content Literacy Terminology.
b. Apply different camera angles to a building (interior and exterior).

INSTRUCTIONAL ACTIVITIES-8.03	
A. Content Literacy Terminology	
Resource(s)	**(See 8.03.1)**
B. Apply different camera angles to a building (interior and exterior).	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining appropriate camera placements for Model Home Project when appropriate for project pace. These views can be used as additional presentation(s) and/or additional Construction Document sheets for the project.
Student Directions	● Determine appropriate placement of cameras to provide multiple perspective views (interior and exterior) in the software. ● Create multiple perspective views (interior and exterior) for the project.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-8.03.1	
Camera (Revit)	Presentation 3D view which shows what would be seen if standing at any given location and height in our design.
Orthographic 3D View (Revit)	Presentation 3D view showing the building model where all components are the same size regardless of the camera's distance.
Perspective 3D View (Revit)	Presentation 3D view showing the building model where all components' height, width, depth, and position are skewed in relation to each other when viewed from a particular camera's point/location/distance.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	**IC63 Drafting III - Architectural**			
Essential Standard	8.00	C3	10%	Apply Procedures to Create Rendering and Walkthroughs.
Indicator	8.04	N/A	N/A	Apply 3D building walkthroughs.
Culminating Question	**How are 3D walk-throughs of a building created in the software?**			

UNPACKED CONTENT

a. Content Literacy Terminology.
b. Apply 3D building walkthroughs.

INSTRUCTIONAL ACTIVITIES-8.04	
A. Content Literacy Terminology	
Resource(s)	**(See 8.04.1)**
B. Apply different camera angles to a building (interior and exterior).	
Activity	Model Home Project
Teacher Instructions	● Facilitate students determining appropriate camera placements and settings for walk-through of Model Home when appropriate for project pace. These walk-throughs can be used as additional presentation(s).
Student Directions	● Determine appropriate camera placements and settings for a walk-through. ● Create a 3D walk-through of a building in the software.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-8.04.1	
Camera (Revit)	Presentation 3D view which shows what would be seen if standing at any given location and height in our design.
Orthographic 3D View (Revit)	Presentation 3D view showing the building model where all components are the same size regardless of the camera's distance.
Perspective 3D View (Revit)	Presentation 3D view showing the building model where all components' height, width, depth, and position are skewed in relation to each other when viewed from a particular camera's point/location/distance.
Walkthrough	A defined a path through a building model used to create an animation to show the model to clients.
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**	

Course	**IC63 Drafting III - Architectural**			
Essential Standard	8.00	C3	10%	Apply Procedures to Create Rendering and Walkthroughs.
Indicator	8.05	N/A	N/A	Apply CAD techniques to create a 3D rendering of an architectural model using 3D CAD software, such as Revit Architecture.
Culminating Question	**How are techniques applied to create a 3D rendering of an architectural model in the software?**			

UNPACKED CONTENT

a. Apply CAD techniques to create a 3D rendering of an architectural model using 3D CAD software, such as Revit Architecture.

INSTRUCTIONAL ACTIVITIES-8.05	
A. Content Literacy Terminology	
Resource(s)	**(See 8.05.1)**
B. Apply CAD techniques to create a 3D rendering of an architectural model using 3D CAD software, such as Revit Architecture. *Note: Activity combines with Indicator 8.01.*	
Activity	Model Home Project
Teacher Instructions	● Facilitate students adding entourage and determining appropriate software settings/angles for renderings needed for Model Home Project when appropriate for project pace. These can be added as extra construction documents, presentations, and/or on the Cover Page for the project. ● Facilitate students creating renderings for the project using software tutorials and/or direct instruction. ● Facilitate personal, peer, and/or teacher review and revisions.
Student Directions	● Add entourage and determine appropriate software setting/angles for renderings needed for Model Home Project ● Apply techniques for appropriate renderings in the software by creating renderings for the project using software tutorials and/or direct instruction. ● Review and revise.
Resource(s)	 Project-Based Learning- Model Ho
	Teachers are encouraged to use or create video tutorial session(s) which align with the current version being used in PSU. Autodesk Revit Resources

Content Literacy Terminology-8.05.1
For more information on Content Literacy Terminology for this Indicator please visit: **Revit Glossary**