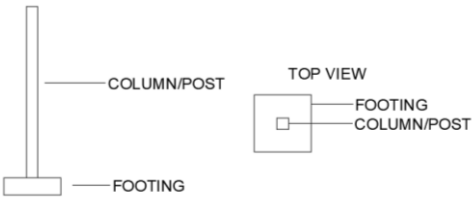
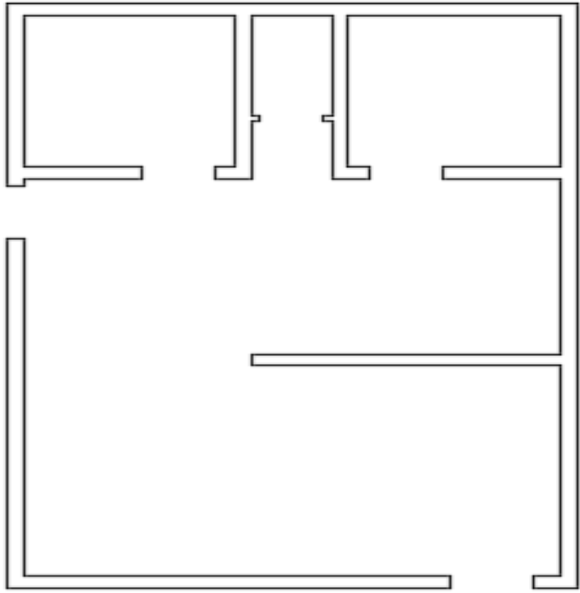


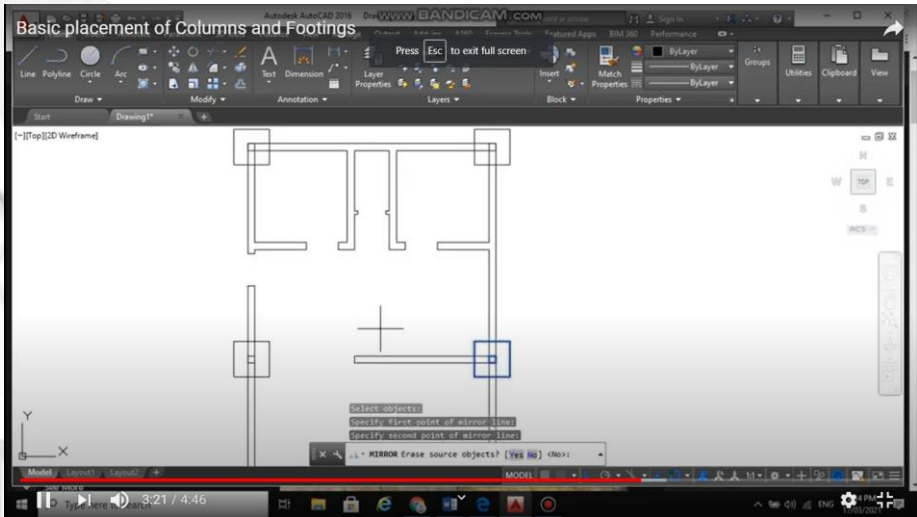
<b>W1-2</b>	<b>Learning Area</b>	TVL	<b>Grade Level</b>	10/12
	<b>Quarter</b>	3rd	<b>Date</b>	

<b>I. LESSON TITLE</b>	Drafting Foundation Plan
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Indicate the locations of wall footings, footings, and columns in drafting the foundation plan <b>TLE_ICTD9-12LC-IIIa-b-1</b>
<b>III. CONTENT/CORE CONTENT</b>	Structural Drawing Standards

<b>IV. LEARNING PHASES</b>	<b>Suggested Timeframe</b>	<b>Learning Activities</b>
<b>A. Introduction</b> <i>Panimula</i>	30 mins.	<p><b>Presentation</b></p> <p>Do you have any idea how houses stand against some natural disasters? Why is it still standing after a typhoon or earthquake?</p> <p>In your notebook, cite 5 ideas on how to construct a stable and durable house.</p> <ol style="list-style-type: none"> <li>_____</li> <li>_____</li> <li>_____</li> <li>_____</li> <li>_____</li> </ol> <p>National Building Code of the Philippines</p> <p>A collection of rules and regulations adopted by authorities having appropriate jurisdiction to control the design and construction of buildings, alteration, repair, quality of materials, use and occupancy, and related factors of buildings within their jurisdiction; contains minimum architectural, structural, and mechanical standards for sanitation, public health, welfare, safety, and the provision of light and air.</p> <p>These rules are important guides in constructing a house</p>
<b>B. Development</b> <i>Pagpapaunlad</i>	1 hr.	<p><b>FOUNDATION</b> All the portions of the building or structure below the footing, the earth upon which the structure rests.</p> <p>Having a strong foundation is important to make a house stable and strong to withstand storm, floods and other natural disasters.</p> <p>The function of having a good foundation are the following:</p> <p>To withstand its Load – Load are differentiated into live and dead load</p> <p>Live Load – Change in weight, these are content like furniture and people.</p> <p>Dead Load – This is constant weight like fixtures that comes within the house that does not change like stairs and roof.</p> <p>National Building Code of the Philippines about foundation.</p> <p><b>Section 708. Minimum Requirements for Group A Dwellings.</b></p> <p>(d) Foundation. Footing shall be of sufficient size and strength to support the load of the dwelling and shall be at least 250 millimeters thick and 600 millimeters below the surface of the ground.</p> <p>(e) Post. The dimensions of wooden post shall be those found in Table 708-A Dimensions of Wooden Posts (Annex B-1). Each post shall be anchored to such footing by strap and bolts of adequate size.</p> <p><b>Section 1002. Projection into Alleys or Streets.</b></p> <p>(b) Footings located at least 2.40 meters below grade along national roads or public highway may project not more than 300 millimeters beyond the property line.</p> <p>(c) Foundations may be permitted to encroach into public sidewalk areas to a</p>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>width not exceeding 500 millimeters; provided, that the top of the said foundations is not less than 600 millimeters below the established grade; and provided further, that said projections does not obstruct any existing utility such as power, communication, gas, water, or sewer lines, unless the owner concerned shall pay the corresponding entities for the rerouting of the parts of the affected utilities.</p> <p><b>Section 1202 Excavation, Foundation and Retaining Walls.</b></p> <p>(c) Footings, Foundations, and Retaining Walls</p> <p>(1) Footings and foundations shall be of the appropriate type, of adequate size, and capacity in order to safely sustain the superimposed loads under seismic or any conditions of external forces that may affect the safety or stability of the structure. It shall be the responsibility of the architect and/or engineer to adopt the type and design of the same in accordance with the standards set forth by the Secretary.</p> <p>(2) Whenever or wherever there exists in the site of the construction an abrupt change in the ground levels or level of the foundation such that instability of the soil could result, retaining walls shall be provided and such shall be of adequate design and type of construction as prescribed by the Secretary.</p> <p><b>Definition of Terms</b></p> <p><b>WALL BEARING</b> A wall which supports any load other than its own weight.</p> <p><b>WALL, CROSS</b> A term which may be used synonymously with a partition.</p> <p><b>WALL, CURTAIN</b> The enclosing wall of an iron or steel framework or the nonbearing portion of an enclosing wall between pier.</p> <p><b>WALL, DEAD</b> A wall without openings.</p> <p><b>WALL, EXTERIOR</b> Any wall or element of a wall or any number or group of members, which defines the exterior boundary or courts of a building.</p> <p><b>WALL, FACED</b> A wall in which the facing and backing are so bonded together that they act as a composite element, and exert a common action under load.</p> <p><b>WALL, FIRE</b> Any wall which subdivided a building so as to resist the spread of fire, by starting at the foundation and extending continuously through all storey to, or above the roof. Extension above the roof is 1.00 meters.</p> <p><b>WALL, FOUNDATION</b> That portion of an enclosing wall below the first tier of floor joists.</p> <p><b>WALL, HEIGHT OF</b> The perpendicular distance measured from its base line either at the grade or at the top of the girder to the top of the coping thereof. Foundation and retaining walls are measured from the grade downward to the base of the footing.</p> <p><b>WALL, NONBEARING</b> A wall which supports no load other than its own weight.</p> <p><b>WALL, PARAPET</b> That part of any entirely above the roof line.</p> <p><b>WALL, PARTY</b> A wall separating two or more buildings, and used in common by the said buildings.</p> <p><b>WALL, RETAINING</b> Any wall used to resist the lateral displacement of any material; a subsurface wall built to resist the lateral pressure of internal loads.</p> <p><b>WALL, THICKNESS OF</b> The minimum thickness measured on the bed.</p>
<p><b>C. Engagement</b> <b>Pakikipagpalihan</b></p>	<p>1 ½ hours</p>	<p>Footing is a part of foundation which is constructed with concrete or brickwork masonry and acts as a base to the floor columns and floor walls. The main function of footing is to transfer the vertical loads directly to the soil.</p> <p>A basic type of footing is a simple footing:</p> 

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>In placing the columns, you need to determine the following:</p> <ol style="list-style-type: none"> <li>Columns should preferably be located near the corners of the house and at the intersection of beams/walls.</li> <li>Select the position of columns so as to reduce bending moments in beams.</li> <li>Avoid larger spans of beams.</li> <li>Avoid larger center-to-center distance between columns.</li> <li>Columns on property line.</li> </ol> <p>The maximum span between columns for normal structures is 7.5 m and minimum spacing is 2.5 m.</p> <p>Columns should have minimum dimensions of 8" x 8" and may be formed by formwork on four sides or formwork on two sides with blockwork on the other two. The minimum column reinforcement should be 4- ½ diameter bars with ¼" stirrups at 6" centers.</p> <p>The minimum width of footings shall be 12 inches (305 mm).</p> <p>The minimum depth of footings below the surface of undisturbed soil, compacted fill material or controlled low strength material (CLSM) shall be 12 inches (305 mm). Where applicable, the requirements of CBC Section 1809.5 shall also be satisfied. The minimum width of footings shall be 12 inches (305 mm).</p> <p><b>Activity 1</b> Construct a column and footing of a house Side view and Top view. (Be guided according to the minimum size in construction) Rubric:</p> <p>Indicators:</p> <ul style="list-style-type: none"> <li>Accurate measurements</li> <li>Legible construction</li> <li>Clean and Neat work</li> <li>Time of Submission</li> </ul> <p>5 – Impressively meet indicators 4 – Meet the indicator 3 – Slightly Meet the indicator 2 – Does not meet the indicator 1 – Did not have the Indicator 0 – No evidence</p>
<b>D. Assimilation</b> <b>Paglalatap</b>	1 ½ hours	<p><b>Activity 2</b> Place the column and footings in the given floor plan using AutoCAD.</p> 

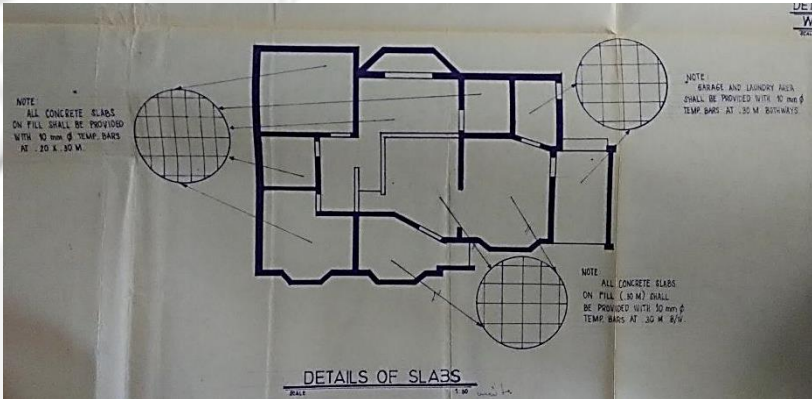
IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>Indicators:</p> <ul style="list-style-type: none"> <li>Accurate measurements</li> <li>Legible construction</li> <li>Clean and Neat work</li> <li>Time of Submission</li> </ul> <p>5 – Impressively meet indicators            4 – Meet the indicator            3 – Slightly Meet the indicator            2 – Does not meet the indicator            1 – Did not have the Indicator            0 – No evidence</p>  <p><a href="https://www.youtube.com/watch?v=GwSUbu9gJ4">https://www.youtube.com/watch?v= GwSUbu9gJ4</a></p>
<b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or Assessment to be given on Weeks 3 and 6)		<p>Quiz:</p> <p>True or False</p> <ol style="list-style-type: none"> <li>Columns should preferably be located near the corners of the house and at the intersection of beams/walls.</li> <li>The maximum span between columns for normal structures is 7.5 m and minimum spacing is 2.5 m.</li> <li>The minimum width of footings shall be 12 meters.</li> <li>A dead wall is a wall without openings.</li> <li>Live Load – Change in weight, these are content like furniture and people</li> </ol>
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>Write your personal insights about the lesson using the prompts below.              I understand that _____.              I realize that _____.              I need to learn more about _____.</li> </ul>
<b>Prepared by:</b>	Godfred M. Velarde, Ed.D	<b>Checked by:</b> Frederick Zaide Rolando B. Talon Jr. TLE-ICT-TD10-w1-2

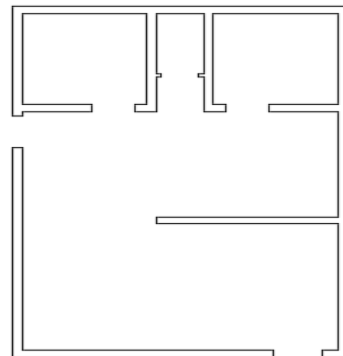


<b>W3</b>	<b>Learning Area</b>	TVL-ICT Technical Drafting	<b>Grade Level</b>	10/12
	<b>Quarter</b>	3rd	<b>Date</b>	

<b>I. LESSON TITLE</b>	Draft structural floors and roof framing plans
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Draft structural floor and roof framing plans based on floor and foundation plans using timber, concrete, or steel construction <b>TL E ICTTD9-12LC-IIIc</b>
<b>III. CONTENT/CORE CONTENT</b>	Structural Drawing Standards

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities						
<b>A. Introduction</b> <i>Panimula</i>	1 hour	<p>In this lesson, the learners will give the opportunity to learn the basic information in drafting structural plan using CAD. They will become more knowledgeable on how to draft a proper layout of structural floor framing plans.</p> <p>The learners will be guided by the following questions based from the K.W.L. This is only to check what the learners already know about the lesson, the skills and competencies that are expected to learn and questions that need to be answered.</p> <table border="1"> <thead> <tr> <th>What I know</th><th>What I want to Know</th><th>What I have Learned</th></tr> </thead> <tbody> <tr> <td>What do you know about the drafting of structural floor and framing plans?</td><td>What do you want to know about the drafting of structural floor and framing plans?</td><td>What have you learned in drafting of structural floor and framing plans?</td></tr> </tbody> </table> <p>To start with, The learners will answer Activity 1</p> <p><b>Activity 1</b> In your notebook, cite 5 common materials used in flooring of a house</p> <ol style="list-style-type: none"> <li>_____</li> <li>_____</li> <li>_____</li> <li>_____</li> <li>_____</li> </ol>	What I know	What I want to Know	What I have Learned	What do you know about the drafting of structural floor and framing plans?	What do you want to know about the drafting of structural floor and framing plans?	What have you learned in drafting of structural floor and framing plans?
What I know	What I want to Know	What I have Learned						
What do you know about the drafting of structural floor and framing plans?	What do you want to know about the drafting of structural floor and framing plans?	What have you learned in drafting of structural floor and framing plans?						
<b>B. Development</b> <i>Pagpapaunlad</i>	1 hr..	<p>Knowing the operational definitions/terminology of floors will help the students to get easily understand the concept of structural floor and framing plans.</p> <p>Definition of Technical Terms</p> <p>Dead Load - refers to all the weight in a structure made up of immovable materials.</p> <p>Framing - is the wood skeleton of a building constructed one level on top of another.</p> <p>Joist - is a horizontal structural member that supports the floor system or ceiling system.</p> <p>Pier - is a block of concrete supporting the floor of a building.</p> <p>Slab - is a foundation reinforced concrete and foundation floor.</p> <p>Cement - is the bonding agent that reacts with water to form a stone-hard substance.</p> <p>Concrete - is a result of mixing cement, fine and coarse aggregates, and water</p> <p>Reinforced concrete - concrete with a reinforcement embedded in order that they act together in resisting forces</p>						

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities																																		
		<p>Below is the suggested concrete proportion</p> <table border="1"><thead><tr><th rowspan="2">Class of Mixture</th><th rowspan="2">Cement 40 kg.</th><th colspan="2">Sand</th><th colspan="2">Gravel</th></tr><tr><th>Cu.Ft.</th><th>Cu.M.</th><th>Cu.Ft.</th><th>Cu.M.</th></tr></thead><tbody><tr><td>AA</td><td>1</td><td>1 ½</td><td>.043</td><td>3</td><td>.085</td></tr><tr><td>A</td><td>1</td><td>2.0</td><td>.057</td><td>4</td><td>.113</td></tr><tr><td>B</td><td>1</td><td>2 ½</td><td>.071</td><td>5</td><td>.142</td></tr><tr><td>C</td><td>1</td><td>3.0</td><td>.085</td><td>6</td><td>.170</td></tr></tbody></table> <p>Reinforced concrete slab is classified as:</p> <ol style="list-style-type: none"><li>1. One-way solid slab- This is supported by two parallel beams</li><li>2. Two-way solid slab - all four sides are supported, either by beams or girders, the reinforcement bars are placed in two directions at right angle to each other.</li><li>3. Ribbed floor</li><li>4. Flat slab or Girder less floor</li></ol> <p>The American Concrete Institute code provides that the thickness of the slab shall not be less than 10cm nor less than the perimeter of the slab divided by 180. The reinforcement shall not be more than 3 times the slab thickness and the ratio of reinforcement shall be at least 0.0025.</p> <p><b>Bar Spacing</b></p> <p>The spacing of bars shall be in accordance with the provisions of the American Concrete I:</p> <ol style="list-style-type: none"><li>1. The minimum clear distances between adjacent steel bars shall not be less than 25 mm.</li><li>2. When beam reinforcements are placed in two layers the clear distance shall be 25 mm.</li><li>3. Lateral ties shall be no.3 bars spaced 16 times the longitudinal bar diameter.</li><li>4. The clear spacing between spirals shall not exceed 7.5 or less than 2.5 cm. 10 mm minimum diameter.</li></ol>  <p>Sample detail of slab for floor framing plan</p>	Class of Mixture	Cement 40 kg.	Sand		Gravel		Cu.Ft.	Cu.M.	Cu.Ft.	Cu.M.	AA	1	1 ½	.043	3	.085	A	1	2.0	.057	4	.113	B	1	2 ½	.071	5	.142	C	1	3.0	.085	6	.170
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<b>C. Engagement</b> <b>Pakikipagpalihan</b>	30 mins	<p>For further learning about floor framing plan, you may watch <a href="https://www.youtube.com/watch?v=JHVPDKrN-ak">https://www.youtube.com/watch?v=JHVPDKrN-ak</a></p> <p>Read also information at Civil Technology book by Dr. Eufemio Valdriz, pages 97- 98</p> <p>After viewing and reading the suggested link and reference, the learners will do the following activities below:</p> <p><b>Activity 2</b></p>																																		

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities																																						
		<p>Jumbled letters: Arrange the letters to produce the right technical term in Floor framing and write its meaning on a sheet of paper.</p> <ol style="list-style-type: none"><li>1. ENCECTRO</li><li>2. AFEMR</li><li>3. SOIJT</li><li>4. EIPR</li><li>5. MENCET</li><li>6. DOAL</li><li>7. LBSA</li><li>8. DERGRI</li><li>9. TESLE RAB</li><li>10. SEGRAGTGAE</li></ol> <p><b>Activity 3</b> Make a list of floor framing materials necessary in a plan. You may interview a carpenter or mason for your answers. Use separate sheet of pad paper for your answers.</p>																																						
<b>D. Assimilation Paglalapat</b>	1 ½ hours	<p><b>Activity 4</b> In this phase the learners will draft structural floor framing plan using CAD. Procedure:</p> <ol style="list-style-type: none"><li>1. Draft a reinforced concrete floor based from the given floor plan. Indicate the detail of a concrete slab with the corresponding dimensions. (Note: You will be provided with a copy of the plan.).</li><li>2. Indicate size and distances of reinforcing bars per standard specification on the national building code.</li><li>3. Draw a portion of the floor plan indicating bar distances and bar sizes.</li></ol> <p><b>Use the given floor plan for the foundation plan activity that you recently constructed in week 2 using AutoCAD.</b></p> <div></div> <p>Learner's output will be rated based from the Scoring rubrics below:</p> <table><thead><tr><th>CRITERIA</th><th>Student's Score</th></tr></thead><tbody><tr><td><b>Accuracy</b></td><td></td></tr><tr><td>10</td><td></td></tr><tr><td>9</td><td></td></tr><tr><td>8</td><td></td></tr><tr><td><b>Speed</b></td><td></td></tr><tr><td>3</td><td></td></tr><tr><td>2</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td><b>Neatness</b></td><td></td></tr><tr><td>3</td><td></td></tr><tr><td>2</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td><b>Lettering/Labeling</b></td><td></td></tr><tr><td>4</td><td></td></tr><tr><td>3</td><td></td></tr><tr><td>2</td><td></td></tr><tr><td>1</td><td></td></tr><tr><td><b>Total: 20 pts.</b></td><td></td></tr></tbody></table> <p><b>Accuracy</b> 10 pts - The output is accurately done. 9 pts - Two to five errors are observed on the output. 8 pts - Six to ten errors are observed on the output.</p> <p><b>Speed</b> 3 pts - The output is done 5 minutes before the time. 2 pts - The output is done on time. 1 pt - The output is done after the allotted time.</p> <p><b>Neatness</b> 3 pts - has no error 2 pts - has two to three erasures 1 pt - has four or more erasures</p> <p><b>Lettering/Labeling</b> 4 pts - All pieces of information are completely indicated and legibly printed. 3 pts - All pieces of information are legibly printed but some are missing. 2 pts - All pieces of information are legibly printed but some are missing and misspelled. 1 pt - Pieces of information are not legibly printed and words are misspelled.</p>	CRITERIA	Student's Score	<b>Accuracy</b>		10		9		8		<b>Speed</b>		3		2		1		<b>Neatness</b>		3		2		1		<b>Lettering/Labeling</b>		4		3		2		1		<b>Total: 20 pts.</b>	
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IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or Assessment to be given on Weeks 3 and 6)		<b>Activity 4</b> Learner will answer the test below.  TRUE OR FALSE  Directions: Write TRUE if the statement is correct and FALSE if it is wrong. Write your answers on a separate sheet of paper  <ol style="list-style-type: none"> <li>1. The minimum clear distances between adjacent steel bars shall not be less than 25 mm</li> <li>2. A block of concrete supporting the floor of a building is called joist.</li> <li>3. One-way solid slab is supported by two parallel beams .</li> <li>4. Concrete with a reinforcement embedded in order that they act together in resisting forces is known as reinforced concrete.</li> <li>5. Steel bar is an example of aggregate.</li> </ol>
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>• Write your personal insights about the lesson using the prompts below.                          I understand that _____.                          I realize that _____.                          I need to learn more about _____.                     </li> </ul>
Prepared by:	Arnel D. Mangilin	Checked by: Frederick Zaide Rolando B. Talon Jr. TLE-ICT-TD10-w3