



Bar Bending & Concreting

Level-II

Learning Guide-#15

**Unit of Competence: Read and Interpret Plans
and Working Drawings**

**Module Title: Reading and Interpreting Plans
and Working Drawings**

LG Code: EIS BBC2 M05 1019 LO2-LG-15

TTLM Code: EIS BBC2 M05 TTLM 0919v1

**LO2: Apply commonly used
symbols and abbreviations.**



Instruction Sheet

Learning Guide #15

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Applying Commonly used symbols and abbreviations
- Applying Common building construction terminologies

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, **upon completion of this Learning Guide, you will be able to:**

- identify, understand and apply commonly used symbols and abbreviations on drawings.
- identify, understand and apply common building and construction terms used on drawings.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, and Sheet 3”.
4. Accomplish the “Self-check 1, Self-check 2, and Self-check 3”.
5. Check the answers for your achievement from the answer key



Information Sheet-1	Applying Commonly used symbols and abbreviations
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1.1. Abbreviations

construction plans or drawings, are full of abbreviations and acronyms to save space and neaten the overall appearance of the presentation. Some of them are listed below:

table 1.1: list of abbreviations and their definition

Abbreviation	Definition	Abbreviation	Definition
AC	Air Conditioner	Galv	Galvanized
AFF	Above Finished Floor	Gyp	Gypsum
AL	Aluminum	GRC	Glass reinforced concrete
AO	Access opening	HW	Hot Water
APF	Acid proof floor	HWD	Hardwood
AW	Acid Waste	IO	Inspection opening
B	Basin	MSB	Main switch board
BHD	Bulk head	O	Oven
BN	Bull nose	PBD	Plasterboard
CD	Clothes drier	R	Refrigerator
CF	Concrete floor	S	Sink
CT	Ceramic tile	SV	Sheet vinyl
CPT	Carpet	SWD	Softwood
C.C.	Center to Center	Std.	Standard
C.I.	Cast Iron	Stl.	Steel
BV	Brick veneer	TBR	Timber
CL.	Closet	TTC	Telephone Terminal Closet
CL	Ceiling level	U/S	Under side
CR	Cement render	VB	Vapor barrier
DG	Double glazing	VENT	Ventilator
DW	Dishwasher	VP	Vent pipe
EJ	Expansion joint	VT	Vinyl tile



FD	Fire detector	WC	Water closet (toilet)
FE	Fire extinguisher	WBD	Wall board
FFL	Finished floor level	WI	Wrought iron
FH	Fire hydrant	WM	Washing machine
FW	Floor waste	WMR	Water meter
GM	Gas meter	WP	Waste pipe
GPO	General purpose outlet	WR	Wardrobe
HWB	Hand Wash Basin		

1.2. Symbols

Blueprint drawings are generally used to show how a building, object, or system is to be worked. One of the main functions of graphic symbols on construction drawings is to reference other drawings within the set.

ARCHITECTURAL SYMBOLS . . .			
Material	Elevation	Plan	Section
EARTH			
BRICK	 WITH NOTE INDICATING TYPE OF BRICK (COMMON, FACE, ETC.)	 COMMON OR FACE FIREBRICK	SAME AS PLAN VIEWS
CONCRETE		 LIGHTWEIGHT STRUCTURAL	SAME AS PLAN VIEWS
CONCRETE BLOCK		 OR 	 OR
STONE	 CUT STONE RUBBLE	 CUT STONE RUBBLE CAST STONE (CONCRETE)	 CUT STONE CAST STONE (CONCRETE) RUBBLE OR CUT STONE

WOOD	 SIDING PANEL	 WOOD STUD REMODELING DISPLAY	 ROUGH MEMBERS FINISHED MEMBERS PLYWOOD
PLASTER		 WOOD STUD, LATH, AND PLASTER METAL LATH AND PLASTER SOLID PLASTER	 LATH AND PLASTER
ROOFING	 SHINGLES	SAME AS ELEVATION VIEW	
GLASS	 OR GLASS BLOCK	 GLASS GLASS BLOCK	 SMALL SCALE LARGE SCALE

Fig. 1.1: Architectural Symbols

PLOT PLAN SYMBOLS			
 NORTH POINT OF BEGINNING (POB) UTILITY METER OR VALVE POWER POLE AND GUY LIGHT STANDARD TRAFFIC SIGNAL STREET SIGN	 FIRE HYDRANT MAILBOX MANHOLE TREE BUSH HEDGE ROW FENCE	 WALK IMPROVED ROAD UNIMPROVED ROAD BUILDING LINE PROPERTY LINE PROPERTY LINE TOWNSHIP LINE	 E OR ELECTRIC SERVICE G OR NATURAL GAS LINE W OR WATER LINE T OR TELEPHONE LINE NATURAL GRADE FINISH GRADE + XX.00' EXISTING ELEVATION

Fig. 1.2: plot plan symbols

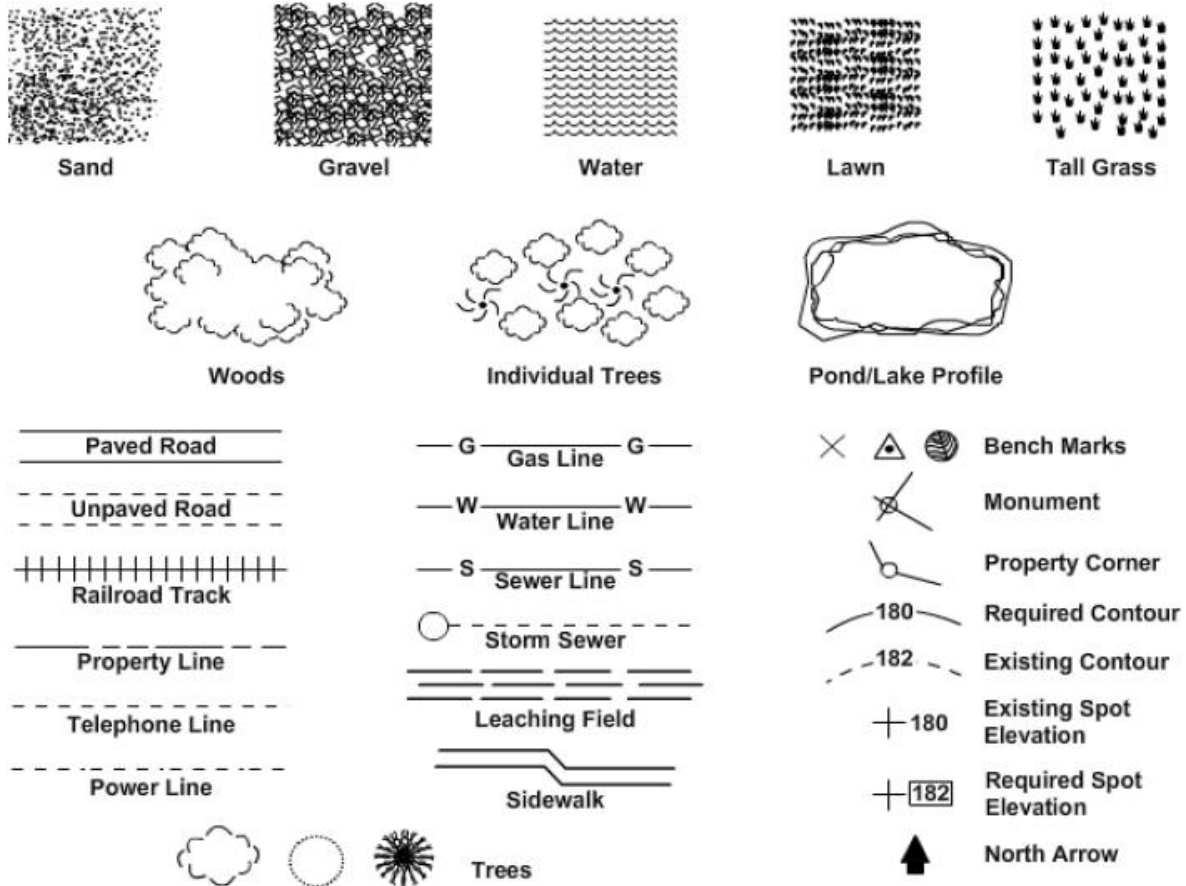


Fig.1.3: Topographic symbols.

	Ceiling Diffuser (Arrows Indicate Direction of Air Flow)		Square to Round Transition
	Return Air Grille		Parallel Blade Damper
	Supply Duct Up		Fire Damper (Wall) (Floor)
	Supply Duct Down		Airfoil Blade Turning Vanes
	Return Duct Up		Air Extractor
	Return Duct Down		
$\frac{6'' \phi \text{ CD}}{200 \text{ CFM}}$	Neck Size/ Air Device CFM	ϕ	Diameter
		CFM	CFM (Cubic Feet Per Minute)
	Thermostat	RA	Return Air
		OSA	Outside Air
		CD	Condensate Drain

Fig.1.4: HVAC symbols.

	Single switched wall socket	CU	Consumer unit
	Double switched wall socket	SS	Shaver socket
	Double switched wall socket above worktop level		Ethernet socket
	Single switched fused spur		Thermostat
	TV aerial		Lamp
	Dimmer switch		Pendant light
	1 gang light switch		2 gang 2 way light switch
	2 gang light switch		Recessed downlight
	Wall light		Telephone point

Fig. 1.5: a) Electrical Symbols

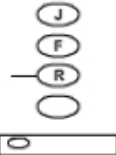
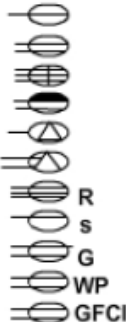
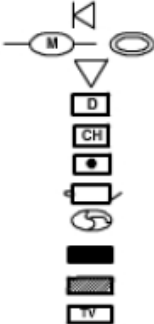
General Outlets Junction Box, Ceiling Fan, Ceiling Recessed Incandescent, Wall Surface Incandescent, Ceiling Surface or Pendant Single Fluorescent Fixture		Receptacle Outlets Single Receptacle Duplex Receptacle Triplex Receptacle Split-Wired Duplex Recep. Single Special Purpose Recep. Duplex Special Purpose Recep. Range Receptacle Switch & Single Receptacle Grounded Duplex Receptacle Duplex Weatherproof Receptacle GFCI	
Switch Outlets Single-Pole Switch Double-Pole Switch Three-Way Switch Four-Way Switch Key-Operated Switch Switch w/ Pilot Low-Voltage Switch Door Switch Momentary Contact Switch Weatherproof Switch Fused Switch Circuit Breaker Switch	S S ₂ S ₃ S ₄ S _K S _P S _L S _D S _{MC} S _{WP} S _F S _{CB}	Auxiliary Systems Telephone Jack Meter Vacuum Outlet Electric Door Opener Chime Pushbutton (Doorbell) Bell and Buzzer Combination Kitchen Ventilating Fan Lighting Panel Power Panel Television Outlet	

Fig.1.5: b) Electrical symbols.





















LEGEND	
	- T.B.M.
	- WATER METER
	- TELSTRA PIT
	- COMMUNICATIONS PIT
	- POWER DOME
	- SEWER MAINTENANCE SHAFT
	- SEWER PROPERTY CONNECTION
— — —	- TOP OF BANK
— — — — —	- CHANGE IN GRADE
— — — — —	- LIMESTONE RETAINING WALL
— — — — —	- ROAD KERB/EDGE
— — — — —	- ROAD CENTRE

Fig. 1.6: A legend from a site plan showing several symbols and their meanings.

Plumbing

Corner Bath	
Recessed Bath	
Roll Rim Bath	
Sitz Bath	
Floor Bath	
Bidet	
Shower Stall	
Shower Head	
Overhead Gang Shower	
Pedestal Lavatory	
Wall Lavatory	
Corner Lavatory	
Manicure Lavatory	
Medical Lavatory	
Dental Lavatory	
Plain Kitchen Sink	
Kitchen Sink, R & L Drain Board	
Kitchen Sink, L.H Drain Board	
Combination Sink and Dishwasher	
Combination Sink & Laundry Tray	
Service Sink	
Wash Sink (Wall Type)	
Wash Sink	
Laundry Tray	

Piping

Soil and Waste	
Soil and Waste, Underground	
Vent	
Cold Water	
Hot Water	
Hot Water Return	
Fire Line	
Gas	
Acid Waste	
Drinking Water Supply	
Drinking Water Return	
Vacuum Cleaning	
Compressed Air	

Pipe Fittings





















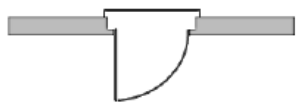
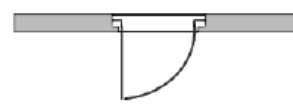

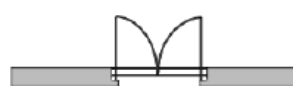









	Screwed	Soldered
Joint		
Elbow - 90		
Elbow - 45		
Elbow - Turned Up		
Elbow - Turned Down		
Elbow Long Radius		
Side Outlet Elbow - Outlet Down		
Side outlet Elbow - Outlet Up		
Base Elbow		
Double Branch Elbow		

Fig. 1.7: Plumbing and piping symbols.

Door Symbols

Type	Symbol	
Single-swing with threshold in extended masonry wall		
Single door, opening in		
Double door, opening out		
Single-swing with threshold in exterior frame wall		
Single door, opening out		
Double door, opening in		
Refrigerator door		

Window Symbols


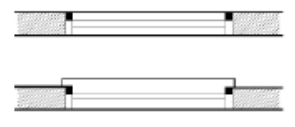
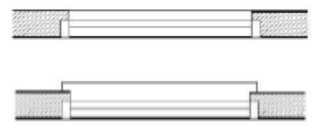
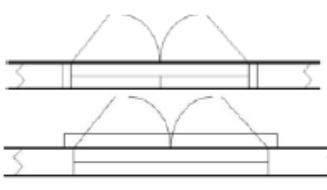
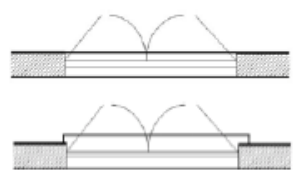
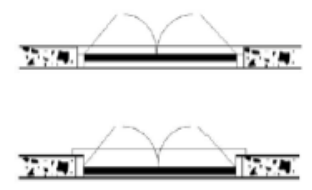
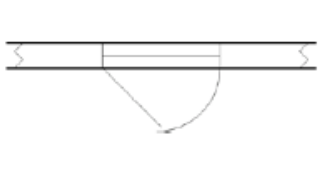
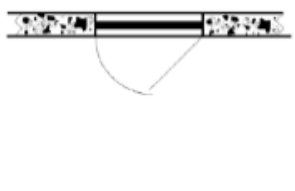
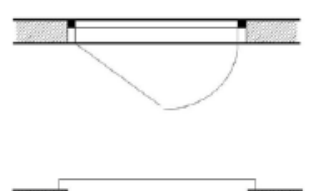
Type	Wood or metal sash in frame wall	Metal sash in masonry wall	Wood sash in masonry wall
Double hung			
Casement - Double, opening out			
Casement - Single, opening in			

Fig. 1.8: Architectural symbols for doors and windows.




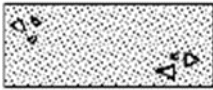
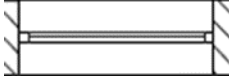




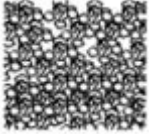

Self-Check -1	Written Test
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Directions: Answer all the questions listed below.

1. Here are some common abbreviations found in architectural plans. Write what each one means underneath it. (5 points)

Abbreviation	Definition	Abbreviation	Definition
HWB		TBR	
AFF		Stl	
C.C.		CF	

2. Below are some common symbols found in architectural plans. Write what each one represents underneath it. (5 points)

 _____	 _____	 _____
 _____	 _____	 _____
 _____	 _____	 _____

Note: Satisfactory rating - 5 and 5 points

Unsatisfactory - below 5 and 5 points

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions



Information Sheet- 2	Applying Common building construction terminologies
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1.1. Construction Terms & Concepts

Among the many things you learn on site are the terminologies used by construction workers that can sound like absolute nonsense to architects at first.

An architecture dictionary might seem like a superb idea, but in practice wouldn't be convenient on a construction site—unless you can memorize the useful entries out of the 25,000 terms in Cyril M Harris' *Dictionary of Architecture and Construction*. Alternatively, here's a more manageable list of 45 construction terms and concepts every architect should know.

- **All-in Rate:** In Construction, the term means the total expenses for an item, which include all the direct and indirect costs. The term is also used in the financial sector.
- **Architect of Record:** This term signifies the name of the architecture firm, or architect, whose name has been listed on the issued construction permits. However, “architects of record” are not necessarily the people behind the design. There are times when high-profile architects who don't have an office near to their construction site hire “architects of record,” handing them the responsibility of working on-site or using their expertise in a specific field.
- **Batter (Walls):** No, not cake batter, sadly. In architecture, batter means an inward inclination or slope of a wall or structure. Some architects choose this design to provide structural strength while others choose it for decorative purposes.
- **Blocking (Construction):** Evidently, the term is derived from “blocks,” and means the use of short pieces or off-cuts of lumber in wooden-framed construction.

Construction workers use the blocking technique for filling, spacing, joining, or reinforcing structures.

- **Box Crib:** Think of this as the final steps of a game of Jenga, but without the anxiety of a collapse. Instead, box cribs are temporary elements used to reinforce and add additional support to heavy objects during construction. The material used to create box cribs are often wooden bars. Due to their practicality, box crib forms are also used in film productions for stabilizing platforms and dolly tracks.



- **Building Engineer:** The MVPs of construction. They know it all, and are responsible for most of what goes on during construction. Building engineers differ from one country to another, but are mainly the experts of construction, technology, design, assessment, and maintenance, all at once.
- **Cant (Architecture):** Or canted, is an oblique or angled line of a surface. Think of it as chamfering the edges of a building's plan. This design was heavily used in Baroque architecture to create a continuous feel to the composition.
- **Concrete Cover:** The term is linked to reinforced concrete and is the least distance between the installed reinforcement and the outer surface of the concrete. The concrete cover has several vital purposes, including protecting the reinforced steel bars from corrosion, providing thermal insulation, and providing sufficient embedding for the steel bars to function as reinforcement.
- **Concrete Slab:** One of the few construction elements that is used in the vast majority of all structures, a concrete slab is the thick (average of 10-40 cm) horizontal concrete platform which is created to construct the floor or ceiling. There are several slab designs (corrugated, ribbed, waffle, one-way) and each one corresponds to the design or endurance required.
- **Course (Architecture):** is a continuous row of masonry. Whether it's stones, bricks, or concrete blocks, a course can have several orientations and types.
- **Cross Bracing:** is a structural component used to improve the endurance of a structure. The X-shaped reinforcement can prevent a building from collapsing completely in case of earthquakes, or a wooden chair from falling apart.
- **Cut and Fill:** While creating railways and canals, construction workers would create cut slopes (like a mini valley) to install the railways. The soil that's been moved, the fills, would subsequently create adjacent embankments, minimizing the labor. The approach is now frequently used on construction sites of any size.
- **Damp Proofing:** since dampness is among the most common construction problems, damp proofing is a procedure done to the structure to prevent potential moisture from being absorbed by walls and entering the interior. Depending on the nature of the structure and the damp problems it might face, a wide variety of



materials can be applied onto the slab, under the final finishing, or even as a surface to act as damp proofing and prevent any spoilage.

- **Design-build:** In most projects, construction is frequently delayed due to time conflicts between two (or more) teams involved. The idea behind design-build is that the same team who designs the project constructs it as well. It is a project delivery system in which the design and the construction are considered “single-point-responsibility,” reducing costs and delivering the project on time.
- **Diagrid:** The idea behind “diagrid” is pretty simple: diagonal + grid. Diagrids are diagonally intersecting steel beams (occasionally wooden or concrete), which help reduce the amount of steel used in traditional steel framing.
- **Encasement:** On a construction site, encasement might refer to one of two things: in some situations, sewers and other underground pipes may need to be enclosed in a concrete encasement for structural reasons.
- **Falsework:** Mostly used for large arch structures and bridges, it is a temporary structure constructed to support and hold the span during construction or repairs.
- **Formwork:** Formwork is *falsework*’s best friend. It is the construction of a temporary structure into which concrete is poured for it to be settled and set in the desired form.
- **Joint (building):** Joints are inserted between two distinct materials in a structure which do not have any physical connection to one another but are either aligned next to each other or overlap.
- **Joist:** Joists are crucial components of a wide-span structure, as they help transfer the load from the beams to the vertical columns and studs. These horizontal elements are connected perpendicularly to the beams (horizontally) and joined (vertically) to the columns.
- **Lean Construction:** A newly developed delivery system in which a study is conducted to minimize the waste of material, time, and effort, resulting in an efficient project.
- **Lift Slab Construction:** Also known as the Youtz-Slick method, the lift slab method ensures time efficiency and safety. Basically, the concrete slabs are cast on ground level, and are then lifted through hydraulic jacks into the designated placement. This



method not only saves time, but also does not require workers to be creating and working with formwork on high ground levels.

- **Lookout (architecture):** Lookouts are wooden joists that extend beyond the exterior wall in a cantilever-like manner, to support the roof sheathing phase in construction.
- **Moling:** This is the use of a 60-centimeter-long, 6-centimeter wide steel "mole," a pneumatically-driven device which is inserted into the ground to create holes for pipes, heating coils, and heat pump systems without using any trenches.
- **Monocrete Construction:** The monocrete construction method is the sole use of precast concrete panels, bolted together, to create concrete structures.
- **Performance Gap:** Similar to when you expect to have three design proposals delivered by the end of the week, but you end up with only one because you're just too tired, performance gap is when the expected work progress does not meet with the result on site. This could be due to environmental, workmanship, or occupant reasons.
- **Precast Concrete:** One of the most commonly used forms of concrete, precast concrete is concrete elements are created off-site to be transferred or lifted to the site later on. Designs could range from blocks to panels, and create solid but maneuverable elements.
- **Purlin:** A purlin is any longitudinal element implemented on the roof structure horizontally for additional structural or material support.
- **Quantity Take-off:** Before beginning with the construction phase, a study is held by estimators to acquire the detailed measurements of material and labor force needed to complete the project. This process is called quantity take-off and helps the project developers have full knowledge of what to expect during the construction phase.
- **Rafter:** Rafters are a series of inclined wooden elements that form a roof, which attach to the edge of the wall plate and often overhang to form the eave.
- **Rim Joist:** In flooring systems, rim joists are attached to the ends of the floor's main joists, providing lateral support to the ends of the decking system. However, they are not the end joists, which are usually the first and last row, parallel to the other joists.



- **Rubblization:** In order to save time and extra cost, unwanted existing concrete is broken down to pieces of rubbles, and left in its place to become the base layer for new surfaces, instead of transferring the material to another site.
- **Shiplap:** You've probably seen shiplaps everywhere, but may have referred to them as wood panels. Shiplaps are a type of inexpensive wooden board or panels fixed onto the sides of barns, sheds, and homes.
- **Shoring:** Temporarily installed on site, shoring is the method in which metal or timber props are assembled to support the structure during construction. Shores can be installed vertically, horizontally, or diagonally, depending on the support needed.
- **Soil Stockpile:** The grown-up version of the sand pyramids we used to do as kids, soil stockpiles are created when bulldozers excavate the soil on site and stack them in piles. The piles never go to waste because they are used later on for level grading.
- **Wall Stud:** Wall studs are crucial members of wooden or steel wall frames, as they are the vertical elements that help support and transfer loads of bearing and nonbearing walls.
- **Superstructure:** In general terms, superstructure simply means a structure built on top of another structure. Typically, this term is used to describe any part of a building that is above ground, with the parts of the building below ground conversely referred to as the substructure.
- **Thin-Shell Structure:** Frequently used in modern-day architecture, thin-shell structures are lightweight concrete elements, typically used on roofs. These large elements are usually curved, making use of the structural performance of certain forms to allow reduced material thickness.
- **Tie (Cavity Wall):** There are times when two elements of a building can not be merged together, and this is when ties come to the rescue. Ties in cavity walls are typically made of metal or plastic wires, and are placed in between the two materials, "tying" them together to create a homogenous body.
- **Topping Out:** A ceremonial practice that traces back to ancient Scandinavia, topping out originally referred to when the builder installs a wooden beam on top of the structure to indicate its completion. These days, it is simply the moment when



the uppermost structural element is installed and is often heralded as a major construction milestone.

- **Trombe Wall:** Developed by French engineer Felix Trombe and architect Jacques Michel in the 1960s, a trombe wall is a solar building element that is designed for cold countries. Similar to the greenhouse principle, it is when a glass external layer is built outside walls with openings, absorbing the heat during sunlit hours of winter. The heat is then slowly released overnight to provide warmth through the openings.
- **Underpinning:** Underpinning is the act of strengthening an existing structural foundation. If the project is being done on a previously built structure, the foundation might not be strong enough or new enough to carry the new building. Underpinning can be mass concrete, beams and base pinning, or mini-piled pinning, depending on the suitable solution to each structure.
- **Virtual Design & Construction:** or VDC, includes all the multi-disciplinary models of a project. The list includes, but is not limited to, engineering modeling (product, process), analysis methods, model-based designs, scheduling, costs, and visualizations.
- **Voided Biaxial Slab:** To be able to reduce the cost and weight of large-spanned reinforced concrete slabs, Joseph-Louis Lambot decided to create voids inside the concrete blocks, reducing the amount of concrete used but maintaining the overall endurance and external appearance of the slabs. These slabs are called voided biaxial slabs and are heavily used in construction nowadays.

**Self-Check -2****Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What does mean the term Underpinning in construction? (5 points)
2. What does mean the term Superstructure? (5 points)

Note: Satisfactory rating - 5 and 5 points

Unsatisfactory - below 5 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions



Answer key


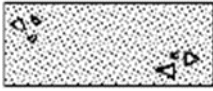
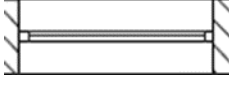






Self-Check -1

Question #1:

1.

Abbreviation	Definition	Abbreviation	Definition
HWB	Hand Wash Basin	TBR	Timber
AFF	Above Finished Floor	Stl	Steel
C.C.	Center to Center	CF	Concrete floor

2)

 Lamp	 Concrete	 Window
 Plaster	 North arrow	 Earth
 Door Opening	 Gravel	 Sand

Self-Check -2

Question #:

1. Underpinning is the act of strengthening an existing structural foundation.
2. superstructure means a structure built on top of another structure. It is used to describe any part of a building that is above ground.



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