Carpentry

Level-II

Learning Guide-62

Unit of Competence: Construct Stairs and Stair Components

Module Title: Constructing Stairs and Stair Components

LG Code: EIS CRP2 M13 0919Lo-81LG-62

TTLM Code: EIS CRP2 M13 0919V1

LO8: Secure stair to structure and line span- drill area

Instruction Sheet #1	Learning Guide # 62

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

- Securing stair to structure and line span- drill area
- Designed securing of stair to building
- Framing , lining and fixing Span- drill, where applicable,

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:

- ✓ Secure stair to structure and line span- drill area
- ✓ Designed securing of stair to building carried out during/on completion of assembly.
- ✓ Span- drill, where applicable, framed, lined and fixed out to specified finish

Learning Instructions:

Read the specific objectives of this Learning Guide.

Follow the instructions described below

Read the information written in the information Sheets below

Accomplish the Self-check

If you earned a satisfactory evaluation from the “

Do the “LAP test” (if you are ready).

Information sheet #1	Secure stair to structure and line span- drill area

1.1 Securing stair to structure and line span- drill area

1.2 Categories for staircase classification

Staircases can be classified according to different criteria, but here only the three most important ones here considered (flight of stairs shape, purpose and the material used for their structure –more on the last criteria is to be found in the “Materials for staircases” theme file)

The classifications to be presented are not singular: there is a possibility to reconsider staircases in other categories as well - after the spaces that are served (interior, exterior), design, tread shape etc

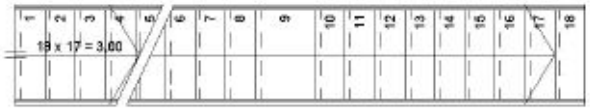
1.3 According to the shape of the flight of stairs

There can be stairs with flights that are straight, curved, balanced (with or without balanced treads). The shape must be chosen not only conforming to the available space (that staircases must occupy to its full use, with a minimum of material), but also to desired esthetic impression.

- **1-8 Staircases with straight flights:**

1. Straight staircase with one flight of stairs and no landing
2. Straight staircase with one flight of stairs and a landing
3. Straight staircase with 2 flights of stairs at a 90° turn
4. Straight staircase with 2 flights of stairs at a 180° turn
5. Straight staircase with 3 flights and 2 landings at a 90° turn
6. Straight staircase with 4 flights and 3 landings at a 90° turn
7. Straight staircase with 3 flights and a landing at a 90° turn
8. Straight staircase with 3 flights and a landing at a 180° turn

1.



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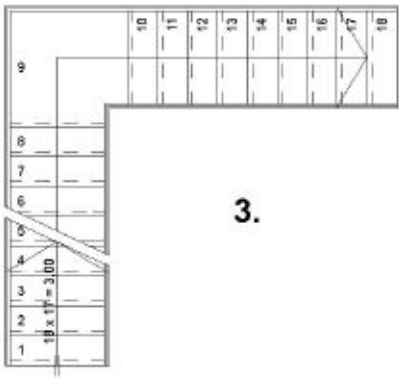

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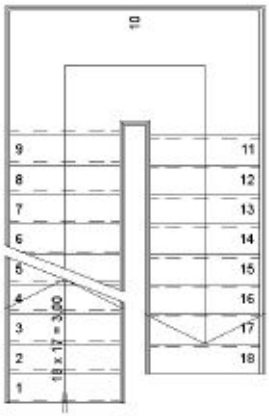

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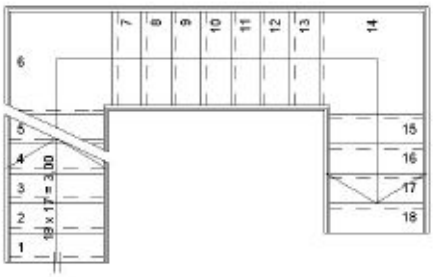

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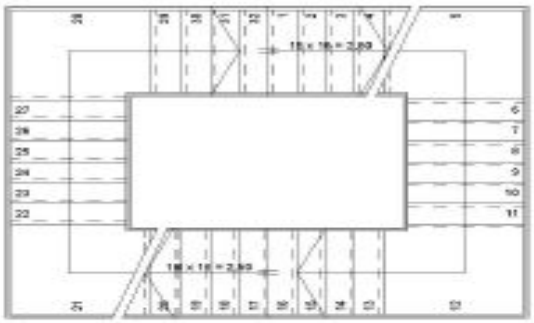

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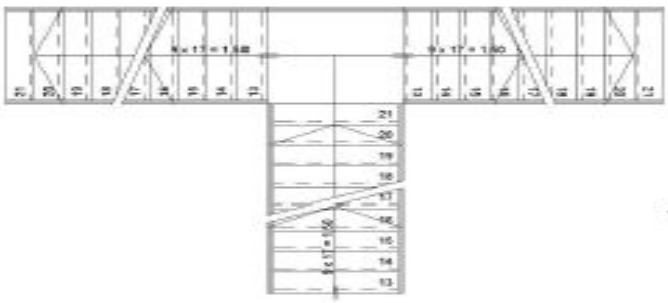

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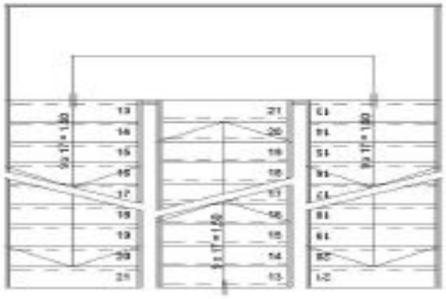
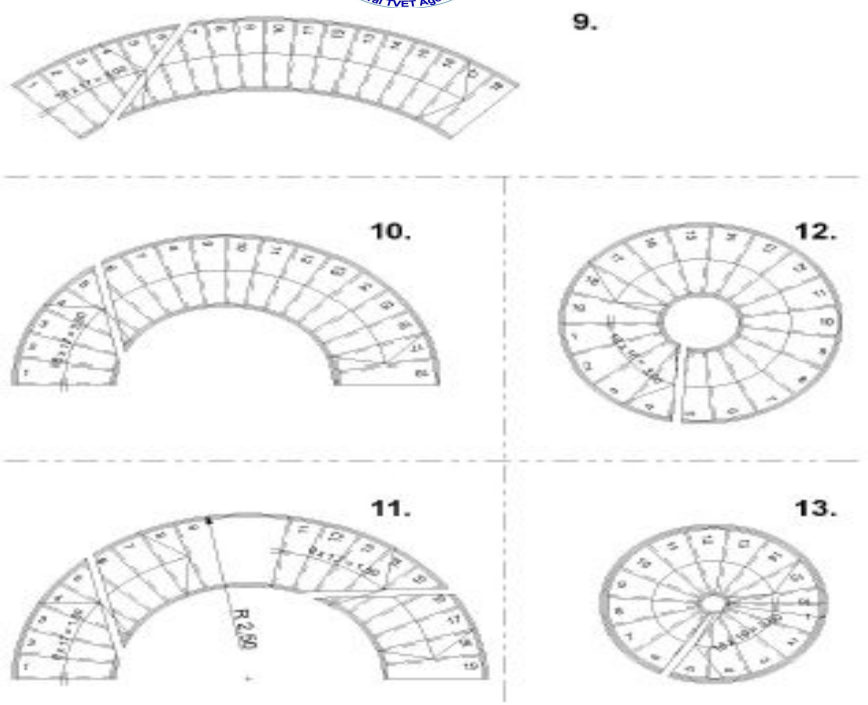


8.

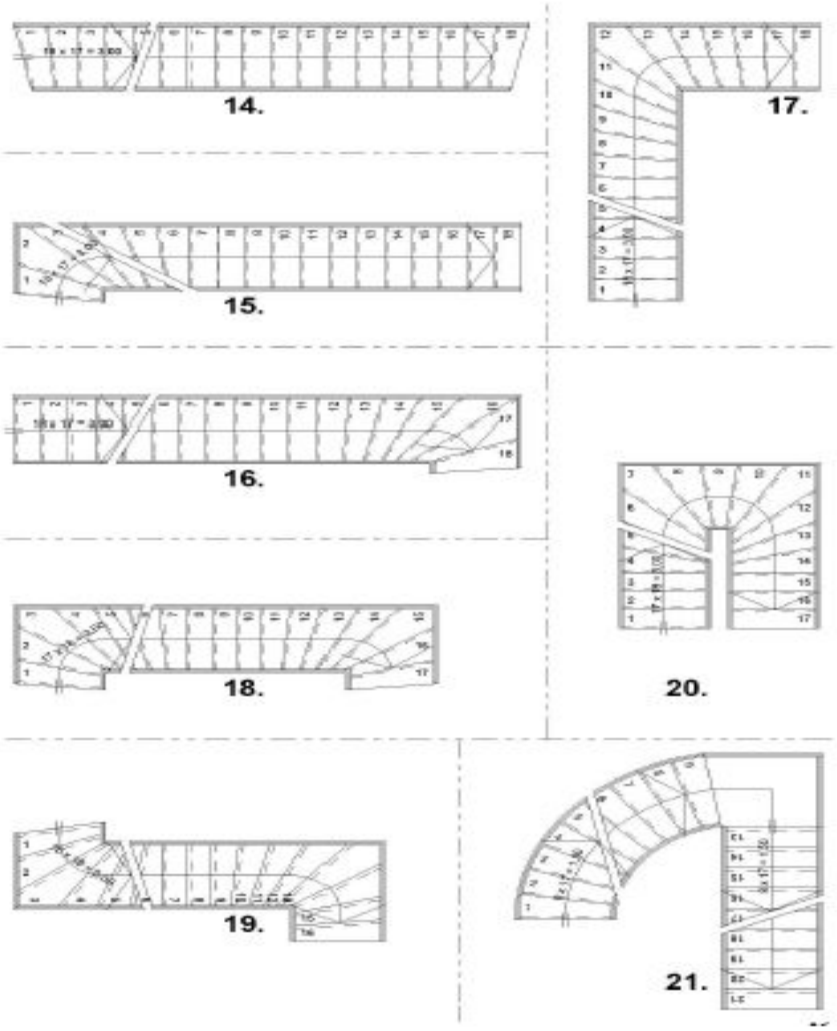
- **9-12 Curved/Helical staircases**

9. Curved staircase with an arch shape
10. Curved staircase with an “cosinus” arch shape
11. Curved staircase with an “cosinus” arch shape and a landing
12. Circular curved staircase
13. Helical staircase



- **14-21. Stairs with balanced treads**

14. Straight balanced staircase
15. Straight staircase, balanced on the inferior part
16. Straight staircase, balanced on the superior part
17. Balanced staircase with a 90° turn
18. Balanced staircase on both the inferior and superior parts
19. Double balanced staircase on both the inferior and superior parts
20. Balanced staircase with a 180° turn
21. Staircase with a straight flight and a curved one


14.
17.
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19.
21.

Self check # 1	Written test

Name: _____ Date: _____

Part: I true or false item

Direction: if the statement is correct write true if the statement is wrong write false on space provided. (5 mark)

_____1. There can be stairs with flights that are straight, curved, balanced with or without balanced tread.

Note: Satisfactory rating – above 50% **Unsatisfactory - below 50%**

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

Name: _____ Date: _____

Answer sheet

Score = _____

Rating: _____

Information sheet #2	Designed securing of stair to building

2.1 According to the purpose

The place in which the staircases will be positioned determines their classification in monumental staircase, main staircases and secondary ones .Monumental staircases are most often found in public buildings ,not just on the outside but also the inside ,though there is the possibility of their use in residential buildings .They can be described as elegant ,with outstanding architectural detailing .Main staircases are situated indoor , serving the building by ensuring proper flow between floors ,while the secondary staircases have an extra purpose ,ensuring safety evacuation in case of need ,transport of goods ,etc.

2.2 Balanced staircases with a 180° turn

This type of staircase can be designed for different spaces. It's not supposed to be a safety evacuation staircase, since it serves only one circulation flux .It's the most economical way to occupy space because the treads also replace the landing.

The preliminary phase to the graphic construction of the balanced staircase with a 180 turn consists of: according to the floor height and the staircase formula, the dimension of the treads is decided

1. The flight of stairs are drawn
2. The width of the handrail is added
3. The line of walk (or step line) is constructed (at 50cm from the edge of the handrail ,on staircases with length smaller than 1 m ,at 60 cm staircases with length bigger than 1 m)
4. The line of walk drawn on the length of the treads

Note: For balanced staircases with a 180 turn, it's highly recommended to orient the tread after the axis of the staircase in order to avoid a lack of precision when finishing corners, especially if the staircase is enclosed within a shaft or has rectangular shape. If the staircase is open or has polygonal shape, this note does not apply.

5. after determining the number of steps that need balancing and the balancing limit line (also known as the balancing line – it's drawn at a distance at least as equal to the double of the width of the flight of stairs or the non rectangular treads are being counted and a twice as that treads are going to be balanced (fig.1.))

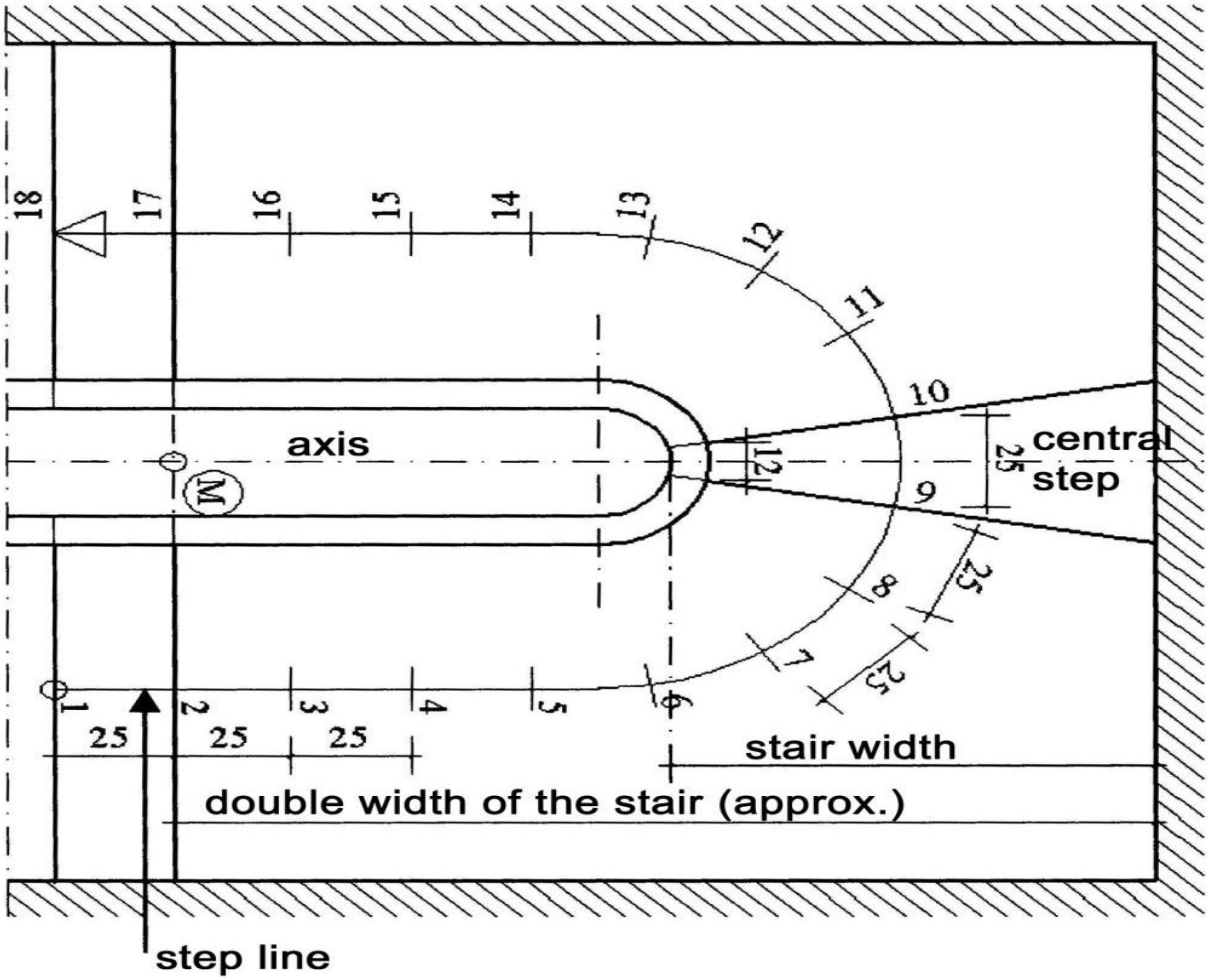

Fig. 1 The preliminary phase to the graphic construction of the balanced staircase with a 180 turn

Self check # 2	Written test

Name: _____ Date: _____

Part: I true or false item

Direction: if the statement is correct write true if the statement is wrong write false on space provided.

_____1. According to the floor height and the staircase formula, the dimension of the treads is decided

Note: Satisfactory rating – above 50% **Unsatisfactory - below 50%**

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

Name: _____ Date: _____

Answer sheet

Score = _____

Rating: _____

Information sheet # 3	Framing, lining and fixing Span- drill, where applicable

3.1 Framing, lining and fixing Span- drill, where applicable

3.1.1 Plywood paneling

Plywood is a type of manufactured wood made from thin sheets of wood. It is then glued together for greater strength. A common reason for using plywood instead of natural wood is its resistance to cracking, shrinkage, twisting/warping, and its general high degree of strength. Also, plywood can be manufactured in sheets far wider than the trees from which it was made.

It has replaced many dimensional lumbers on construction applications for these reasons.

Plywood and fiberboard can be used for interior wall coverings; however, plywood is most commonly used. It comes in 4-feet-wide and 5-to 8-feet-long sheets, 1/4 to 3/4 inch thick. It is usually applied vertically from the floor to the ceiling. When plywood is correctly applied (with flush joints), the joints do not need to be concealed. However, to improve wall appearance, joints may be covered with moldings. These may be battens fastened over the joints or applied as splices between the panels. Less expensive plywood can be covered with paint or covered in the same way as plastered surfaces.

3.1.2 Hardboard paneling:

Hardboard Panels are an engineered wood product that is hard and dense. Hardboard Panels are manufactured from exploded wood fiber, the core is made up of medium or high density fiberboards, which has been compressed. Hardboard Panels are homogeneous with no grain. Hardboard Panels are ideal for furniture, construction, appliance and cabinetry. Hardboard or wood can be relatively inexpensive. The surface is more rigid so there tends to be is less cracking in the painting.

Hardboard is easy to cut to the size you want. There's usually a smooth side and one with a weave-like finish which is very coarse; you can paint on the painted smooth side hard board is manufactured with a vinyl or plastic coating bonded to the face. This results in a durable surface. It’s available with a variety of effects. Fiberboard has minimal expansion and contraction so the core is very stable. Fiberboard is also denser and harder than most wood and is less prone to denting. Floors with a fiberboard core are hydrophobic and must never be exposed to large amounts of water or very high humidity - the expansion caused from absorbing water combined with the density of the fiberboard, will cause it to lose its form. Fiberboard is less expensive than timber.

3.1.3 Wood board paneling:

Paneling of different wood comes in random widths of 4, 6, 8, 10, 12, inches, with a dressed thickness of approximately ¾ of an inch. The lengths available are from 6to 16 feet. There are several edge types, but boards with tongue and groove edges provide the best results for concealing the joints.

A number of interesting effects can be produced with board paneling .it can be installed vertically, horizontally, diagonally or in a combination of these partitions.

Self check # 3	Written test

Name: _____ Date: _____

Part: I true or false item

Direction: if the statement is correct write true if the statement is wrong write false on space provided.

_____1. Plywood is a type of manufactured wood made from thin sheets of wood.

---------- 2. Hardboard Panels are an engineered wood product that is hard and dense.

----------3. A number of interesting effects can be produced with board paneling .

Note: Satisfactory rating – above 50% **Unsatisfactory - below 50%**

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

Name: _____ Date: _____

Answer sheet

Score = _____

Rating: _____

Reference

Publications about wood Order at www.swedishwood.com/publications.

Prepared by: Colin mackenzie Timber Queensland Limited First produced: April 2007 Revised: May 2012, October 2013

Www.jeld-wen.co.uk

Design Guide 34 Steel-Framed Stairway Design

Answers key for self check information sheet LG -62

Self check -1

1. True
2. True

Self check -2

1. True

Self check -3

1. True
2. True
3. True

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