Carpentry

Level-II

Learning Guide-61

Unit of Competence: Construct Stairs and Stair Components

Module Title: Constructing Stairs and Stair Components

LG Code: EIS CRP2 M13 0919L7-LG-61

TTLM Code: EIS CRP2 M13 0919V1

LO7: Install spiral stair/curved string

Instruction Sheet	Learning Guide # 61

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

- Marking Location of stair and first step accurately.
- Erecting and fixing Central post into true position,
- Supporting Initial string section temporarily.
- Fitting and fixing Treads and risers into position
- Developing Stair progressively

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:

- ✓ Location of stair and first step accurately marked on floor.
- ✓ Central post erected into true position, fixed at floor and temporarily braced at top.
- ✓ Initial string section temporarily supported in place for assembly.
- ✓ Treads and risers fitted and fixed into position to specification.
- ✓ Stair progressively developed with the extending, supporting and fixing of curved string.

.**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	Marking Location of stair and first step accurately

1.1 Marking Location of stair and first step accurately

1.1.1 Interior stair

This section covers the construction steps the joiner will follow. Interior timber stairs can be constructed as show in Figures 2a and 2b. Solid timber or medium density fiberboard sheet (MDF) may be used in the construction. MDF is normally used for treads and risers. It is glued and screwed while solid timber may be nailed and screwed. Stairs are constructed using solid timber stringers as support for the treads and risers. The treads are housed in rebates in the stringer and held in place by wedges and glue blocks (Figures 2a and 2b). A stringer that closes off the ends of the treads and risers is a closed stringer. If the stair is built between walls the stringer may be called a wall stringer. In this case the stringer is attached to the wall and transfers the stair load directly to the wall. It is generally sized to accommodate the tread and riser, and align with skirting. Stringers may be sized for the horizontal span using the joist tables from NZS 3604. Where the stringer is rebated to house the treads (Figure 2b) and spans between the floor levels, the thickness of the stringer should be increased by the rebate depth. The stringers are routed out to a minimum rebate depth of 13 mm.

It is important that the wedges hold the treads and risers securely into the rebated stringer. Failure to secure the treads and risers will cause ‘creaking’ of the stairs.

Fit sufficient glue blocks to tie the treads and risers securely together. Treads should be rebated into the base of the risers to prevent these members separating. The rebate will hold the tread to resist sagging.

A typical detail at the top riser of the stair is shown in Figure 3.

1.1.2 Exterior timber steps

A simple form of stair can be constructed from solid timber to provide access to exterior deck areas (Figures 4 and 5) using H3.2 treated timber (H4 where in ground contact). The treads can be attached to the stringers with by 50 x 50 mm brackets. The stair timber and fixings used should meet the same durability requirements as the deck

construction. Exposed bolts and other fastenings will need to be type 316 stainless steel or epoxy coated hot-dip galvanized steel.

Timber treads need to be coated with a non-slip finish or grooved to provide a slip resistant surface. Balustrades and handrails will be needed if a fall greater than one meter is possible. Refer to Building Code Clause F4/AS1 and B1/AS1. Open treads that have a gap of more than 100 mm between treads are not suitable where the stair may be accessed by the public, e.g. the front steps to a house.

Figure 1

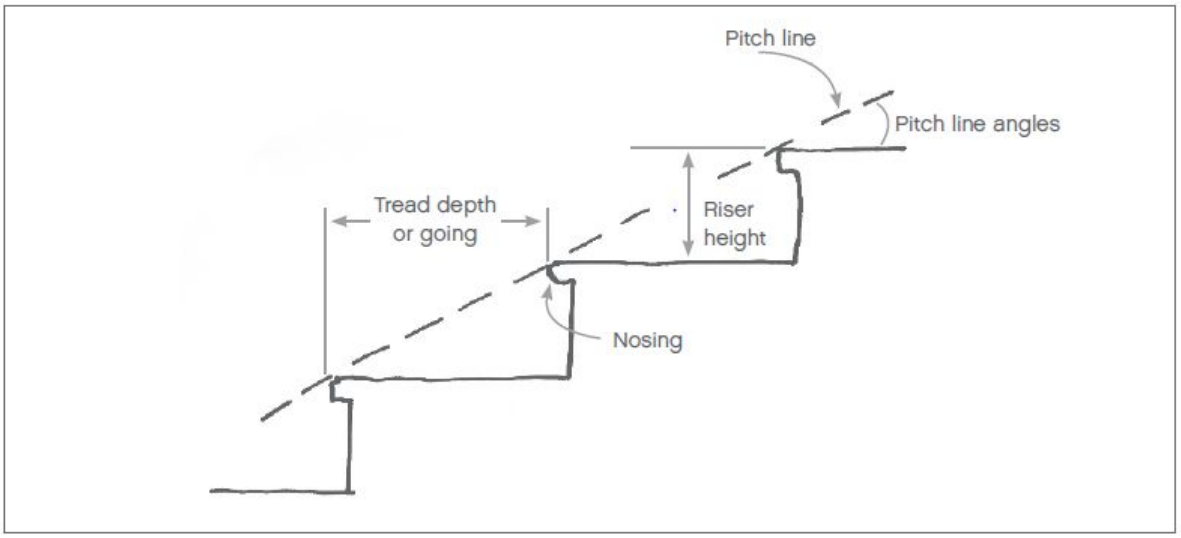

Fig-1 riser, nosing & treads

Figure 2 (a)

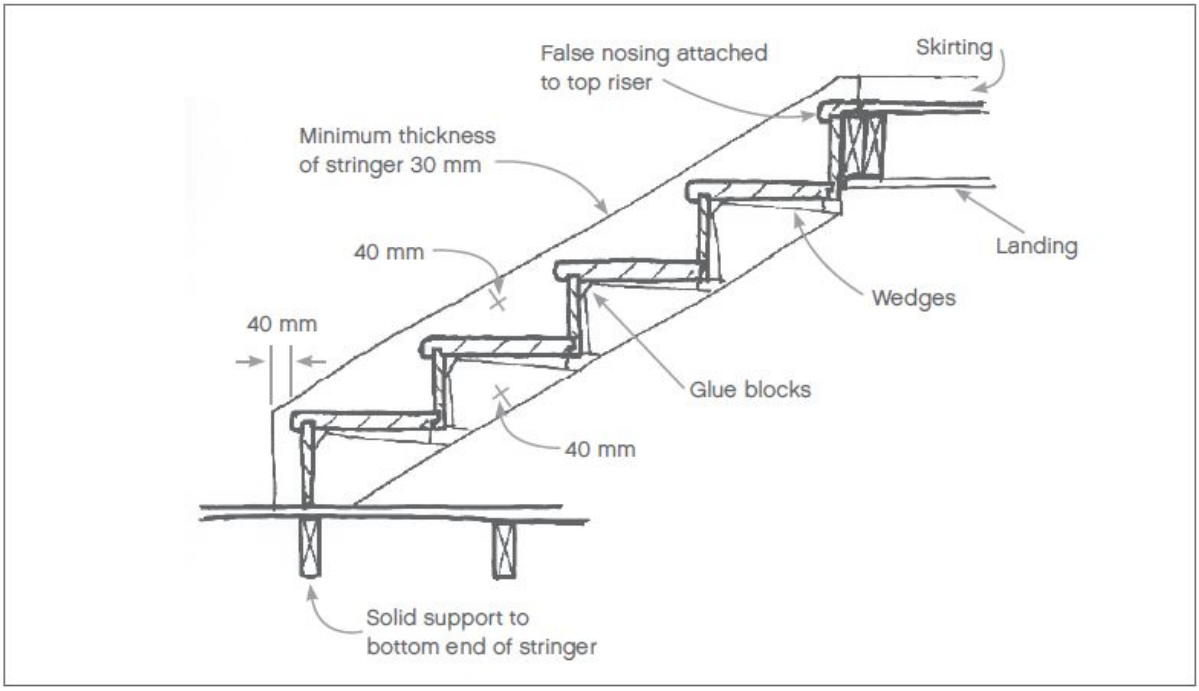

Figure 2 (b)

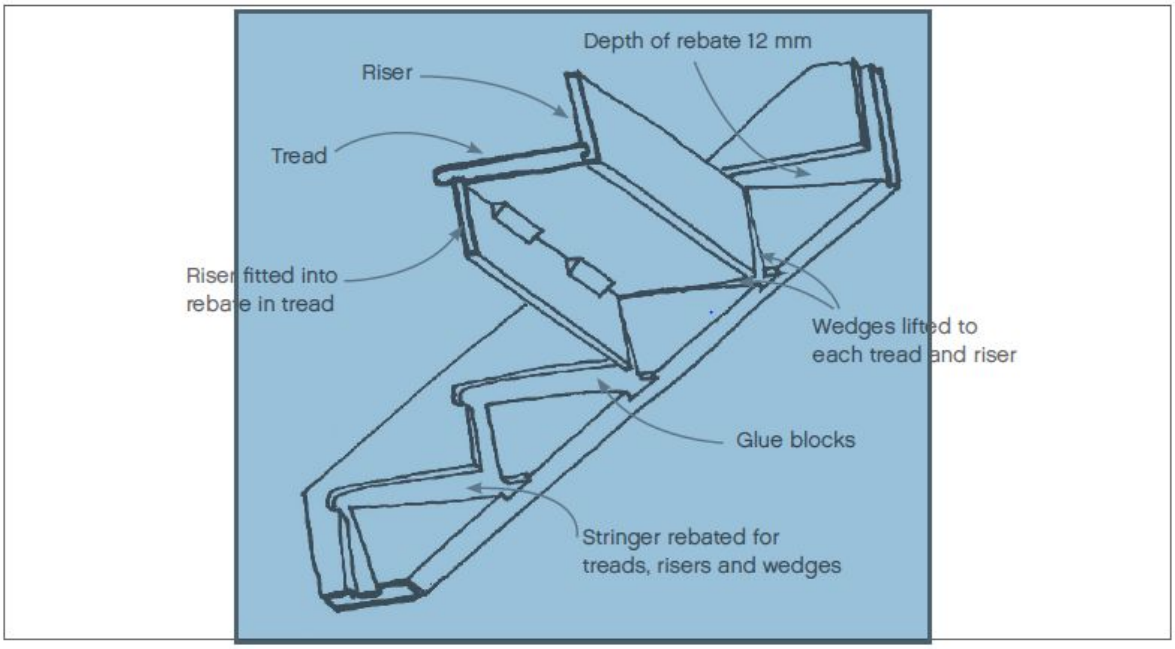

Fig-2 a&b wedges and glue blocks

Figure 3

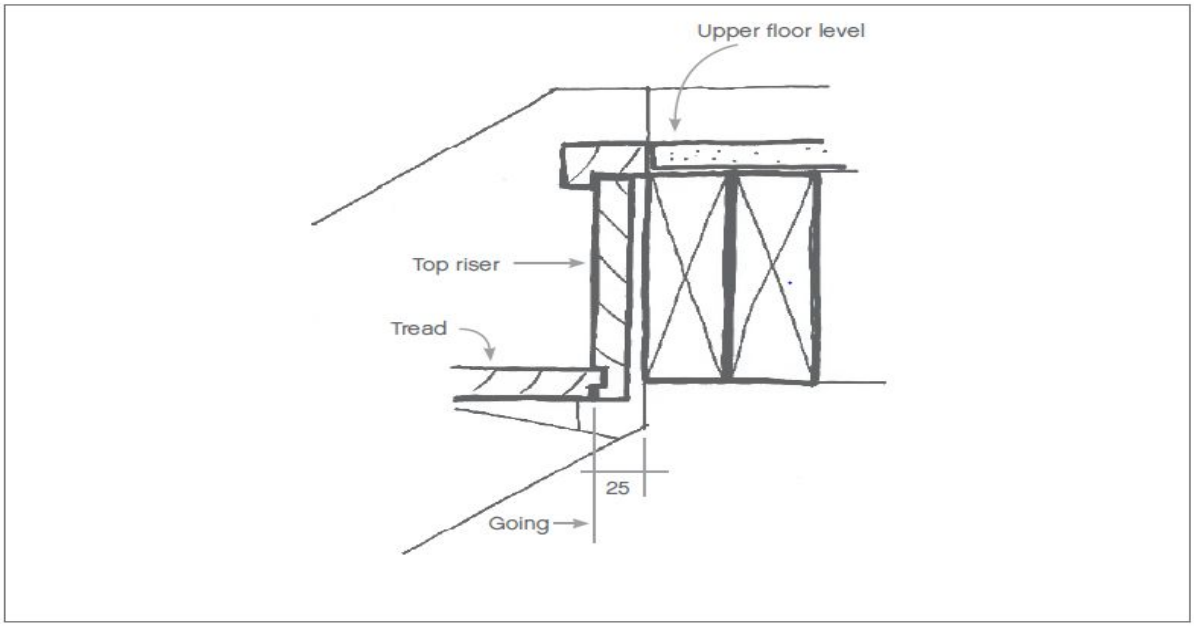

Fig- 3 top riser

Figure 4

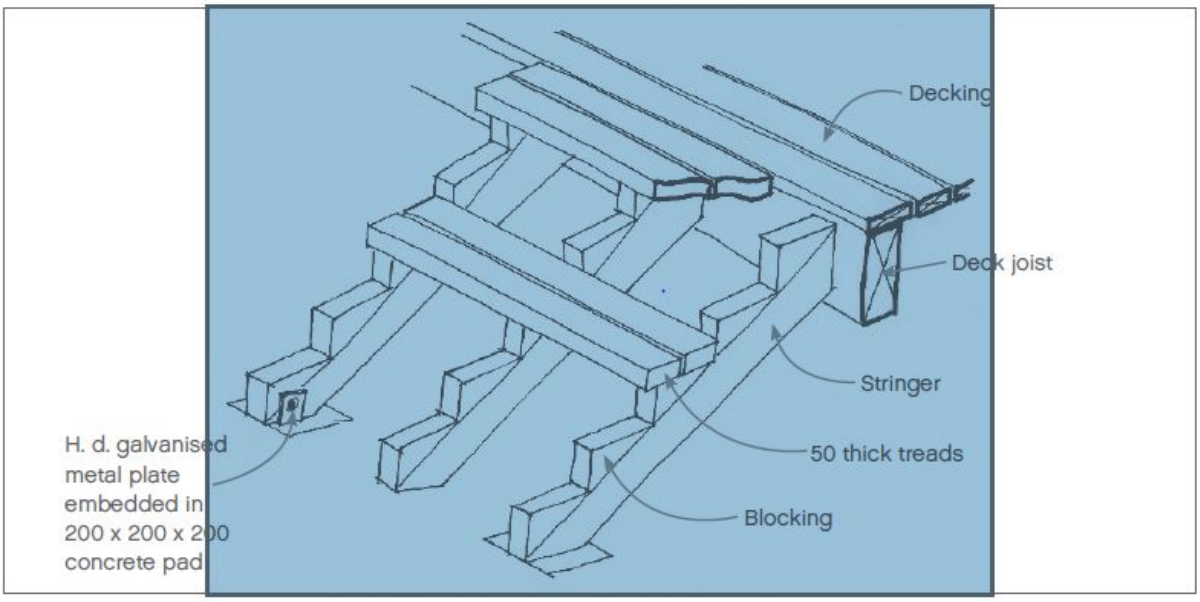

Fig-4 exterior deck areas on stringer

Figure 5

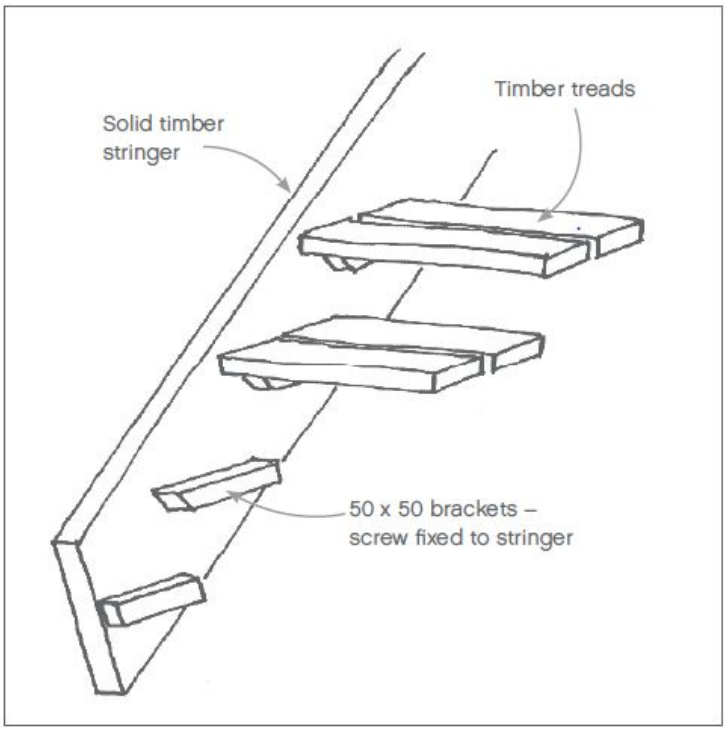

Fig-5 exterior deck areas on stringer

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. (2 mark each)

_____1. Stair timber and fixings used should meet the same durability requirements as the deck construction.

_____2. Failure to secure the treads and risers will cause ‘creaking’ of the stairs.

_____ 3. Timber treads need to be coated with a non-slip finish or grooved to provide a slip resistant surface.

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

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

Name: _____ Date: _____

Answer sheet

---------- 1.

---------- 2.

----------3.

Score = _____

Rating: _____

Information sheet # 2	Erecting and fixing Central post into true position

2.1 Erecting and fixing Central post into true position Erecting and fixing Central post

There are two basic types of handrail systems. “Post to post” and “over the post. The type of newel posts you choose will determine your handrail style. However, you may select any baluster type (metal, pin-top wood, square-top wood) and use it with an over-the-post or post-to-post rail system.

Handrails in post-to post newel systems attach to block-top or box newels.

These types of handrail systems require few, if any rail fittings. Handrails are attached to newels using screws, nails or rail bolts. Generally, these rail systems are easier to assemble and can be less expensive when used with common newel posts.

To construct a post-to-post handrail system, you will need the following types of newels, depending on the configuration of your staircase. Using the diagram below, the newels you would need are:

1. Starting Newel
2. Landing Newel
3. Rosette
4. Half Newel

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POST TO POST

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To construct a post-to-post handrail system, you will need the following types of newels, depending on the configuration of your staircase. Using the diagram below, the newels you would need are:

A. Starting Newel
B. Landing Newel
C. Rosette
D. Half Newel

OVER THE POST

Handrails in over-the-post newel systems travels over the newel posts, allowing the hand to run along the handrail continuously.

These systems require handrail fittings that fit on top of newel posts.

Handrails are attached to fittings using rail bolts.

Over-the-post systems are generally more expensive and labor intensive.

Constructing an over-the-post handrail system requires specific types of rail fittings that are unique to the configuration of your staircase. Using the diagram below, the most commonly used newels and fittings are listed.

A. Starting Newel
B. Landing Newel
C. Rosette
D. Straight Gooseneck (fitting)
E. 90° Gooseneck (fitting)
F. 180° Gooseneck (fitting)
G. Starting Fitting (volute or starting easing)

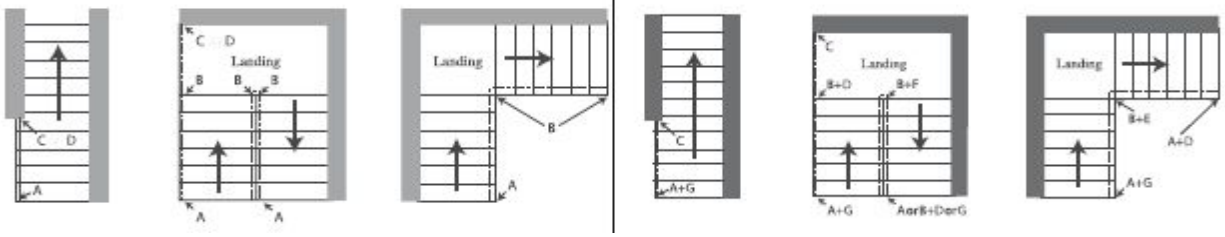
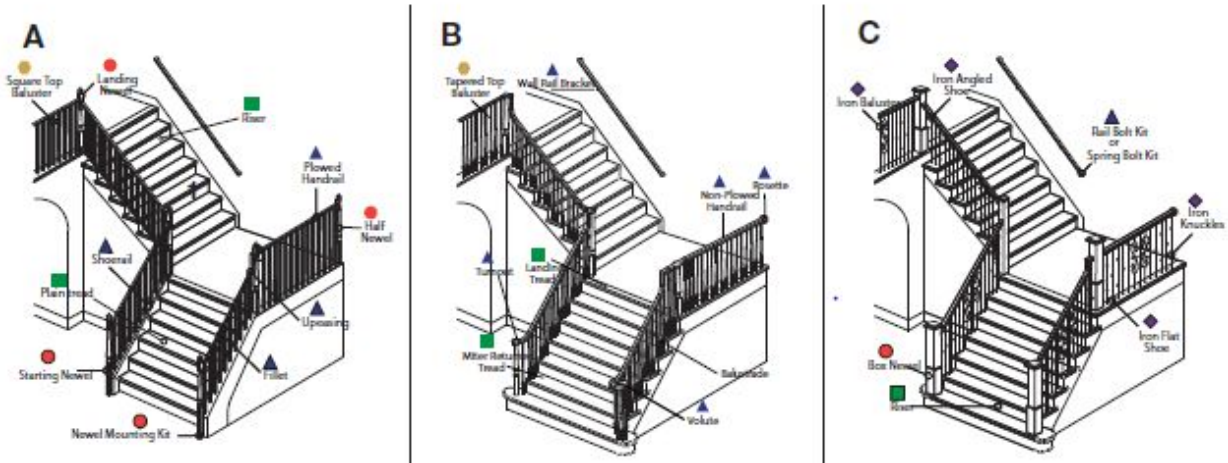


Fig- 1 post to post system and post



A. POST TO POST RAIL SYSTEM.
A traditional post to post newel system is shown with a few variations.

1. Block top newels where handrail attaches.
2. Block top newels that require a handrail fitting.

Rails with handrail fittings are generally more expensive and labor intensive

B. OVER THE POST RAIL SYSTEM.
An over the post system comprises handrail fittings that fit on top of pin-top newel posts, allowing the hand to flow interrupted over the railing.

These systems are generally more expensive than post-to-post. Many fittings are available through special order.

C. BOX NEWEL WITH METAL.
Box newels require few, if any handrail fittings. This stair shows a double bullnose starting step.

While this system is viewed as post-to-post, the use of box newels can make it more expensive than the traditional post-to-post system.

Fig-2a post to post rail system Fig-2b over the post rail system Fig-2c box newel with metal

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. (2 mark each)

_____1. Handrails in post-to post newel systems attach to block-top or box newels.

_____ 2. Handrails are attached to newels using screws, nails or rail bolts.

_____ 3. The type of newel posts you choose will determine your handrail style.

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: _____

---------- 1.

----------2.

----------3.

Information sheet # 3	Supporting Initial string section temporarily

3.1 Supporting Initial string section temporarily

Strings should be housed to receive the treads and risers to a depth of 12 mm or 0.4 times the string thickness, whichever is the greater. These housings should be tapered to receive wedges to support the tread and riser. The wedges should be fitted with adhesive to form a rigid joint. Where the aesthetics demand, wedges may be omitted, but an alternative side restraint system will be needed. Where strings are fitted into newels, the ends of the strings should have tenons formed to fit into the newels. The tenons should be not less than 12 mm thick and not less than 45 mm long. However, where two strings are joined to a newel one or both tenons may be reduced in length or hunched to allow both tenons to be accommodated. For winder stairs, the upper and lower strings may need to be enlarged to accommodate the housings of the winders where the stair turn occurs. Where a stair is to be supported on timber carriages the design and fabrication should be checked by a person qualified in structural detailing.

When marking out stair strings a routine will prevent mistakes and the wasting of time. A good practice is to always mark out the same hand string first. This practice should develop a clearer recognition of the correct positioning of members. Note: The accepted practice of marking right hand or left hand string first varies from state to state and region to region.

The procedure below is based upon marking the left hand string first.

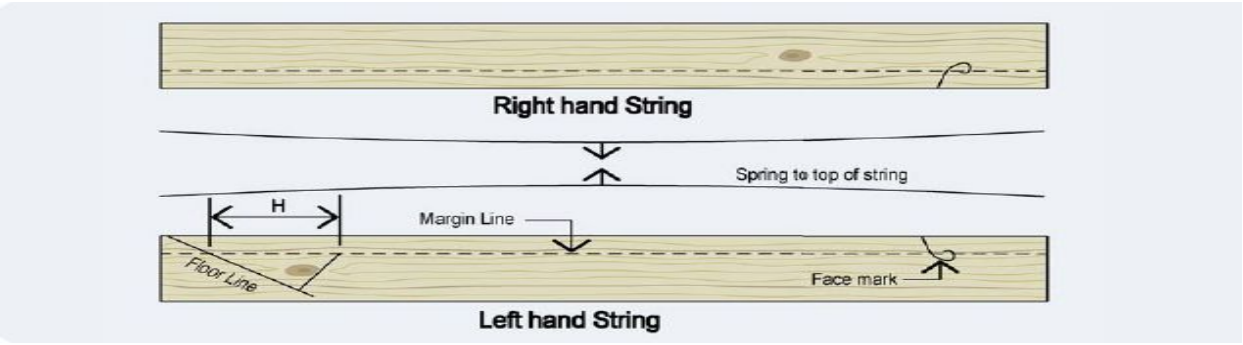


Fig-1 left hand string

Steps 1 The string handing is determined by looking up the flight or at the flight from the bottom. The string to the left is the left-hand string. The two strings in one flight are a pair; one left and one right-hand string.

Step 2 Place strings in pairs on saw tools and mark inside face and top edges – consider the effect of any spring or bow. For short flights with one step bolt, place the hollow of the bow in and for longer flights with two step bolts place the hollow of the bow out. String edges should be rounds up (spring up) (Figure 1).

Step 3 Having paired the strings by face and edge marking them, commence marking out the left-hand string. Draw the margin line with the margin template, then using the pitch board, start at the bottom of the flight and mark the position of the floor, the first rise and going (Figure 1). Before continuing to mark the string, a pair of wing dividers set to distance 'H' in Figure 1 should be used to mark along the margin line, the number of remaining steps in the flight. This action will serve to equalize successive marking with the pitch board and avoid possible loss or gain.

Step 4 After completing the marking of the first string, place both strings together as a pair and square the points on the margin line across from one to the other. This method will prevent length differences between the two strings (Figure 2 and Figure 3).

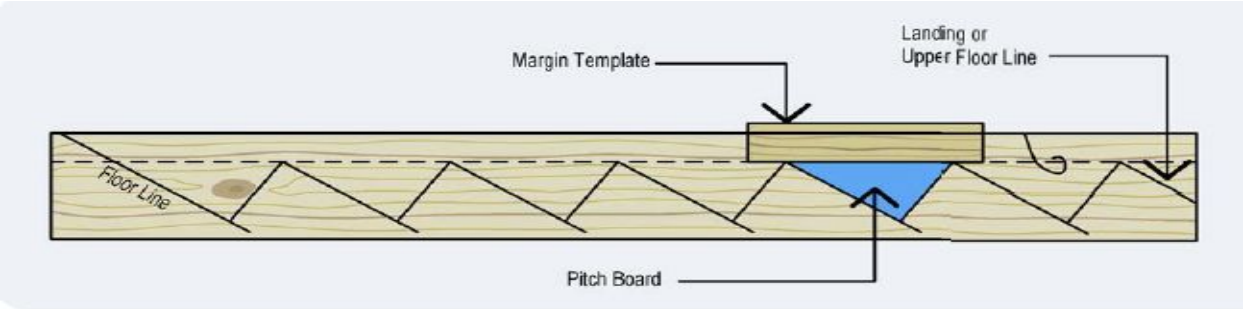


Fig- 2 marking of pitch board

Fig -3 marking out left string

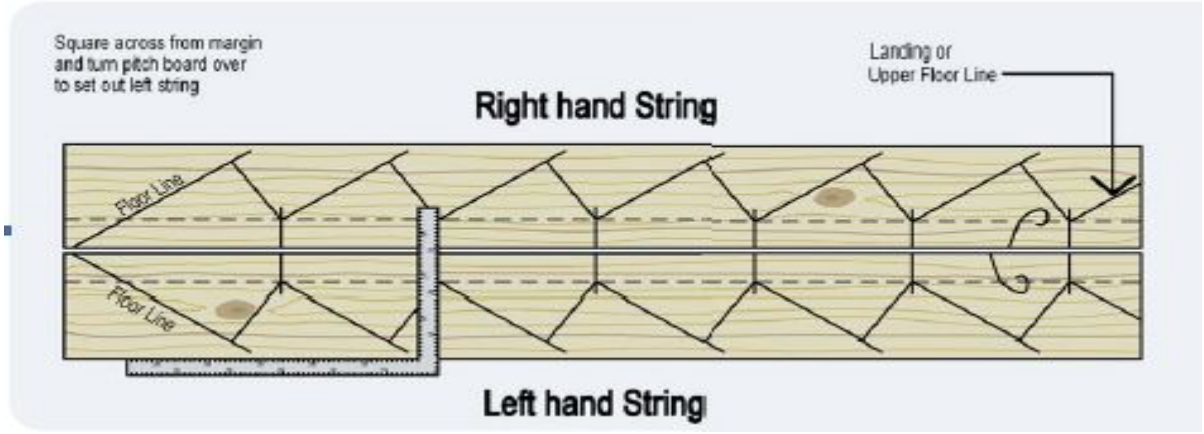


Fig- 4 right hand string

Step 5 When satisfied that the initial marking, as in Figure 4, is correct; proceed to complete the marking for the housings.

- Number each tread and riser.
- Select treads and risers (if used) in numerical order and scribe thickness and shape onto strings.
- Using a gauge, mark the housing depth (15 mm) onto the back edge of the string. Always gauge from the outside of the tread.

- This will account for any differences in thickness of the tread particularly when using unseasoned rough sawn timber. Note: Gauge depth = tread thickness minus housing depth (Figure 5).

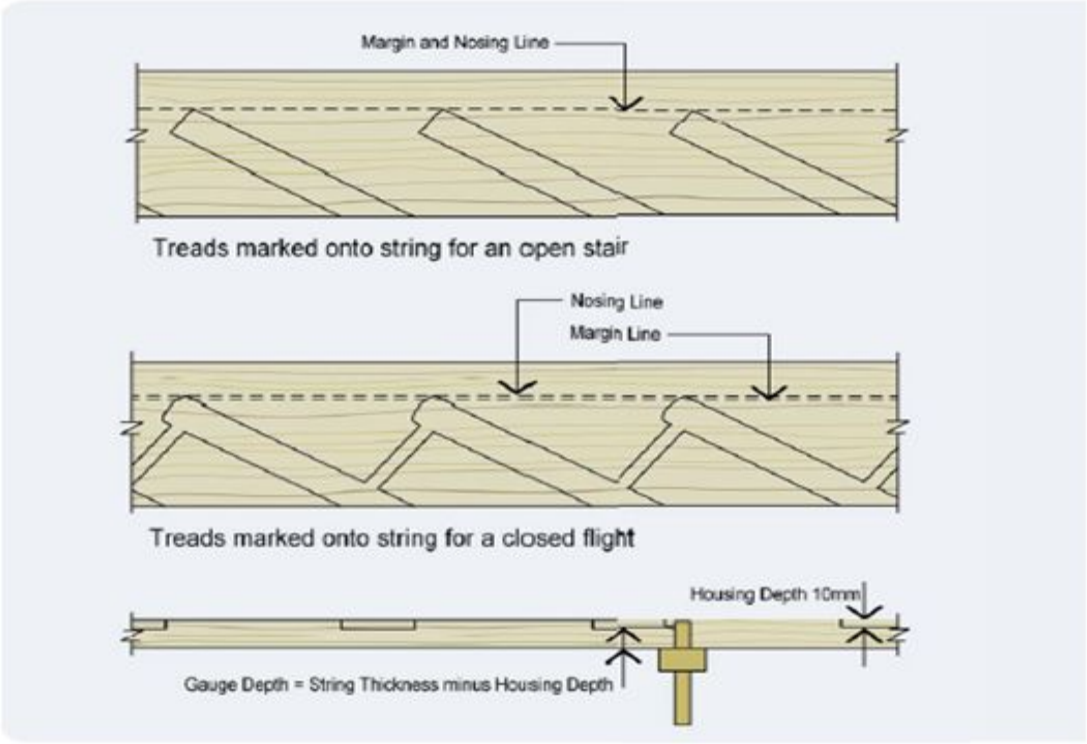


Fig-5 string marked out for housings

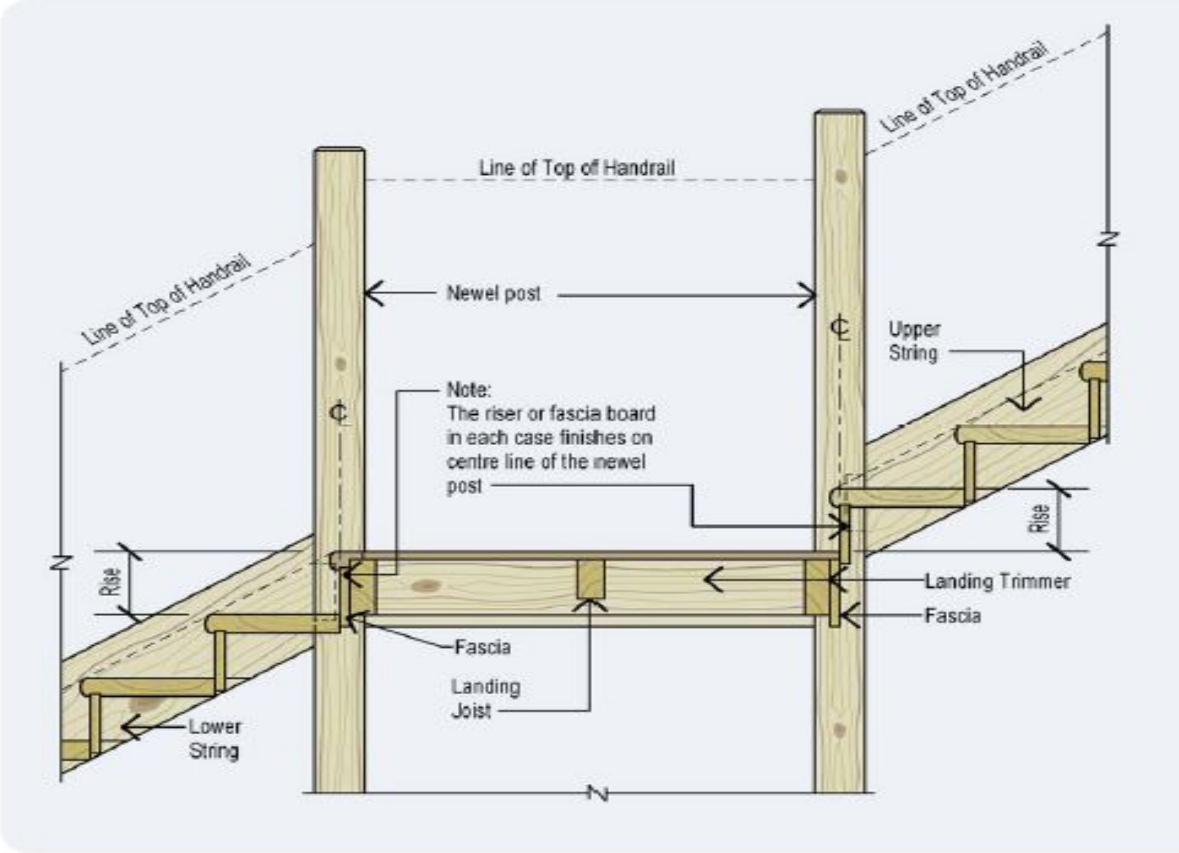


Fig-6 the assembled string marked out for housings

Table-1 type-1 stair 36 degrees Standard string dimension

String dimensions 36 degrees

Type 1 stairs 36 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D30	11000	30	220mm	3680	3772	3944	4176	4385
			225mm	3764	3858	4033	4271	4485
			245mm	4098	4201	4392	4651	4884
			275mm	4600	4715	4930	5220	5482
			295mm	4934	5058	5288	5600	5880
			320mm	5353	5487	5736	6074	6379
			350mm	5854	6001	6274	6644	6977

Type 1 stairs 36 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D40	13000	40	220mm	3891	3988	4170	4415	4636
			225mm	3979	4079	4264	4516	4742
			245mm	4333	4441	4643	4917	5163
			275mm	4863	4985	5212	5519	5796
			295mm	5217	5348	5591	5921	6217
			320mm	5659	5801	6065	6422	6744
			350mm	6190	6345	6633	7024	7376

Type 1 stairs 36 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D50	14000	50	220mm	3988	4088	4274	4526	4752
			225mm	4079	4181	4371	4629	4860
			245mm	4441	4552	4759	5040	5292
			275mm	4985	5110	5342	5657	5940
			295mm	5348	5481	5731	6069	6373
			320mm	5801	5946	6216	6583	6913
				6345	6503	6799	7200	7561

Table-2 type-1 stair 38 degrees Standard string thickness

String dimensions 38 degrees

TABLE E.1 - Max string span (on slope)

Type 1 stairs 38 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C24	11000	24	220mm	3712	3805	3978	4213	4424
			225mm	3797	3892	4069	4309	4525
			245mm	4134	4238	4431	4692	4927
			275mm	4640	4757	4973	5266	5530
			295mm	4978	5102	5335	5649	5932
			320mm	5400	5535	5787	6128	6435
			350mm	5906	6054	6329	6702	7038

Type 1 stairs 38 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C27	11500	27	220mm	3768	3862	4038	4276	4490
			225mm	3853	3950	4130	4373	4592
			245mm	4196	4301	4497	4762	5000
			275mm	4710	4828	5047	5345	5612
			295mm	5052	5179	5414	5734	6021
			320mm	5480	5617	5873	6219	6531
			350mm	5994	6144	6424	6802	7143

Type 1 stairs 38 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D30	11000	30	220mm	3712	3805	3978	4213	4424
			225mm	3797	3892	4069	4309	4525
			245mm	4134	4238	4431	4692	4927
			275mm	4640	4757	4973	5266	5530
			295mm	4978	5102	5335	5649	5932
			320mm	5400	5535	5787	6128	6435
			350mm	5906	6054	6329	6702	7038

String dimensions 38 degrees

Type 1 stairs 38 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D40	13000	40	220mm	3925	4023	4206	4454	4677
			225mm	4014	4115	4302	4555	4784
			245mm	4371	4480	4684	4960	5209
			275mm	4906	5029	5258	5568	5847
			295mm	5263	5395	5640	5973	6272
			320mm	5709	5852	6118	6479	6803
			350mm	6244	6400	6692	7086	7441

Type 1 stairs 38 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D50	14000	50	220mm	4023	4124	4311	4566	4794
			225mm	4115	4217	4409	4669	4903
			245mm	4480	4592	4801	5084	5339
			275mm	5029	5155	5389	5707	5993
			295mm	5395	5530	5781	6122	6429
			320mm	5852	5998	6271	6641	6973
			350mm	6400	6560	6859	7263	7627

Table-2 type-1 stair 40 degrees Standard string thickness

String dimensions 40 degrees

TABLE E.1 - Max string span (on slope)

Type 1 stairs 40 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C24	11000	24	220mm	3748	3841	4016	4253	4466
			225mm	3833	3929	4107	4350	4567
			245mm	4173	4278	4472	4736	4973
			275mm	4684	4802	5020	5316	5582
			295mm	5025	5151	5385	5703	5988
			320mm	5451	5587	5842	6186	6496
			350mm	5962	6111	6389	6766	7105

Type 1 stairs 40 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C27	11500	27	220mm	3803	3899	4076	4316	4533
			225mm	3890	3987	4169	4414	4636
			245mm	4236	4342	4539	4807	5048
			275mm	4754	4873	5095	5395	5666
			295mm	5100	5228	5466	5788	6078
			320mm	5532	5671	5929	6278	6593
			350mm	6051	6202	6485	6867	7211

Type 1 stairs 40 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D30	11000	30	220mm	3748	3841	4016	4253	4466
			225mm	3833	3929	4107	4350	4567
			245mm	4173	4278	4472	4736	4973
			275mm	4684	4802	5020	5316	5582
			295mm	5025	5151	5385	5703	5988
			320mm	5451	5587	5842	6186	6496
			350mm	5962	6111	6389	6766	7105

String dimensions 40 degrees

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Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C24	11000	24	220mm	3748	3841	4016	4253	4466
			225mm	3833	3929	4107	4350	4567
			245mm	4173	4278	4472	4736	4973
			275mm	4684	4802	5020	5316	5582
			295mm	5025	5151	5385	5703	5988
			320mm	5451	5587	5842	6186	6496
			350mm	5962	6111	6389	6766	7105

Type 1 stairs 40 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C27	11500	27	220mm	3803	3899	4076	4316	4533
			225mm	3890	3987	4169	4414	4636
			245mm	4236	4342	4539	4807	5048
			275mm	4754	4873	5095	5395	5666
			295mm	5100	5228	5466	5788	6078
			320mm	5532	5671	5929	6278	6593
			350mm	6051	6202	6485	6867	7211

String dimensions 40 degrees

Type 1 stairs 40 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D40	13000	40	220mm	3962	4061	4246	4496	4722
			225mm	4052	4154	4343	4599	4829
			245mm	4412	4523	4729	5007	5258
			275mm	4953	5077	5308	5620	5902
			295mm	5313	5446	5694	6029	6331
			320mm	5763	5907	6176	6540	6868
			350mm	6303	6461	6755	7153	7512

Type 1 stairs 40 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D50	14000	50	220mm	4061	4163	4352	4609	4840
			225mm	4154	4257	4451	4714	4950
			245mm	4523	4636	4847	5133	5390
			275mm	5077	5203	5440	5761	6050
			295mm	5446	5582	5836	6180	6490
			320mm	5907	6055	6331	6704	7040
			350mm	6461	6623	6924	7332	7699

Table-2 type-1 stair 42 degrees Standard string thickness

String dimensions 42 degrees

TABLE E.1 - Max string span (on slope)

Type 1 stairs 42 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C24	11000	24	220mm	3786	3880	4057	4296	4511
			225mm	3872	3969	4149	4394	4614
			245mm	4216	4321	4518	4784	5024
			275mm	4732	4850	5071	5370	5639
			295mm	5076	5203	5440	5761	6049
			320mm	5506	5644	5901	6249	6562
			350mm	6023	6173	6454	6835	7177

Type 1 stairs 42 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
C27	11500	27	220mm	3842	3938	4118	4360	4579
			225mm	3929	4028	4211	4459	4683
			245mm	4279	4386	4585	4856	5099
			275mm	4803	4923	5147	5450	5723
			295mm	5152	5281	5521	5847	6140
			320mm	5589	5728	5989	6342	6660
			350mm	6113	6265	6551	6937	7284

Type 1 stairs 42 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D30	11000	30	220mm	3786	3880	4057	4296	4511
			225mm	3872	3969	4149	4394	4614
			245mm	4216	4321	4518	4784	5024
			275mm	4732	4850	5071	5370	5639
			295mm	5076	5203	5440	5761	6049
			320mm	5506	5644	5901	6249	6562
			350mm	6023	6173	6454	6835	7177

String dimensions 42 degrees

Type 1 stairs 42 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D40	13000	40	220mm	4002	4103	4289	4542	4770
			225mm	4093	4196	4387	4645	4878
			245mm	4457	4569	4777	5058	5312
			275mm	5003	5128	5362	5678	5962
			295mm	5367	5501	5752	6091	6396
			320mm	5822	5967	6239	6607	6938
			350mm	6367	6527	6824	7226	7588

Type 1 stairs 42 degrees			String Depth	String Thickness				
Grade	E (N/mm²)	Fm,k (N/mm²)		26mm	28mm	32mm	38mm	44mm
D50	14000	50	220mm	4103	4205	4397	4656	4889
			225mm	4196	4301	4496	4762	5000
			245mm	4569	4683	4896	5185	5444
			275mm	5128	5256	5496	5820	6111
			295mm	5501	5639	5895	6243	6556
			320mm	5967	6117	6395	6772	7111
			350mm	6527	6690	6994	7407	7778

Operation sheet #3	Supporting Initial string section temporarily

Procedure for supporting initial string section temporarily

Steps 1 The string handing is determined by looking up the flight or at the flight from the bottom.

Step 2 Place strings in pairs on saw tools and mark inside face and top edges – consider the effect of any spring or bow.

Step 4 After completing the marking of the first string, place both strings together as a pair and square the points on the margin line across from one to the other.

Step 5 When satisfied that the initial marking, as in Figure 4, is correct; proceed to complete the marking for the housings.

Lap Test -1	Practical

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary equipments, tools and materials you are required to perform the following tasks within1 hour.

Task1. Perform Supporting Initial string section temporarily

Note: Satisfactory rating – above 100% **Unsatisfactory - below 100%**

Name: _____ Date: _____

Information sheet # 4	Fitting and fixing Treads and risers into position

4.1 Fitting and fixing Treads and risers into position

Steps Installing of Treads

The following steps describe this process:

- Rip the tread to proper width. This is usually the run of the stair plus 1-1/4 - inches.
- Measure distance from the offset to the skirt. Please note Fig. 2-16 here.

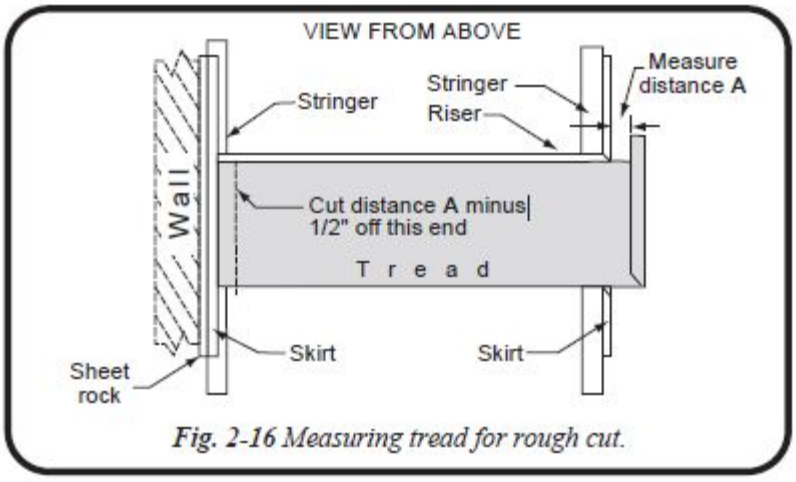

Fig. 2-16 Measuring tread for rough cut.

- Subtract 1/2-inch from this distance; measure and scribe a line on the opposite end of the tread and cut.
- Lay the tread in place.
- 5. Place a spacer that is 3/4-inch thick between the tread return and the mitered skirt. Please note Fig 2-17 here.

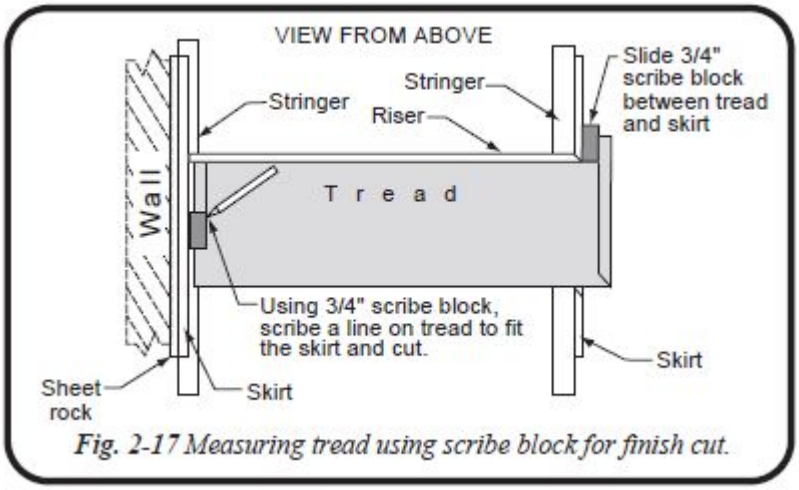

Fig. 2-17 Measuring tread using scribe block for finish cut.

- Slide the spacer out, being careful not to move the tread.
- Using the same spacer, scribe a line on the other end of the tread to match the wall skirt. Please note Fig. 2-17 again.
- Cut the tread to length following the line scribed on wall skirt end. When cutting the tread, leave the width of the pencil line to allow for a tight fit.
- Place construction adhesive on stringers, skirts, upper riser, and lower riser where tread will come in contact.
- Set tread into place and push tightly against all surfaces.
- Nail the tread into stringers and into the front riser. Please note Fig. 2-18 here.

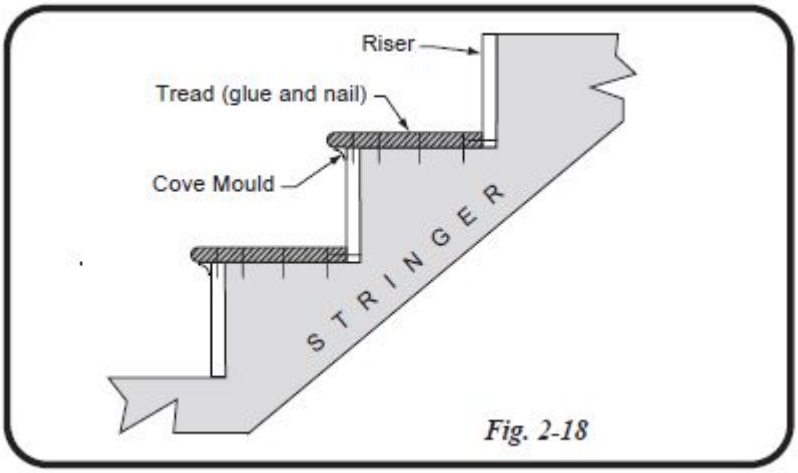

Fig. 2-18

Reach around the back of the upper riser and nail riser to tread. Trim bottom of tread with appropriate molding. (This is usually cove molding.)

Operation sheet # 4	**Fitting and fixing Treads into position**

Steps Installing of Treads

The following steps describe this process:

- Rip the tread to proper width. This is usually the run of the stair plus 1-1/4 - inches.
- Measure distance from the offset to the skirt. Please note Fig. 2-16 here.
- Subtract 1/2-inch from this distance; measure and scribe a line on the opposite end of the tread and cut.
- Lay the tread in place.
- 5. Place a spacer that is 3/4-inch thick between the tread return and the mitered skirt. Please note Fig 2-17 here.
- Slide the spacer out, being careful not to move the tread.
- Using the same spacer, scribe a line on the other end of the tread to match the wall skirt. Please note Fig. 2-17 again.
- Cut the tread to length following the line scribed on wall skirt end. When cutting the tread, leave the width of the pencil line to allow for a tight fit.
- Place construction adhesive on stringers, skirts, upper riser, and lower riser where tread will come in contact.
- Set tread into place and push tightly against all surfaces.
- Nail the tread into stringers and into the front riser. Please note Fig. 2-18 here.

Reach around the back of the upper riser and nail riser to tread. Trim bottom of tread with appropriate molding. (This is usually cove molding.)

Lap test 2	Written test

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary equipments, tools and materials you are required to perform the following tasks within1 hour.

Task1. Fitting and fixing treads and risers into position

Note: Satisfactory rating – above 100% **Unsatisfactory - below 100%**

Name: _____ Date: _____

Information sheet # 5	Fitting and fixing risers into position

5.1 Fitting and fixing risers into position

Risers may be constructed out of a variety of species of wood. The determination is usually based on certain variables: whether the stair will be carpeted, whether the risers will be painted, or whether the risers will be stained. All risers should be nailed and glued securely to the stringer so to strengthen the stair and eliminate the possibility of creaks.

The following steps describe this process:

- Cut a piece of material the height of the rise and 2-inches longer than the width of the stair.
- Lay the riser across the stringers with the end flush against the wall skirt.
- Scribe the riser to fit the wall skirt and cut.
- Place the riser back onto the stringers and scribe a line even with the long point of the mitered skirt. Please note Fig. 2-10.

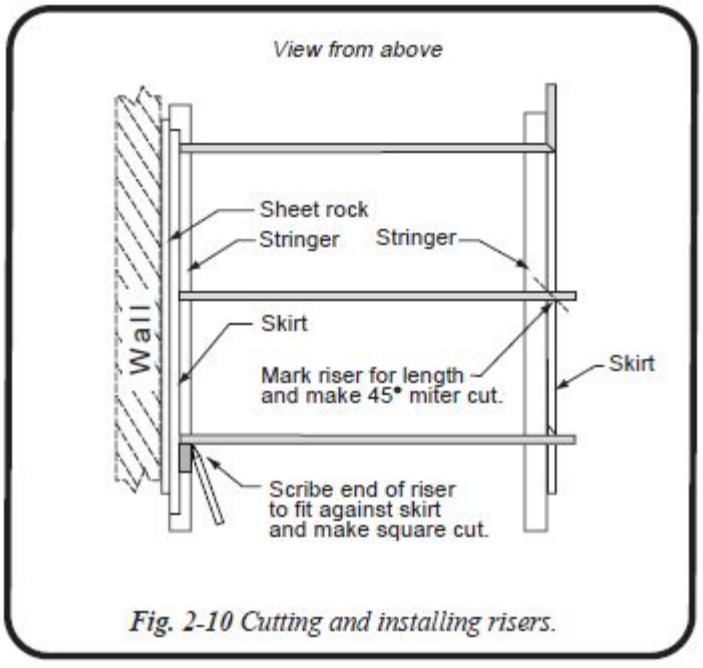

Fig. 2-10 Cutting and installing risers.

- Make a square cut on this line at a 45-degree miter.

- Place a small amount of wood glue on all areas where the riser is going to come in contact with the skirts. Use construction adhesive where the riser meets the stringers.
- Set the rise in place and nail it to the skirts and stringers.

Note: Special attention should be given to the two mitered edges, which should form a sharp corner**.**

- If necessary, shim the “wall side” of the riser to make it plumb.
- Add blocking to the frame of the stair for the newel posts.

Operation sheet # 3	**Fitting and fixing risers into position**

The following steps fitting and fixing risers into position

- Cut a piece of material the height of the rise and 2-inches longer than the width of the stair.
- Lay the riser across the stringers with the end flush against the wall skirt.
- Scribe the riser to fit the wall skirt and cut.
- Place the riser back onto the stringers and scribe a line even with the long point of the mitered skirt. Please note Fig. 2-10.
- Make a square cut on this line at a 45-degree miter.
- Place a small amount of wood glue on all areas where the riser is going to come in contact with the skirts. Use construction adhesive where the riser meets the stringers.
- Set the rise in place and nail it to the skirts and stringers.

Note: Special attention should be given to the two mitered edges, which should form a sharp corner**.**

- If necessary, shim the “wall side” of the riser to make it plumb.
- Add blocking to the frame of the stair for the newel posts.

Lap test # 3	Written test

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary equipments, tools and materials you are required to perform the following tasks within1 hour.

Task1. Fitting and fixing risers into position

Note: Satisfactory rating – above 100% **Unsatisfactory - below 100%**

Name: _____ Date: _____

6.1 Developing Stair progressively

6.1.1 Things to Remember

1. Always consult your local building codes before building a stair.
2. Riser jig should be tight to framing (in at least one spot) and plumb before marking.
3. The riser jig must be same thickness as riser material.
4. All connecting surfaces should be bonded with a high quality wood glue and/or construction adhesive.
5. Add backing or blocking to all areas where newel posts will be attached.
6. Make all of the necessary adjustments to the first and last rise to allow for finished floor thickness.
7. Make sure that all treads are level and all risers plumb.
8. Securely fasten all bull nose treads to the floor and stair structure.
9. Before continuing, check all finished rise and run dimensions to verify compliance with local building codes.

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. (2 mark each)

_____1. Always consult your local building codes before building a stair

_____2. The riser jig must be same thickness as riser material.

_____ 3. Securely fasten all bull nose treads to the floor and stair structure.

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

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

Name: _____ Date: _____

Answer sheet

---------- 1.

---------- 2.

---------- 3.

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 for self checks

Self check 1

1. True
2. True
3. True

Self check 2

1. True
2. True
3. True

Self check -5

1. True
2. True
3. True

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