Assessment Evidence Guide

for

"Assistant Steel Fixer/ Erector"

Level-2

(Summative Assessment)

National Vocational & Technical Training Commission

Instruction Sheet for the Candidate

Title of Qualification: National Vocational Certificate Level 2 in Steel Fixer& Erector(Assistant Steel Fixer/Erector)	**CS Code:**	**Level:**2	**Version:**01
Competency Standard Title: Fallow Safety Rules at Site Perform Basic Communication Skills Perform Basic Technical Drawings Demonstrate Basic Numeracy Skills Maintain Steel Fixing & Erecting Tools, Equipment and Materials Perform Cutting and Bending Rebar for Simple Shapes Execute the Steel Work of Foundations Execute steel work in column for domestic building Execute steel work in beams for domestic building Execute steel work in roof slabs for domestic building Execute steel work in stairs for domestic building Execute steel work in arches	**Assessment Date (DD/MM/YY):** **Assessment Time: 5 hrs.**		

Candidate Details	Name: ..... Registration/Roll Number:.....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the giventime frame (for practical demonstration & assessment):** **Assessment Task 1:** Candidate is required to prepare fabrication of single flight stair with columnand stringer beam as per structural drawing and bar bending sechudle given by assessor. **And complete:** **1. Knowledge assessment test (Written or Oral)** **2. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria 1:** Select and wear the PPEs relevant to Job. **Performance Criteria 2:**Select the tools as per job requirement. **Performance Criteria 3:**Arrange the steel fixing& erecting tools, components and accessories at appropriate positions in store **Performance Criteria 4:**Identify and label/tag the damaged and out of order tools and accessories. **Performance Criteria 5** Identify risk associated with job to be done

	Performance Criteria 6: Select the types of rebar as per job **Performance Criteria 7:** Carry out the instructions of the supervisor **Performance Criteria 8:** Interpret bar bending schedule **Performance Criteria 9:**Interpret the drawing **Performance Criteria 10:**Straighten up the rebars **Performance Criteria 11:**Measure and mark the required cut length on rebars **Performance Criteria 12:**Cut the rebars with relevant cutting tool **Performance Criteria 13:** Make the bundle of cut rebars and mark the bar code using tag for foundation. **Performance Criteria 13:**Place rebars as per drawing **Performance Criteria 14:**Place dowel rebars for neck column **Performance Criteria 15:**Bind rebars with binding wire according to the drawing **Performance Criteria 16:**Provide steel chairs and spacers for the erected frame work of steel **Performance Criteria 17:**Interpret reinforcement drawing **Performance Criteria 18:**Interpret bar bending schedule **Performance Criteria 19:** Measure and mark the required cut length on rebars as per bar bending schedule **Performance Criteria 20:**Cut the rebars with relevant cutting tool **Performance Criteria 21:** Make the bundle of cutting rebars and mark the bar code using tag. **Performance Criteria 22:** Bend the bar to make the lateral ties, as per bar bending schedule. **Performance Criteria 23:**Make the bundle of ties and attach the bar code tag for reference. **Performance Criteria 24:** **Performance Criteria 26:**Place the lateral ties **Performance Criteria 27:** Erect the main vertical rebars one by one with dowel bar of column within the lateral ties. **Performance Criteria 28:** Bind the main vertical rebars with ties with the help of binding wire according to drawing/bar bending schedule. **Performance Criteria 29:**Fix spacer around the column as per drawing **Performance Criteria 30:**Bend the rebars to make the stirrups using bar bending schedule **Performance Criteria 31:** Bend the end hooks for main, and bent up rebars as per bar bending schedule. **Performance Criteria 32:** Make the bundle of stirrups and bent up rebars, attach the bar code tag for reference. **Performance Criteria 33:**Place main rebars as per drawing **Performance Criteria 34:**Fix the strip along with the main rebars as per drawing **Performance Criteria 35:** Bind the main rebars with stirrups by binding wire **Performance Criteria 36:**Fix spacer around the column as per drawing **Performance Criteria 37:** Straighten the rebars **Performance Criteria 38:**Measure and mark the required cut length on rebars **Performance Criteria 39:** Cut the rebars with relevant cutting tool. **Performance Criteria 40:** Make the bundle of cutting rebars and mark the bar code using tag for beam. **Performance Criteria 41:** Place the main rebars as per drawing **Performance Criteria 42:**Place distribution steel as per drawing

	Performance Criteria 43: Place extra rebars as per drawing **Performance Criteria 44:**Prepare required rings for beam by cutting and bending of rebars **Performance Criteria 45:**Cut and bend the rebars as per stair shape **Performance Criteria 46:**Place the rebars in waist slab of stairs as per drawing **Performance Criteria 47:** Place spacer as per requirement
	Portfolios required at the time of assessment (if any) for ▪ Folder/file includesbasic technical drawings ▪ Folder/file includes basic mathematical calculations ▪ Folder/file includes evidence of steel work in roof slabs for domestic building ▪ Folder/file includes evidence of steel work in arches **Performance Criteria 1:**Draw different types of lettering **Performance Criteria 2:**Draw different types of lines **Performance Criteria 3:**Draw different drawing symbols **Performance Criteria 4:**Draw different geometrical figures **Performance Criteria 5:**Select measuring tools as per requirement **Performance Criteria 6:**Identify imperial and metric system **Performance Criteria 7:**Perform inter conversion of Measuring units **Performance Criteria 8:**Measure the rebars as per bar bending schedule **Performance Criteria 9:**Mark the rebars **Performance Criteria 10:**Cut the rebars **Performance Criteria 11:**Bend the main rebars as per bar bending schedule **Performance Criteria 12:**Place the rebars according to the drawing **Performance Criteria 13:**Bind the rebars **Performance Criteria 14:**Place spacers as per requirement

Continued on following page

Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature: ....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor: ..... Assessor's code: ..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1	**Description of Assessment Task 1** Candidate is required to prepare fabrication of single flight stair with column and stringer beam as per structural drawing and bar bending sechudle given by assessor.

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select and wear the PPEs relevant to Job.			
2.	Select the tools as per job requirement.			
3.	Arrange the steel fixer & erector tools, components and accessories at appropriate positions in store			
4.	Identify and label/tag the damaged and out of order tools and accessories			
5.	Identify risk associated with job to be done			
6.	Select the types of rebar as per job			
7.	Carry out the instructions of the supervisor			
8.	Interpret bar bending schedule			
9.	Interpret the drawing			
10.	Straighten up the rebars			
11.	Measure and mark the required cut length on rebars			
12.	Cut the rebars with relevant cutting tool			
13.	Make the bundle of cut rebars and mark the bar code using tag for foundation.			
14.	Place rebars as per drawing			
15.	Place dowel rebars for neck column			
16.	Bind rebars with binding wire according to the drawing			
17.	Provide steel chairs and spacers for the erected frame work of steel			
18.	Interpret reinforcement drawing			
19.	Interpret bar bending schedule			
20.	Measure and mark the required cut length on rebars as per bar bending schedule			
21.	Cut the rebars with relevant cutting tool			
22.	Make the bundle of cutting rebars and mark the bar code using tag.			
23.	Bend the bar to make the lateral ties, as per bar bending schedule.			
24.	Make the bundle of ties and attach the bar code tag for reference.			
25.	Place the lateral ties			

26.	Erect the main vertical rebars one by one with dowel bar of column within the lateral ties.			
27.	Bind the main vertical rebars with ties with the help of binding wire according to drawing/bar bending schedule.			
28.	Fix spacer around the column as per drawing			
29.	Bend the rebars to make the stirrups using bar bending schedule			
30.	Bend the end hooks for main, and bent up rebars as per bar bending schedule.			
31.	Make the bundle of stirrups and bent up rebars, attach the bar code tag for reference.			
32.	Place main rebars as per drawing			
33.	Fix the strip along with the main rebars as per drawing			
34.	Bind the main rebars with stirrups by binding wire			
35.	Fix spacer around the column as per drawing			
36.	Straighten the rebars			
37.	Measure and mark the required cut length on rebars			
38.	Cut the rebars with relevant cutting tool.			
39.	Make the bundle of cutting rebars and mark the bar code using tag for beam.			
40.	Place the main rebars as per drawing			
41.	Place distribution steel as per drawing			
42.	Place extra rebars as per drawing			
43.	Prepare required rings for beam by cutting and bending of rebars			
44.	Cut and bend the rebars as per stair shape			
45.	Place the rebars in waist slab of stairs as per			
46.	Place spacer as requirement			
Competent ☐		Not Yet Competent ☐		

Portfolio	Description of Portfolio
	▪ Folder/file includes basic technical drawings ▪ Folder/file includes basic mathematical calculations ▪ Folder/file includes evidence of steel work in roof slabs for domestic building ▪ Folder/file includes evidence of steel work in arches

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Draw different types of lettering			
2.	Draw different types of lines			
3.	Draw different drawing symbols			
4.	Draw different geometrical figures			
5.	Select measuring tools as per requirement			
6.	Identify imperial and metric system			
7.	Perform inter conversion of Measuring units			
8.	Measure the rebars as per bar bending schedule			
9.	Mark the rebars			
10.	Cut the rebars			
11.	Bend the main rebars as per bar bending schedule			
12.	Place the rebars according to the drawing			
13.	Bind the rebars			
14.	Place spacers as per requirement			
Competent ☐		Not Yet Competent ☐		

Knowledge Assessment

Title of Qualification: National Vocational Certificate Level 2 in Steel Fixer& Erector (Assistant Steel Fixer/Erector)	**CS Code:**	**Level:**02	**Version:**01
Competency Standard Title: Perform Basic Technical Drawings Perform Basic Communication Skills Follow Safety Rules at Site Demonstrate Basic Numeracy Skill Maintain Steel Fixing & Erecting Tools, Equipment and Materials Perform Cutting and Bending Rebar for Simple Shapes Execute the Steel Work of Foundations Execute steel work in column for domestic building Execute steel work in beams for domestic building Execute steel work in roof slabs for domestic building Execute Steel Work in Stairs For Domestic Building Execute Steel Work In Arches	**Assessment Date (DD/MM/YY):** **Assessment Time:** 30 min		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.**

Candidate Details	Name:..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT □ NOT YET COMPETENT □ Name of the Assessor:..... Assessor's code: Signature of the Assessor:..... .....

Question	**Candidate's answer**
Answer any 15 questions.	
1. Enlist any three types of dimensions?	
2. Enlist the types of scales	
3. Write the types of development drawings?	

Question	Candidate's answer
Answer any 15 questions.	
4. Enlist any five Verbal communication techniques?	
5. Explain basic measuring units ?	
6. Calculate the volume of Cube, having $6\ cm$ length?	
7. Enlist any five Verbal communication techniques?	
8. Define inter conversion of linear dimensions?	
9. Define steel fixing?	
10. Enlist the tools used in steel fixing	
11. What is effective communication?	
12. What is the purpose of steel in construction?	
13. What is a bar bending schedule?	
14. Enlist the types of foundation	
15. What is the steel grade used in construction?	
16. What are the hazards at construction site?	
17. What is the purpose of structural drawing?	
18. what is lap length in steel?	
19. Define main rebar's	
20. Enlist steps involved in finding the cut length of stirrups	

Question	Candidate's answer
Answer any 15 questions.	
21. Define two way slab?	
22. Define PPE's?	
23. Steps to calculate the length of rebar in slab	
24. Define tread and riser?	
25. Enlist types of stairs	
26. Enlist PPE's for construction work	
27. Define arch?	
28. Define crown of arches?	
29. Enlist different types of rebar cutting tools	
30. Enlist different types of arches according to shape	

ANSWER KEY

Sr.	Answers
1.	Linear Dimensions. Radial Dimensions. Angular Dimensions. Ordinate Dimensions. Arc Length Dimensions .Baseline and Continued Dimensions.
2.	• Nominal Scale. • Ordinal Scale. • Interval Scale. • Ratio Scale.
3.	• Parallel • Radial • Triangulation.
4.	Active listening ,Clarity and conciseness ,Confidence, Empathy, Friendliness, Open-mindedness, Giving and soliciting feedback, Confidence, Respectfulness
5.	FPS SI
6.	216 cm^3
7.	• Active listening • Clarity and conciseness • Confidence • Empathy • Friendliness • Open-mindedness • Giving and soliciting feedback • Confidence
8.	1 meter — 1000 mm 1 kilometer — 1000 meters 1 inch — 2.54 cm 1 meter — 3.281 feet 1 feet — 12 inches
9.	Steel fixing is shaping and fitting the steel bars or mesh structures in construction projects.
10.	Steel fixers use a variety of hand and power tools, including industrial wire or bolt cutters, guillotines and power saw.
11.	Effective Communication is defined as the ability to convey information to another effectively and efficiently
12.	Steel is one of the basic materials used in today's civil engineering industry due to its proven high strength and durability.
13.	Bar Bending Schedule is a detailed list of bent reinforcement bars given in any structural concrete element.
14.	• Shallow foundation • Deep Foundation.
15.	• Grade 40 and Grade 60

16.	• Wear your PPE at all times. ... • Does not start work without an induction? ... • Keep a tidy site. ... • Do not put yourself or others at risk. ... • Follow safety signs and procedures. ... • Never work in unsafe areas.
17.	• Read structural drawings easily. • Read detailed drawings of footings, slab, beam, column, staircase, etc. • Plan and execute the construction projects. • Estimate the building projects.
18.	A lap is when two pieces of reinforcing bar (rebar) are overlapped to create a continuous line of rebar.
19.	*Main bars* are placed at the shorter span direction to transfer the bending moment (B.M) developed at the bottom of the slab to the *beam*.
20.	• Look at the size of column or beam from drawings • Adopt Dia of the bar (generally 8mm Dia is used for stirrups) • Deduct the concrete cover or clear cover
21.	The two-way slab is a slab which is generally supported on all sides of walls or beams, and whose length to breadth ratio is less than two and it twists or bends in both direction.
22.	Personnel Protective Equipment's
23.	Deduct the concrete cover and hooks from the total length.
24.	The riser is the vertical surface of the stair. The tread on the other hand is the horizontal surface of the stair and the part of the stair you step on.
25.	• Straight flight Stairs. • L Shaped Stairs. • U Shaped Stairs. • Spiral Stairs. • Curved Stairs. • Cantilever Stairs. • Split Staircase
26.	• Helmet • Safety shoes • Safety goggles • Gloves • Safety jackets • Ear plug • Face mask • Face shields
27.	A Curved member that is used to span an opening and to support loads from above.
28.	It is the highest part of arch.
29.	• Disc cutter • Pliers • Chisel • Hammer
30.	• Semicircular arches • Flat arches • Horseshoe arches • Segmental arches