



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer& Erector)**



(Curriculum)

**National Vocational and Technical Training Commission (NAVTTTC)
Government of Pakistan**



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Table of Contents

Introduction.....	4
Definition/Description of training program (Steel Fixer& Erector)	4
Purpose of the training program:	4
Overall objectives of training program:.....	5
Competencies to be gained after completion of course:.....	5
Possible available job opportunities, available immediately and later in the future:	6
Trainee entry level:	6
Minimum qualification of trainer:	7
Recommended trainer: trainee ratio.....	7
Medium of instruction i.e. language of instruction:	7
Duration of the course (Total time, Theory & Practical time):	8
Sequence of modules:	8
Summary template-overview of the curriculum:	9
Module 3.1: Perform Basic Computer Operations	11
Module 3.2: Plan and Organize Work	14
Module 3.3: Maintain Safety at Site	21
0732CM-11: Interpret bar bending Schedule	26
0732CM-12: Execute the Steelwork for the Foundations and the Necks	28
0732CM-13: Execute the Steelwork for the Grade Beams	34



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



0732CM-14: Fabricate Complex Column Cage	37
0732CM-15: Execute the Steelwork for the Stairs	45
0732CM-16: Execute the Steel work for the Shell Roof and Domes	55
0732CM-17: Execute steel work for the Tank/Basement	62
0732CM-18: Perform Welding	68
List of Tool, Machinery and Equipment:	77
Members of the Curriculum Development Committee	82
Members of the Curriculum Validation Committee	84



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Introduction

Definition/Description of training program (Steel Fixer& Erector)

Construction sector is one of the booming industries of Pakistan. There is an increasing demand of the Steel Fixer& Erector. Therefore, the skills are required to be inducted in the future generation. If an individual is planning to pursue a career in construction, this program will be helpful in targeting various commercial and non-commercial projects etc. If an individual is planning to take up Steel Fixer& Erector course, this course will help him weigh their choices better.

Keeping in view of the above the competency based national vocational qualifications have been developed by NAVTTC to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increasing their livelihood income.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the workshop, some writing, some not even in the classroom or workshop but in another part of the building using special equipment. As trainees learn at different pace they might be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed.

Purpose of the training program:

The purpose of the training is to provide skilled manpower to improve the existing construction industry. More than 96 % of the Pakistani manpower is working in GCC countries where Saudi Arabia (50.90%) and UAE (33.10%) are the largest destination countries followed by Oman (7.26%), Kuwait (1.90%), Bahrain (1.58%), and Qatar (1.41%). The overseas Pakistanis are playing a pivotal role to support the economy in the form of remittances. According to new labor



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



laws, a large number of skilled labor is demanded by Saudi Government especially for the construction sector. For this purpose, new qualifications have been developed by NAVTTC on CBT&A mode in order to train the unskilled human resource with employable skills and cater the demand of Saudi Government. Moreover, the availability of skilled professionals will bring socio-economic benefits to all stakeholders.

Overall objectives of training program:

The main objectives of the National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector) are as follows:

- Improve the professional competence of Steel Fixing work
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in the construction sector
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training for Steel Fixing work across globe

Competencies to be gained after completion of course:

At the end of the course, the trainee has attained the following core competencies:

National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)

1. Perform basic computer Operations
2. Plan and Organize Work
3. Maintain Safety at Site
4. Interpret bar bending Schedule
5. Execute the Steelwork for the Foundations and the Necks



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



6. Execute the Steelwork for the Grade Beams
7. Erect rebars for Columns
8. Execute the Steel work for the Stairs
9. Execute the Steel work for the roof
10. Execute steel work for the Tank and Basement
11. Perform Welding

Possible available job opportunities, available immediately and later in the future:

Possible Career paths

- Steel Fixer& Erector
- Steel Fixer/Erector Supervisor

Trainee entry level:

The entry level for National Vocational Certificate Level 3 in Construction Sector **(Steel Fixer & Erector)** is given below:

Title	Entry requirements
National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)	The entry requirement for this qualification would be Assistant Steel Fixer Level-2 or equivalent



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Minimum qualification of trainer:

- A. Must be a holder of DAE/Level 5 Diploma in Civil Technology with at least 2 years relevant experience
- OR**
- B. BSc Engineering Technology (Civil) / B.E Civil /BSc Civil Engineering

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 25 trainees.

Medium of instruction i.e. language of instruction:

Instructions will be in Urdu/ English/ Local language.



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Duration of the course (Total time, Theory & Practical time):

The distribution of contact hours is given below:

Total	-	600 hours
Theory	-	120hours (20%)
Practical	-	480 hours (80%)
Proposed Course Duration-6 Months		

Sequence of modules:

1. Module 3.1:Perform basic computer Operations
2. Module 3.2:Plan and Organize Work
3. Module 3.3:Maintain Safety at Site
4. 0732CM-11:Interpret bar bending Schedule
5. 0732CM-12:Execute the Steelwork for the Foundations and the Necks
6. 0732CM-13:Execute the Steelwork for the Grade Beams
7. 0732CM-14:Erect rebars for Columns
8. 0732CM-15:Execute the Steel work for the Stairs
9. 0732CM-16:Execute the Steel work for the roof
10. 0732CM-17:Execute steel work for the Tank and Basement
11. 0732CM-18:Perform Welding



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Summary template-overview of the curriculum:

Following is the structure of the course:

Sr No	Code	Competency Standards	Occupation	NVQF Level	Category	Estimated Contact Hours			Cr Hr
						Th	Pr	Total	
Level 3									
1	Module 3.1	Perform basic computer Operations	Steel Fixer & Erector	3	Generic	8	42	50	5
2	Module 3.2	Plan and Organize Work		3	Generic	12	18	30	3
3	Module 3.3	Maintain Safety at Site		3	Generic	16	24	40	4
4	0732CM-11	Interpret bar bending Schedule		3	Technical	6	24	30	3
5	0732CM-12	Execute the Steelwork for the Foundations and the Necks		3	Technical	12	48	60	6



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



6	0732CM-13	Execute the Steelwork for the Grade Beams		3	Technical	13	27	40	4
7	0732CM-14	Erect rebars for Columns		3	Technical	12	48	60	6
8	0732CM-15	Execute the Steel work for the Stairs		3	Technical	10	90	100	10
9	0732CM-16	Execute the Steel work for the roof		3	Technical	13	57	70	7
10	0732CM-17	Execute steel work for the Tank and Basement		3	Technical	13	57	70	7
11	0732CM-18	Perform Welding		3	Technical	5	45	50	5
		Total				120	480	600	60
		Percentage				20	80		



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Module 3.1: Perform Basic Computer Operations

Objective: This competency standard covers the skills and knowledge required to perform basic computer operations

Duration: 50 Hours

Theory: 8 Hours

Practice: 42 Hours

Credit Hours: 5

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1.Perform basic Configuration of Computer System	Trainee will be able to: <ol style="list-style-type: none"> 1. Connect computer components and peripherals as per requirement 2. Install drivers and applications according to the software specification 3. Troubleshoot applications to trace and fix faults in a specific application to bring it in a running condition 	<ul style="list-style-type: none"> • Knowledge of different computer components. . • Explain operating systems • Differentiate Hardware and Software <p>Describe the process of troubleshooting of application software.</p> <p>Practical Activity:</p> <ul style="list-style-type: none"> • Practice of installing operating system. • Practice of installing Microsoft Office. • Practice of printer and scanner installation. 	<p>Total:16hrs</p> <p>Theory:4hrs</p> <p>Practical:12hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Computer Lab



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				system <ul style="list-style-type: none"> • Pen • Operating system CD • Software and peripheral driver CD 	
LU2. Create a document using MS word	Trainee will be able to: <ol style="list-style-type: none"> 1. Compose a document as per the requirement 2. Format Word Document according to given requirements 3. Print Word Documents according to requirements 	<ul style="list-style-type: none"> • Describe the page set up and paragraph for formatting. • Describe the font size and style. • Knowledge of short keys • Explain printing and type of printers. <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice of short keys, document opening/closing, saving, coping and pasting. • Practice of creating and editing a document/letter in 	Total: 30hrs Theory: 3hrs Practical: 27hrs	<div>Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board marker <div>Non Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Internet • Computer 	<ul style="list-style-type: none"> • Computer Labs



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		MS word and print it.		system <ul style="list-style-type: none"> Software CD 	
LU3 Create an e-mail account	<ol style="list-style-type: none"> Select email browser Go to sign in page Add Personal Information Enter and confirm password 	<ul style="list-style-type: none"> Describe Internet and E-mail address. Knowledge of email attachments Explain encryption of email address and documents. <p>Activity</p> <ul style="list-style-type: none"> Practice of creating an email address and sending an email along with an attachment (document and picture) 	<p>Total: 4hrs</p> <p>Theory: 1hrs</p> <p>Practical: 3hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board marker <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Internet Computer system Software CD 	<ul style="list-style-type: none"> Computer Labs



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Module 3.2: Plan and Organize Work

Objective: This competency standard covers the skills and knowledge required to gather information and plan and organize work used in civil projects

Duration: 30 Hours

Theory: 12 Hours

Practice: 18Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Interpret drawing and job order.	Trainee will be able to: <ol style="list-style-type: none"> 1. Read job order 2. Read bar bending schedule and drawings 	<ul style="list-style-type: none"> • Explain job order • Describe the importance of bar bending schedule • Describe the importance of structural drawing <p>Activity:</p> <ul style="list-style-type: none"> • Practice to match the specification details with available resources and in line with job requirements 	<p>Theory-3Hrs</p> <p>Practical-3Hrs</p> <p>Total-6Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board • Marker • Duster • Job order • Requisition book 	Class Room/workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Sample Bar bending schedule • Sample drawings Non Consumable • White board • Multimedia • Calculator • Computer 	
LU2. Estimate the materials and tools.	Trainee will be able to: <ol style="list-style-type: none"> 1. Take on-site measurement with reference to layout drawing. 2. Check discrepancies in measurements for accurate calculation of steel fixing materials 3. Generate the demand of the materials and tools. 	<ul style="list-style-type: none"> • Describe types of measurement units • Knowledge about various discrepancies in measurements <p>Activity:</p> <ul style="list-style-type: none"> • Practice to prepare list of materials and tools for mock project 	Theory-2Hrs Practical-3Hrs Total-5Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster • Job order 	Class Room/workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<ul style="list-style-type: none"> Practice to generate demand of materials and tools for mock project 		<ul style="list-style-type: none"> Requisition book Sample Bar bending schedule Sample drawings <div>Non Consumable</div> <ul style="list-style-type: none"> White board Multimedia Calculator Computer 	
LU3.Estimate manpower requirement.	Trainee will be able to: <ol style="list-style-type: none"> Identify manpower requirements according to job. Calculate the man hours as per job quantum. Calculate the cost of labor 	<ul style="list-style-type: none"> Explain manpower requirement Describe procedure of calculation of man hours <p>Activity:</p> <ul style="list-style-type: none"> Practice to generate activity sequence and assess the man power hours and cost of labour 	Theory-2Hrs Practical-3Hrs Total-5Hrs	<div>Consumable</div> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White Board Marker 	Class Room/workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	services.	services		<ul style="list-style-type: none"> • Duster • Job order • Requisition book • Sample Bar bending schedule • Sample drawings Non Consumable • White board • Multimedia • Calculator • Computer 	
LU4. Arrange Facilities and utilities	Trainee will be able to: 1. Plan the means of transportation of material according to job.	<ul style="list-style-type: none"> • Describe different pattern of construction site layout • Describe the facilities required for steel fixer workshop • Explain the utilities and 	Theory-3Hrs Practical-6Hrs Total-9Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners 	Class Room/workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<p>2. Identify and report the physical hazards at workplace, if any.</p> <p>3. List the facilities and utilities according to job requirement.</p> <p>4. Check facilities and utilities before the commencement of work.</p>	<p>safety essential for construction site</p> <p><u>Activity:</u></p> <ul style="list-style-type: none"> Practice to draw layout of steel fixer workshop and show the position of safety measures 		<ul style="list-style-type: none"> White Board Marker Duster Job order Requisition book Sample Bar bending schedule Sample drawings <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Calculator Computer 	
--	--	---	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



LU5.Manage Subordinates	Trainee will be able to: <ol style="list-style-type: none"> 1. Instruct subordinates on the housekeeping and risks related to the construction site. 2. Assign the task to the subordinates. 3. Monitor the working of subordinates 	<ul style="list-style-type: none"> • Describe the importance of housekeeping • Describe the risk associated with steel fixing job • Describe 5C of communication <p><u>Activity:</u></p> <p>Role play; give instruction to subordinate according to job order</p>	<p>Theory-2Hrs</p> <p>Practical-3Hrs</p> <p>Total-5Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White Board • Marker • Duster • Job order • Requisition book • Sample Bar bending schedule • Sample drawings <p>Non Consumable</p> <ul style="list-style-type: none"> • Computer • White board 	<p>Class Room/workshop</p>
--------------------------------	---	---	---	---	----------------------------



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



				<ul style="list-style-type: none">• Multimedia• Calculator	
--	--	--	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Module 3.3: Maintain Safety at Site

Objective: This competency standard covers the skills and knowledge required to Maintain Safety at Site

Duration: 40 Hours

Theory: 16Hours

Practice: 24 Hours

Credit Hours: 4

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Maintain safe work condition at site	<p>You must be able to:</p> <ol style="list-style-type: none"> 1. Identify physical hazards (risk of slip, trip and fall etc.) at work site. 2. Erect barricades, hoardings, signage in the hazardous areas. 3. Remove obstacles from work area. 4. Identify risk associated with job to be done. 5. Select and wear appropriate PPEs. 6. Report unsafe condition to immediate supervisor 	<ul style="list-style-type: none"> • Describe the safety signs at work place • Demonstrate the fall protection measures • Describe unsafe act and unsafe conditions • Knowledge of hazardous materials and relevant safety procedures <p>Activity:</p> <ul style="list-style-type: none"> • Visit the work site and identify the potential hazards and apply control 	<p>Total 10hrs</p> <p>Theory: 4hrs</p> <p>Practical: 6hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board PPES marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board PPES • Multimedia • PPEs (Safety glasses, Ear muffs/ear plugs, 	<ul style="list-style-type: none"> • Class Room • Simulated environment



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<p>measures</p> <ul style="list-style-type: none"> Practice to wear full body harness. Sort and label hazardous chemicals at work site 		<p>Protective Gloves, Cap, Safety shoes etc.)</p> <p>Computer</p>	
<p>LU 2</p> <p>Perform fire fighting</p>	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> Identify source of fire. Identify classes of fire Raise fire alarms Select suitable fire extinguishers Check expiry of fire extinguisher Check wind direction Locate emergency exits Perform PASS (Pull, aim, squeeze and sweep) on fire extinguisher 	<ul style="list-style-type: none"> Describe the fire triangle State principles of fire fighting Describe the source of fire Explain classes of fire Demonstrate firefighting techniques Recognize different types of fire extinguisher <p>Activity:</p> <ul style="list-style-type: none"> Perform mock exercise of firefighting on a source of fire Participate in emergency 	<p>Total</p> <p>9hrs</p> <p>Theory:</p> <p>3hrs</p> <p>Practical:</p> <p>6 hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White board PPES marker <p>Non Consumable</p> <ul style="list-style-type: none"> White board PPES Multimedia PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.) 	<ul style="list-style-type: none"> Class Room Simulated environment



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		response drill		Computer	
LU 3 Carry out first aid treatment	The trainee will be able to: <ol style="list-style-type: none"> 1. Identify elements for first aid kit 2. Perform mock first aid treatment for bleeding 3. Perform mock first aid treatment against electrical shock 	<ul style="list-style-type: none"> • Describe the first aid procedure for bleeding • Describe components of first aid kit • Explain types of electrical shocks Activity: <ul style="list-style-type: none"> • Demonstrate mock exercise of first aid treatment for bleeding in result of accident injury • Demonstrate mock exercise of first aid treatment to the victim of electric shock 	Total 6hrs Theory: 3hrs Practical: 3hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board PPES marker Non Consumable <ul style="list-style-type: none"> • White board PPES • Multimedia • PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.) Computer	<ul style="list-style-type: none"> • Class Room • Simulated environment



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



LU4 Perform safety practices while using hand and power tools	You must be able to: <ol style="list-style-type: none"> 1. Select appropriate tools for specific job. 2. Check physical working condition of the tools 3. Operate tools according to standard safety procedures. 	<ul style="list-style-type: none"> • Explain types of power tool used in steel fixing • Describe power tool • Explain the SOPs for power tool • Describe the safety tips for using of sharp edge tool Activity: <ul style="list-style-type: none"> • Demonstrate to use power tools as per safety standards in different situations 	Total 9hrs Theory: 3 hrs Practical: 6 hrs	<div>Consumable</div> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board PPES marker <div>Non Consumable</div> <ul style="list-style-type: none"> • White board PPES • Multimedia • PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.) Computer 	<ul style="list-style-type: none"> •



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



<p>LU5</p> <p>Perform electrical safely at workplace</p>	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Check the connectivity of earthing with power equipment 2. Check leads and cable for any visual damage before use 3. Tag damaged lead, cable and connection points and report to the supervisor 	<ul style="list-style-type: none"> • Knowledge of electric hazards • Describe protective measures against the electric hazards • Describe how electricity work • Describe the reason of electric shock <p>Activity:</p> <p>Practice to check and tag extension leads and cable for any visual damage</p>	<p>Total</p> <p>6hrs</p> <p>Theory:</p> <p>3hrs</p> <p>Practical:</p> <p>3hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • White board PPES marker <p>Non Consumable</p> <ul style="list-style-type: none"> • White board PPES • Multimedia • PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.) • Computer 	<ul style="list-style-type: none"> • Class Room • Simulated environment
---	---	---	--	--	---



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



0732CM-11: Interpret bar bending Schedule

Objective: This competency standard covers the skills and knowledge required to gather information and interpret reinforcement drawing and bar bending schedule used in civil projects

Duration: 30 Hours

Theory: 6 Hours

Practice: 24 Hours

Credit Hours: 3

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify shapes of rebars	Trainee will be able to: 1. Interpret structural drawing 2. Make list of all the shapes of rebar in the structural drawing	<ul style="list-style-type: none"> Explain bar bending schedule Describe the importance of bar bending schedule Describe different types of rebar Recognize types of hooks and bend Knowledge about density of rebars Activity:	Theory-3Hrs Practical-9Hrs Total-12Hrs	<div style="background-color: #d3d3d3; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White Board Marker Duster <div style="background-color: #d3d3d3; padding: 2px;">Non</div> <div style="background-color: #d3d3d3; padding: 2px;">Consumable</div>	Class Room/workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<ul style="list-style-type: none"> Practice to identify different shapes of rebars in structural drawing 		<ul style="list-style-type: none"> White board Multimedia Calculator schedule 	
LU2. Calculate the length of rebars	Trainee will be able to: <ol style="list-style-type: none"> Count the number of different shapes of the rebar and note in Table Measure spacing between rebars Measure length of the concrete member Identify concrete cover Measure development length Calculate length of each rebar 	<ul style="list-style-type: none"> Define development length of steel used in RCC structure Explain significance of concrete cover Explain concrete covers for various structures. <p><u>Activity:</u></p> <ul style="list-style-type: none"> Practice to count and stacking of different shapes and sizes of rebars Practice to calculate total length of rebars 	<p>Theory-3Hrs</p> <p>Practical-15Hrs</p> <p>Total-18Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners White Board Marker Duster <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Calculator Computer 	Class Room/workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



0732CM-12: Execute the Steelwork for the Foundations and the Necks

Objective: This competency standard covers the skills and knowledge required to execute the steel work for the foundations and the necks in civil structure.

Duration: 60 Hours

Theory: 12 Hours

Practice: 48 Hours

Credit Hours: 6

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory activities	Trainee will be able to: <ol style="list-style-type: none"> 1. Prepare workplace for task 2. Collect required equipment 3. Plan task sequences for optimum efficiency 4. Use PPE and apply safe work practices 	<ul style="list-style-type: none"> • Define foundations and its types • Explain types of hooks and bend • Explain rebars of various diameters. • Knowledge of different steel grades <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to make task sequence for foundations 	<p>Theory-2Hrs</p> <p>Practical-6Hrs</p> <p>Total-8Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Erecting cable 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Binding wire Non Consumable • White board • Multimedia • PPEs • Computer • Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer) • Cutting base • Clipers • Measuring tape(100') • Measuring tape 18' 	
LU2. Prepare the rebars for the foundation	Trainee will be able to: <ol style="list-style-type: none"> 1. Interpret reinforcement drawing 2. Interpret bar bending schedule 3. Measure the rebars as per foundation and beam requirements as per bar bending 	<ul style="list-style-type: none"> • Understanding of lay out drawings of foundation • Knowledge about bar bending schedule • Knowledge of different Measurement systems 	Theory-3Hrs Practical-12Hrs Total-15Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners 	Class Room Training Workshop



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<p>schedule</p> <ol style="list-style-type: none"> 4. Straighten the rebars 5. Cut and bend required rebars 	<p><u>Activity:</u></p> <ul style="list-style-type: none"> • Practice to straighten, cut and bend the rebars of different shapes according to required measurement 		<ul style="list-style-type: none"> • Whiteboard • marker • Duster • Chalk • Rebars • Erecting cable • Binding wire <p>Non</p> <p>Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Chisels(for cutting rebars) • Differnt types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clipers • Measuring tape(100') 	
--	---	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> Measuring tape 18' 	
LU3 Erect the cage of the foundation with erecting wire/cables	<ol style="list-style-type: none"> Separate the rebars according to diameter as per bending bar schedule of foundation slab Separate the rebars according to diameter as per bending bar schedule of foundation cage Place the cut rebars in foundation as per drawing and prepare required cage Tie rebars in cage foundation with binding wire / cables 	<ul style="list-style-type: none"> Explain foundation cage Explain the use of cables and binding wire <p>Activity:</p> <ul style="list-style-type: none"> Practice to place rebars in foundations leaving space for cage Practice to erect the rebars in cage of foundation 	<p>Theory-3Hrs</p> <p>Practical-9Hrs</p> <p>Total-12Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Erecting cable Binding wire <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer 	<p>Class Room</p> <p>Training Workshop</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • PPEs • Chisels(for cutting rebars) • Different types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' 	
LU4 Assemble the parts of foundation	<ol style="list-style-type: none"> 1. Mark the neck columns in foundation 2. Measure the rebars of neck column as per drawing 3. Mark the points for cutting and shaping rebars as per measurements for neck and other foundation parts 4. Prepare required rings / lateral ties for neck column by cutting and bending of rebars. 5. Bind rings and other rebars in foundation parts with MS binding wire 	<ul style="list-style-type: none"> • Explain neck column • Explain procedure of erecting neck column from foundation • Define rings / lateral ties of neck column <p>Activity:</p> <ul style="list-style-type: none"> • Practice to make rings / lateral ties for neck column • Practice to make different shapes of rebars for neck column 	<p>Theory-3Hrs</p> <p>Practical-18Hrs</p> <p>Total-21Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Erecting cable 	<p>Class Room</p> <p>Training Workshop</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<ul style="list-style-type: none"> Practice to assemble different parts of foundation. 		<ul style="list-style-type: none"> Binding wire Non Consumable White board Multimedia Computer PPEs Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.)t Cutting base Clipers Measuring tape(100') Measuring tape 18' 	
LU5 Use the spacer and cover block in foundation	<ol style="list-style-type: none"> Select the spacer and cover block as per requirements Place spacer as per design Place cover blocks as per design 	<ul style="list-style-type: none"> Knowledge about spacer Understanding cover block <p>Activity:</p> <ul style="list-style-type: none"> Practice to place the spacer and cover blocks as per 	<p>Theory-1Hrs</p> <p>Practical-3Hrs</p> <p>Total-4Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners 	<p>Class Room</p> <p>Training Workshop</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		requirement		<ul style="list-style-type: none"> • Whiteboard • marker • Duster • Chalk • Spacer • Cover block <div style="background-color: #cccccc; padding: 2px;">Non</div> <div style="background-color: #cccccc; padding: 2px;">Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Lift lever 	
--	--	-------------	--	---	--

0732CM-13: Execute the Steelwork for the Grade Beams

Objective: This competency standard covers the skills and knowledge required to execute steel work in grade beams in civil structures

Duration: 40 Hours

Theory: 13 Hours

Practice: 27 Hours

Credit Hours: 4

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials	Learning
---------------	-------------------	-------------------	----------	-----------	----------



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				Required	Place
LU1. Prepare rebars for grade beams	Trainee will be able to: <ol style="list-style-type: none"> 1. Interpret bar bending schedule 2. Interpret structural drawings 3. Mark the location of grade beams as per structure drawing 4. Straighten up the rebars 5. Measure and mark the required cut length on rebars as per cut length mentioned in bar bending schedule 6. Cut the rebars 7. Bend the rebars to make the stirrups, as per bar bending schedule 8. Bend the end hooks for main and bent up rebars as per shape dimension 9. Make the bundle of prepared rebars and mark the bar code using tag for grade beam for reference 	<ul style="list-style-type: none"> • Explain grade beam • Explain grade beam foundation • Explain the construction process of grade beam foundation • Understanding of structural drawings. • Understanding of bar bending schedule. <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to prepare rebars for grade beam foundations as per drawing 	<p>Theory-8Hrs</p> <p>Practical-15Hrs</p> <p>Total-23Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Erecting cable • Binding wire <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> Chisels(for cutting rebars) Different types of hammer(sledge hammer,light hammer etc.) Cutting base Clippers Measuring tape(100') Measuring tape 18' 	
LU2 Prepare grade beam	Trainee will be able to: <ol style="list-style-type: none"> Place the bundle of prepared rebars to the required central place Separate the rebars and place them at required location Mark the stirrups spacing as per drawing Insert stirrups in bottom and top rebars Bind the stirrups with binding wire Bind curtailed rebars with the top and bottom rebars Fix spacer in bottom of beam as 	<ul style="list-style-type: none"> Understanding of rebar marking codes Understanding tagging of rebar bundles Describe types and importance of spacer <p>Activity:</p> <ul style="list-style-type: none"> Practice to place rebars of grade beam as per drawing Practice to insert and bind stirrups of grade beam as per drawing 	Theory-5Hrs Practical-12Hrs Total-17Hrs	Consumable <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Erecting cable Binding wire 	Class Room Training Workshop Lab/ Field Visit



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	per drawing	<ul style="list-style-type: none"> Practice to place the spacer as per requirement 		<div>Non</div> <div>Consumable</div> <ul style="list-style-type: none"> White board Computer Multimedia PPEs Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.)t Cutting base Clipers Measuring tape(100') Measuring tape 18' 	
--	-------------	---	--	--	--

0732CM-14: Fabricate Complex Column Cage

Objective: This competency standard covers the skills and knowledge required to fabricate complex column cage in civil structure

Duration: 60 Hours

Theory: 12 Hours

Practice: 48 Hours

Credit Hours: 6



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory activities	Trainee will be able to: <ol style="list-style-type: none"> 1. Interpret bar bending schedule 2. Interpret structural drawing 3. Collect required tools and equipment 4. Plan task sequences 5. Use PPE 6. Apply safe work practices 	<ul style="list-style-type: none"> • Understanding of structural drawings • Understanding of bar bending schedule. • Explain safe work practices • Knowledge of cut length of ties, rings and dowel bars) <p>Activity:</p> <ul style="list-style-type: none"> • Practice to interpret bar bending schedule and abstract the cut length and numbers of different rebars (Ties,dowels,splices) 	<p>Theory-2Hrs</p> <p>Practical-6Hrs</p> <p>Total-8Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Binding wire • Safety tape <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer 	<p>Class Room</p> <p>/Workshop</p>



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



				<ul style="list-style-type: none"> • PPEs • Barriers • Guardrail • Bar bending key • Bar bending table with pins • Straightening base • Chisels(for cutting rebars) • Differnt types of hammer(sledge hammer,light hammer etc.) • Cutting base • Clipers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter 	
--	--	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> Plier Bench vice 	
LU2. Cut the rebars	Trainee will be able to: <ol style="list-style-type: none"> Measure and mark the required cut length on rebars as per requirement Cut rebar according to the marked points Make bundle of cut rebars and mark the bar code using tag 	<ul style="list-style-type: none"> Knowledge of different Measurement systems Describe cutting tools Explain the manual cutting procedure <p>Activity:</p> <ul style="list-style-type: none"> Practice to straighten, and cut rebars manually Practice to cut rebars mechanically Practice to straighten, and cut rebars with power cutter 	Theory-1Hrs Practical-9Hrs Total-10Hrs	<div>Consumable</div> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Binding wire Safety tape <div>Non</div> <div>Consumable</div> <ul style="list-style-type: none"> White board Multimedia 	Class Room Training Workshop Lab/ Field Visit



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



				<ul style="list-style-type: none"> • Computer • PPEs • Barriers • Guardrail • Bar bending key • Bar bending table with pins • Straightening base • Chisels(for cutting rebars) • Differnt types of hammer(sledge hammer,light hammer etc.) • Cutting base • Clipers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring 	
--	--	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Power cutter • Plier • Bench wise Bar straightening ring • Power cutter 	
LU3 Prepare lateral ties	<p>The trainee will be able to:</p> <ol style="list-style-type: none"> 1. Mark and pin on bending bench for making of ties and rings 2. Place rebar between the pins and bend at required angle. 3. Check the bent rebar for its shape, angle & length. 	<ul style="list-style-type: none"> • Describe types of ties • Explain methods to calculate the cut length of different types of ties & rings • Knowledge to check accuracy of ties & rings • Describe the method of rings/ties fabrication <p>Activity:</p> <ul style="list-style-type: none"> • Practice to make square/rectangular tie • Practice to make hexagonal tie • Practice to make rings with different diameter 	<p>Theory-3Hrs</p> <p>Practical-15Hrs</p> <p>Total-18Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Bar bending table 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> Bar bending plates with pins Bar bending key of different sizes Bar bending machine 	
LU4 Fix rebars for the columns with the necks	<ol style="list-style-type: none"> Place the bundle of prepared rebars to the required central place Separate and place rebars Provide splices of main vertical rebars with dowel bar of column Mark the spacing of ties on one vertical bar as per pitch mentioned in structural drawing Bind the main vertical rebars with ties on marked spot 	<ul style="list-style-type: none"> Explain neck column Explain dowel bar Describe pitch of tie Describe splices/overlaps Explain different ways to provide splices <p>Activity:</p> <ul style="list-style-type: none"> Practice to fabricates the components of hexagonal column Practice to fabricates the components of circular column 	<p>Theory-4Hrs</p> <p>Practical-15Hrs</p> <p>Total-19Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Binding wire <p>Non Consumable</p>	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> White board Multimedia Measuring tape Plier 	
LU5 Fix spacer with rebars	<ol style="list-style-type: none"> 1. Select spot on column sides for using spacer for proposed concrete cover 2. Fix/tie spacer in four sides of the column on alternate ties. 3. Check and clean all tools & accessories for any discrepancy, tag and report. 4. Clear work area and dispose off rebar wastage. 	<ul style="list-style-type: none"> Describe types of spacer. Describe standards of concrete cover <p>Activity:</p> <ul style="list-style-type: none"> Practice to fix appropriate spacer on a fabricated column cage 	<p>Theory-2Hrs</p> <p>Practical-3Hrs</p> <p>Total-5Hrs</p>	<p>Consumable</p> <p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Spacer <p>Non</p> <p>Consumable</p> <ul style="list-style-type: none"> White board Multimedia 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Computer • PPEs • Measuring tape • Plier 	
--	--	--	--	---	--

0732CM-15: Execute the Steelwork for the Stairs

Objective: This competency standard covers the skills and knowledge required to execute the steel work for the stairs

Duration: 100 Hours

Theory: 10 Hours

Practice: 90 Hours

Credit Hours: 10

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: <ul style="list-style-type: none"> • Interpret bar bending schedule • Interpret structural drawing • Select material as per requirement • Select tools as per job requirement • Select and wear the PPEs relevant to Job. 	<ul style="list-style-type: none"> • Describe different types of stairs • Explain the standards for staircase • Knowledge of layout of different types of stairs <p>Practical Activity:</p> <ul style="list-style-type: none"> • Practice to interpret bar bending schedule and abstract the cut length and 	<p>Theory-2Hrs</p> <p>Practical-9Hrs</p> <p>Total-11Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		numbers of different rebars		<ul style="list-style-type: none"> • Chalk • Rebars • Binding wire • Safety tape Non Consumable • White board • Multimedia • Computer • PPEs • Barriers • Guardrail • Bar bending key • Bar bending table with pins • Straightening base • Chisels(for cutting rebars) • Different types of 	
--	--	-----------------------------	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				hammer(sledge hammer, light hammer etc.) • Cutting base • Clipers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Plier Bench wise	
LU2. Prepare Door step	Trainee will be able to: <ul style="list-style-type: none"> • Abstract cut length and number of different types of rebars according to bar bending schedule • Cut the rebars as per bar bending schedule. • Bend the rebars as per drawing • Place rebars as per drawing • Bind rebars as per drawing 	<ul style="list-style-type: none"> • Describe pattern of door steps • Describe the standards for public stair Activity: <ul style="list-style-type: none"> • Practice to cut, bend the rebars for five steps high doorstep, make bundle and mark tag. • Practice to place and bind 	Theory-2Hrs Practical-12Hrs Total-14Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk 	



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<ul style="list-style-type: none"> Place spacer as per requirement 	<p>the rebars of door step.</p> <ul style="list-style-type: none"> Practice to cut, bend the rebars for five steps high curved flight doorstep, make bundle and mark tag. Practice to place and bind the rebars for curved door step. 		<ul style="list-style-type: none"> Rebars Binding wire Safety tape Non Consumable White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base Chisels(for cutting rebars) Differnt types of hammer(sledge 	
--	---	---	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				hammer,light hammer etc.) • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Plier Bench wise	
LU3. Prepare Cantilever Stairs	Trainee will be able to: <ul style="list-style-type: none"> • Abstract cut length and number of different types of rebars • Cut rebars as per bar bending schedule • Bend rebars as per drawing • Make stirrups for stringer beam as per drawing • Place rebars as per bar bending schedule • Bind rebars as per bar bending schedule 	<ul style="list-style-type: none"> • Define cantilever stairs • Explain the components of cantilever stairs. • State the purpose of stringer beam <p><u>Activity:</u></p> <ul style="list-style-type: none"> • Practice to cut the rebars for fabrication of single flight cantilever stair and make 	Theory-2Hrs Practical-24Hrs Total-26Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars 	Class Room Training Workshop Lab/ Field Visit



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<ul style="list-style-type: none"> Place the spacer as per requirement 	<p>bundle and mark tag.</p> <ul style="list-style-type: none"> Practice to fabricate single flight cantilever stair using the pre cut rebars 		<ul style="list-style-type: none"> Binding wire Safety tape Non Consumable White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.) 	
--	---	---	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Plier • Bench wise 	
LU4 Prepare Geometrical Stairs	<ul style="list-style-type: none"> • Abstract cut length and number of different types of rebars • Cut rebars as per design • Bend rebars at the required angle as per drawing • Place rebars as per bar bending schedule • Bind rebars as per bar bending schedule • Place the spacer as per requirement 	<ul style="list-style-type: none"> • Define geometrical stairs • Explain the components of geometrical stairs. <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to cut the rebars for fabrication of bifurcated stair, make bundle and mark tag. • Practice to fabricate bifurcated stair using the pre cut rebars. 	<p>Theory-2Hrs</p> <p>Practical-33Hrs</p> <p>Total-35Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Binding wire 	



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<ul style="list-style-type: none"> Practice to cut the rebars for fabrication of circular stair, make bundle and mark tag Practice to place and bind precut rebars for circular stair on the prepared form work 		<ul style="list-style-type: none"> Safety tape Non Consumable White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.) Cutting base 	
--	--	---	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Clippers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Plier • Bench vise 	
LU5 Prepare RCC Ramp	<ul style="list-style-type: none"> • Interpret the Job drawing and bar bending schedule. • Abstract cut length and number of different types of rebars • Cut rebars as per bar bending schedule. • Bend rebars at the required angle as per drawing • Place rebars as per drawing • Bind rebars as per drawing • Place spacer as per requirement 	<ul style="list-style-type: none"> • Describe types of RCC ramp • Explain the standards for pitch and width of ramp <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to interpret bar bending schedule and abstract the cut length and numbers of different rebars for RCC ramp • Practice to cut the rebars for fabrication of single flight 	<p>Theory-2Hrs</p> <p>Practical-12Hrs</p> <p>Total-14Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Binding wire • Safety tape 	



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<p>RCC ramp and make bundle and mark tag.</p> <ul style="list-style-type: none"> Practice to place and bind rebars on the prepared shuttering for RCC ramp 		<p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base Chisels(for cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.) Cutting base Clipers Measuring 	
--	--	---	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Plier Bench wise	
--	--	--	--	---	--

0732CM-16: Execute the Steel work for the Shell Roof and Domes

Objective: This competency standard covers the skills and knowledge required to execute steel work for the shell roof and dome in civil structure.

Duration: 70 Hours

Theory: 13 Hours

Practice: 57Hours

Credit Hours: 7

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: <ol style="list-style-type: none"> 1. Interpret bar bending schedule 2. Interpret structural drawing 3. Select material as per requirement 4. Select tools as per job requirement 	<ul style="list-style-type: none"> • Describe different types of roof • Describe different types of dome • Explain the standards for roof • Explain the standards for dome 	Theory-3Hrs Practical-9Hrs Total-12Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard 	Class Room Training Workshop Lab/ Field Visit



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<p>5. Select and wear the PPEs relevant to Job.</p>	<p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> Practice to interpret bar bending schedule and abstract the cut length and numbers of different rebars for shell roof Practice to interpret bar bending schedule and abstract the cut length and numbers of different rebars for dome 		<ul style="list-style-type: none"> marker Duster Chalk Rebars Binding wire Safety tape <p>Non</p> <p>Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base 	
--	---	---	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Chisels(for cutting rebars) • Different types of hammer(sledge hammer,light hammer etc.) • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Plier • Bench vice 	
LU2 Prepare Shell Roof	<ol style="list-style-type: none"> 1. Abstract cut length and number of different types of rebars 2. Straighten rebars 3. Measure and mark the required cut length on rebars as per bar bending schedule 4. Cut the rebars with bar cutting tools/ machine cutter 5. Bend the end hooks of rebars as per bending schedule 	<ul style="list-style-type: none"> • Describe the procedure for laying reinforcement for shell roof • Explain the concept of curtailing the rebars <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to cut ,bind and place rebars on prepared 	<p>Theory-5Hrs</p> <p>Practical-21Hrs</p> <p>Total-26Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker 	



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<ol style="list-style-type: none"> 6. Prepare the stirrups for beams 7. Make the bundle of prepared rebars and tag rebars 8. Place the bundle of prepared rebars of structural members to the required central place 9. Separate the rebars of different sizes of beams/slabs 10. Place the beam rebars to required location 11. Mark the stirrups spacing on holding /top rebars according to bar bending schedule 12. Bind the stirrups with bottom and top rebars on marked points 13. Bind curtailed/tension rebars with stirrups 14. Spread the main rebars and distribution rebars for slab in two direction 15. Bind rebars with one another with binding wire 16. Fix the concrete spacers in slabs, beams 	<p style="text-align: center;">shell roof mould /form work</p>		<ul style="list-style-type: none"> Duster Chalk Rebars Binding wire Safety tape <p style="text-align: center;">Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base Chisels(for 	
--	---	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> cutting rebars) Differnt types of hammer(sledge hammer,light hammer etc.)t Cutting base Clipers Measuring tape(100') Measuring tape 18' Bar straightening ring Power cutter Plier Bench wise 	
LU3 Prepare Dome	<ol style="list-style-type: none"> 1. Abstract cut length and number of different types of rebars 2. Straighten rebars 3. Measure and mark the required cut length on rebars as per bar bending schedule 4. Cut the rebars with bar cutting tools/ machine cutter 5. Bend rebars as per bending schedule 6. Prepare the stirrups for ring beam 	<ul style="list-style-type: none"> Describe the procedure for laying reinforcement for dome Explain the concept of curtailing the rebars <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> Practice to cut , place and bind the rebars on prepared dome mould /form work 	<p>Theory-5Hrs</p> <p>Practical-27Hrs</p> <p>Total-32Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster 	



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<ol style="list-style-type: none"> 7. Make the bundle of prepared rebars and tag rebars 8. Place the bundle of prepared rebars of structural members to the required central place 9. Separate the rebars of different sizes of beams/slabs 10. Place the ring beam rebars to required location 11. Mark the stirrups spacing on holding /top rebars according to bar bending schedule 12. Bind the stirrups with bottom and top rebars on marked points 13. Bind curtailed/tension rebars with stirrups 14. Spread the main rebars and distribution rebars for dome 15. Bind rebars with one another with binding wire 16. Fix the concrete spacers in dome and ring beams 			<ul style="list-style-type: none"> Chalk Rebars Binding wire Safety tape <p style="margin-left: 20px;">Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia Computer PPEs Barriers Guardrail Bar bending key Bar bending table with pins Straightening base Chisels(for cutting rebars) Different types of 	
--	---	--	--	---	--



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



				<div>hammer(sledge hammer,light hammer etc.)t</div> <ul style="list-style-type: none">• Cutting base• Clipers• Measuring tape(100')• Measuring tape 18'• Bar straightening ring• Power cutter• Plier• Bench wise	
--	--	--	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



0732CM-17: Execute steel work for the Tank/Basement

Objective: This competency standard covers the skills and knowledge required to measure, cut and fix steel for the Tank/Basement.

Duration: 70 Hours

Theory: 13 Hours

Practice: 57 Hours

Credit Hours: 7

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: <ol style="list-style-type: none"> 1. Select the tools as per job requirement 2. Select and wear the PPEs relevant to Job. 3. Interpret bar bending schedule 4. Interpret structural drawing 5. Plan task sequence 	<ul style="list-style-type: none"> • Describe different types of underground tank • Describe different types of retaining wall <p>Activity:</p> <ul style="list-style-type: none"> • Practice to interpret bar bending schedule and abstract the cut length and numbers of different rebars for basement/tank • Practice to interpret bar bending schedule and abstract the cut length and numbers of different rebars for different components of over head tank 	<p>Theory-3Hrs</p> <p>Practical-9Hrs</p> <p>Total-12Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Binding wire • Safety tape <p>Non</p>	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<div>Consumable</div> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Barriers • Guardrail • Bar bending key • Bar bending table with pins • Straightening base • Chisels(for cutting rebars) • Differnt types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clipers • Measuring tape(100') • Measuring tape 18' 	
--	--	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> Bar straightening ring Power cutter Plier Bench vice 	
LU2. Fabricate rebars for Tank/Basement	Trainee will be able to: <ol style="list-style-type: none"> Abstract cut length and number of different types of rebars for base slab and retaining wall Straighten the rebars Measure and mark the cut length of rebars according to bar bending schedule Cut of rebars as per design Bend therebars,stirrups ,ties and chairs at the required angle as per drawing Make bundles of cut bars and tag them. Secure access according to site procedures Mark the position of rebars on finish surface of base Place and bind rebars for bottom slab as per bar bending 	<ul style="list-style-type: none"> Explain the basic concept of curtailment bar Describe types of joint sealer and water stopper Explain types of basement. <p>Activity:</p> <ul style="list-style-type: none"> Practice to cut ,bend rebar,make stirrups and ties and bundle them with tag for fabrication of small tank/basement Practice to place and bind pre cut rebars for basement cage. 	<p>Theory-5Hrs</p> <p>Practical-27Hrs</p> <p>Total-32Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Binding wire Safety tape <p>Non Consumable</p> <ul style="list-style-type: none"> White board Multimedia 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<p>schedule</p> <p>10. Place and bind rebars for retaining wall and column as per bar bending schedule</p> <p>11. Check proper overlap of neck columns and retaining walls.</p> <p>12. Place spacer as per requirement</p> <p>13. Verify the reinforcement detail in Tank/Basement according to the drawing</p> <p>14. Collect tools, equipment and materials from the trench</p> <p>15. Remove, clean and store barriers and signs</p>			<ul style="list-style-type: none"> • Computer • PPEs • Barriers • Guardrail • Bar bending key • Bar bending table with pins • Bar bending machine • Straightening base • Chisels(for cutting rebars) • Different types of hammer(sledge hammer,light hammer etc.)t • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' • Bar 	
--	---	--	--	---	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				straightening ring • Power cutter • Plier • Bench vise	
LU3 Fabricate rebars for Overhead Tank	1. Abstract cut length and number of different types of rebars for footing, column, and base slab and shear wall. 2. Straighten the rebars 3. Measure and mark the length of rebars according to bar bending schedule 4. Cut rebars as per bar bending schedule 5. Bend the rebars, stirrups, ties and chairs at the required angle as per drawing 6. Make bundles of cut bars and tag them. 7. Mark the position of rebars on finish surface of base 8. Place and bind rebars for footing and columns as per bar bending schedule 9. Place and bind rebars for base	• Describe different pattern of overhead water tank • Explain capacities of overhead water tank Activity: • Practice to cut, bend rebar, make ties and bundle them with tag for fabrication of base and column for an overhead tank • Practice to cut, bend rebar, make stirrups and bundle them with tag for fabrication of base slab of overhead tank • Practice to cut, bend rebar and bundle them with tag for fabrication of shear wall of overhead tank • Practice to fabricate the	Theory-5Hrs Practical-21Hrs Total-26Hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars Non Consumable • White board • Multimedia • Computer • PPEs	



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<p>slab and shear wall as per bar bending schedule</p> <p>10. Check overlap/splices of rebars.</p> <p>11. Place the spacer as per requirement</p> <p>12. Verify the reinforcement detail in Overhead Tank according to the drawing</p> <p>13. Gather tools, equipment and waste materials</p> <p>14. Remove, clean and store barriers and signs</p>	<p>cage of different components of overhead tank on ground</p>		<ul style="list-style-type: none"> • Chisels(for cutting rebars) • Different types of hammer(sledge hammer,light hammer etc.) • Cutting base • Clippers • Measuring tape(100') • Measuring tape 18' • Bar straightening ring • Power cutter • Bar bending machine 	
--	---	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



0732CM-18: Perform Welding

Objective: This competency standard covers the skills and knowledge required to perform preparatory work, carry out Arc welding, carry out oxy-fuel welding, cut and bend materials using Oxy-Fuel Process and perform cleaning of workplace.

Duration: 50 Hours

Theory: 5 Hours

Practice: 45 Hours

Credit Hours: 5

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform preparatory work	Trainee will be able to: <ul style="list-style-type: none"> Select appropriate personal protective equipment as per job requirement Select tools and equipment as per the job requirement Select required material as per job 	<ul style="list-style-type: none"> Understanding of types of welding Understanding of health and safety protocols involved during Welding Explain job drawings Define specifications/ classification of electrodes required for the job Differentiate electrical parameters like (voltage, current etc.) and their effects on welding Explain welding techniques as per WPS/instruction sheet 	Theory-01Hrs Practical-06Hrs Total-07Hrs	Consumable <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Electrodes MS Welding 	Class Room Training Workshop Lab/ Field Visit



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<ul style="list-style-type: none"> • Explain welding procedure specifications (WPS) • Define types of joints • Explain types of welding and its defects • Define metal sheet gauges <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to inspect the preparatory activities • Practice to select tools/equipment and material as per the job requirement 		<p>Wire Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Welding TXR • Welding Table • Electrode Holder • Oxy-Fuel Set • Regulators • Gas Pipe • Welding Torch • Welding Nozzles • Cutting Nozzles • Chipping Hammer • Sledge Hammer • Flux • Brass Wire • Flat Tong • Round Tong • Scriber • Angle Grinder 	
--	--	---	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> Table Grinder Power Circular Cutter Power Hacksaw Flat File 	
LU2. Carry out Arc welding	Trainee will be able to: <ul style="list-style-type: none"> Prepare base / parent metal for welding following standard procedures. Align and tack weld base / parent metal into position as per the job requirements following standard procedures Maintain the gap and angle between electrode and base metal as per the job requirements / specification following standard procedures. Remove slag Check welds for defects as per SOPs 	<ul style="list-style-type: none"> Understanding of Arc welding machine/Transformer & equipment used for welding Understanding of base and parent Metal Differentiate electrical parameters like (voltage, current etc.) and their effects on welding Explain welding techniques as per WPS/instruction sheet Explain welding procedure specifications (WPS) Understanding of types of joint and inspection of welding defects Understanding of metal sheet gauges 	Theory-01Hrs Practical-12Hrs Total-13Hrs	<div>Consumable</div> <ul style="list-style-type: none"> Notebooks Pencils Erasers Sharpeners Whiteboard marker Duster Chalk Rebars Electrodes MS Welding Wire <div>Non Consumable</div> <ul style="list-style-type: none"> White board Multimedia 	Class Room Training Workshop Lab/ Field Visit



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



		<p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> Practice to prepare butt andlap joint of rebar and remove slag. Practice to prepare different types of joints and remove slag with the help of chipping hammer. 		<ul style="list-style-type: none"> Computer PPEs Welding TXR Welding Table Electrode Holder Oxy-Fuel Set Regulators Gas Pipe Welding Torch Welding Nozzles Cutting Nozzles Chipping Hammer Sledge Hammer Flux Brass Wire Flat Tong Round Tong Scriber Angle Grinder Table Grinder Power Circular Cutter Power Hacksaw Flat File 	
--	--	---	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



LU3 Carry out oxy-fuel welding	<ul style="list-style-type: none"> • Prepare base / parent metal for welding as per standards • Ignite the torch and make desire flame • Maintain the gap and angle between gas nozzle and base metal as per the job requirements / specification following standard procedures. • Check welds for defects as per SOPs 	<ul style="list-style-type: none"> • Understanding of base /parent metal • Explain Oxy-Fuel Equipment used for welding and cutting mild steel • Define welding techniques as per WPS/instruction sheet • Define welding procedure specifications (WPS) • Understanding of brazing <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to prepare V-Grove butt joint • Practice to braze the two different metals with brass rod. 	<p>Theory-01Hrs</p> <p>Practical-12Hrs</p> <p>Total-13Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk • Rebars • Electrodes • MS Welding Wire <p>Non Consumable</p> <ul style="list-style-type: none"> • White board • Multimedia • Computer • PPEs • Welding TXR • Welding Table • Electrode Holder 	
---------------------------------------	--	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Oxy-Fuel Set • Regulators • Gas Pipe • Welding Torch • Welding Nozzles • Cutting Nozzles • Chipping Hammer • Sledge Hammer • Flux • Brass Wire • Flat Tong • Round Tong • Scriber • Angle Grinder • Table Grinder • Power Circular Cutter • Power Hacksaw • Flat File 	
LU4 Cut and bend materials using Oxy-Fuel Process	<ul style="list-style-type: none"> • Identify Oxy-Fuel Equipment • Read Structural drawings • Measure and mark the rebar to be cut • Cut the rebar by Oxy-Fuel Equipment • Handle the rebar efficiently 	<ul style="list-style-type: none"> • Understanding of structural drawing • Understanding of welding torch • Knowledge about welding nozzles and its types 	Theory-01Hrs Practical-09Hrs Total-10Hrs	Consumable <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners 	Class Room Training Workshop Lab/ Field Visit



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



	<p>using the proper tools/Equipment</p> <ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Understanding of bending procedure with the help of Oxy Fuel welding <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> Practice to prepare different Bends of rebar as per drawing Practice to prepare cut the rebar at marked point with the help of oxy fuel process. 		<ul style="list-style-type: none"> Whiteboard marker Duster Chalk Rebars Electrodes MS Welding Wire Non Consumable White board Multimedia Computer PPEs Welding TXR Welding Table Electrode Holder Oxy-Fuel Set Regulators Gas Pipe Welding Torch Welding Nozzles Cutting Nozzles 	
--	--	---	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Chipping Hammer • Sledge Hammer • Flux • Brass Wire • Flat Tong • Round Tong • Scriber • Angle Grinder • Table Grinder • Power Circular Cutter • Power Hacksaw • Flat File 	
LU5 Perform cleaning of workplace	<ul style="list-style-type: none"> • Clean up the all Tools and accessories • Check all tools & accessories for any discrepancy, tag and report. • Clear work area and dispose of wastage accordance with workplace requirements. 	<ul style="list-style-type: none"> • Knowledge of maintaining and handling of tools • Knowledge of reporting <p><u>Practical Activity:</u></p> <ul style="list-style-type: none"> • Practice to Clean workplace and maintain tools after perform welding 	<p>Theory-01Hrs</p> <p>Practical-06Hrs</p> <p>Total-07Hrs</p>	<p>Consumable</p> <ul style="list-style-type: none"> • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster • Chalk 	<p>Class Room</p> <p>Training Workshop</p> <p>Lab/ Field Visit</p>



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Rebars • Electrodes • MS Welding Wire Non Consumable • White board • Multimedia • Computer • PPEs • Welding TXR • Welding Table • Electrode Holder • Oxy-Fuel Set • Regulators • Gas Pipe • Welding Torch • Welding Nozzles • Cutting Nozzles • Chipping Hammer • Sledge Hammer • Flux • Brass Wire • Flat Tong 	
--	--	--	--	--	--



National Vocational Certificate Level 3 in Construction Sector (Steel Fixer & Erector)



				<ul style="list-style-type: none"> • Round Tong • Scriber • Angle Grinder • Table Grinder • Power Circular Cutter • Power Hacksaw Flat File 	
--	--	--	--	--	--

List of Tool, Machinery and Equipment:

SR#	Items/Tools & Equipment	Quantity
1.	PPEs: Safety Helmet Safety Shoes Ear-muffs Gloves Eye Protection(Goggles)	 30 30 30 30



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



	Face Shields.	05
2.	Desktop computer	26
3.	Printer	01
4.	Application software.	As required
5.	Requisition book	05
6.	Sample drawings	15
7.	Sample bar bending schedule	05
8.	First aid KIT	01
9.	Fire extinguishers.	02
10.	Fire alarm	02
11.	Chain pulley	02



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



12.	Hammer(Sledge)	10
13.	Hammer(light)	10
14.	Manual Hydraulic Rebar Cutter	25
15.	Hydraulic Rebar Cutter	25
16.	Spanner Set	05
17.	Vernier Calipper	10
18.	Grinding Machine	02
19.	Bench vice	30
20.	Bending Lever (<i>Bari</i>)	10
21.	Bending Machine with table (4'x6')	05
22.	Plier	25



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



23.	Measuring tape(100')	10
24.	Steel tape (16')	30
25.	Bar bending table (4'x6')	05
26.	Power Cutter	02
27.	Tongs	06
28.	Anvil	05
29.	Manual Cutting Base	10
30.	Cutting Machine with cutters	10

List of Consumable Supplies

SR#	Consumable Supplies	Quantity
1.	PPEs	



**National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)**



	Surgical Face Masks	30
2.	Stationary	As required
3.	Rebar(1/2" dia)	600kg
4.	Binding wire	50kg
5.	Rebar(3/4" dia)	450kg
6.	Rebar(1/4" dia)	350kg
7.	Printer paper	As required
8.	Sample job order	As required



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



Members of the Curriculum Development Committee

S#	Name	Designation
1	Mr. Tariq Saeed	Sr. Instructor, GTTI Mughalpura Lahore
2	Mr. Azhar Iqbal Shad	Principal, GCT Raiwind Road Lahore
3	Mr. Muhammad Asim	Lab Technologist UOL, Lahore
4	Mr. Muhammad Shafiq	Sr. Instructor, GSTC Mughalpura Lahore



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



5	Ms. Hira Ishtiaq	Lecturer, UOL, Lahore
6	Ms. SaimaAsghar	CBT Expert & Certified Assessor, Lahore
7	Mr. Nadeem Zaigham	Sr. Instructor, GCT Raiwind Road Lahore
8	Mr. Tahir Mehmood	Sr. Instructor, GTTI Mughalpura Lahore
9	Mr. Muhammad AmjadRafique	Principal, GCT Rasool
10	Engr. Danish Khan	DACUM Facilitator
11	Mr. Muhammad Yasir	Deputy Director/ Coordinator –(Skills Standards and Curricula) NAVTTC HQ



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



Members of the Curriculum Validation Committee

S#	Name	Designation
1.	Mr. Tariq Saeed	Sr. Instructor, GTTI Mughalpura Lahore
2.	Mr. Azhar Iqbal Shad	Ex-Principal, GCT Raiwind Road Lahore
3.	Engr. Muhammad Asim	Lecturer, UOL, Lahore
4.	Engr. Abdul Rasheed	Principal GCT Tangi, Charsadda KPK
5.	Mr. Imtiaz Ahmed	Assistant Manager, SK International Builders Islamabad



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



6.	Mr. Muhammad Shafiq	Sr. Instructor, GSTC Mughalpura Lahore
7.	Engr. Habiba Mohsin	Lecturer, UOL, Lahore
8.	Ms. Saima Asghar	CBT Expert & Certified Assessor, Lahore
9.	Mr. Muhammad Abid	Instructor, GCT Railway Road Lahore
10.	Mr. Tahir Mehmood	Sr. Instructor, GTTI Mughalpura Lahore
11.	Mr. Shoukat Ali Rana	Deputy Controller Examination, PBTE, Lahore
12.	Engr. Muhammad Waris	Instructor, GCT Raiwind Road Lahore



***National Vocational Certificate Level 3 in Construction Sector
(Steel Fixer & Erector)***



13.	Mr. Sikandar Hayat	Jr. Instructor, GCT Raiwind Road Lahore
14.	Engr. Danish Khan	DACUM Facilitator
15.	Mr. Muhammad Yasir	DD, VT (NAVTTTC)