Model Curriculum

1. Scaffolder - System

SECTOR: Construction
SUB-SECTOR: Real Estate and Infrastructure Construction
OCCUPATION: Scaffolding
REF ID: CON/Q0305, V1.0
NSQF LEVEL: 4

Certificate

COMPLIANCE TO
QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

CONSTRUCTION SECTOR SKILLS COUNCIL

for the

SKILLING CONTENT: PARTICIPANT HANDBOOK

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Scaffolder-System' QP No. 'CON/Q 0305 NSQF Level 4'

Date of Issuance: January 31st, 2017

Valid up to: May 23rd, 2017

* Valid up to the next review date of the Qualification Pack

Authorised Signatory
(Construction Skill Development Council)

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Scaffolder- System

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Scaffolder- System", in the "Construction" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	**Scaffolder- System**		
Qualification Pack Name & Reference ID. ID	CON/Q0305, v1.0		
Version No.	1.0	**Version Update Date**	23-03-2017
Pre-requisites to Training	Preferably 5th Standard		
Training Outcomes	**After completing this programme, participants will be able to:** • **Erect and dismantle common customized system scaffolds:-** Procedure for erecting and dismantling common customized scaffolds . • **Erect and dismantle the staircase towers and mobile towers scaffolds:-** Procedure for erecting and dismantling staircase towers and mobile towers scaffolds. • **Work effectively in a team to deliver desired results at the workplace:-** Organised working procedure within a team at site . • **Plan and organize work to meet expected outcomes: -** Prioritizing activities and organising resources to meet desired outcome. • **Work according to personal health, safety and environment protocol at construction site: -** Importance of Health & Safety aspects & measures to be followed while working.		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of "Scaffolder- System" Qualification Pack issued by "Construction Skill Development Council of India".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 00:00	• Role description/ functions of the job role • Expected personal attributes from the job role • Brief description about course content, mode of learning and duration of course • Future possible progression and career development provisions on completion of the course	Classroom Requirement 1. Classroom of 30 students capacity 2. Black/White board 3. Projector/LED Monitor 4. Computer 5. Trade specific charts and other teaching aids
2	**Erect and dismantle common customized system scaffolds** **Theory Duration** (hh:mm) 32:00 **Practical Duration** (hh:mm) 136:00 **Corresponding NOS Code** CON/N0351	**Theory:-** • Numeration/general arrangement drawings, schematic working drawing for scaffolding • Importance of system scaffolding in construction work • Different types of common customised system scaffolds (Pipe & coupler, frame,cuplock,wedgelock,ringlock),Scaffold component their standard size and weight • Various hand tools used in scaffold erection • Visual checking for ground compaction • PPE's and fall protection System related to scaffolding work • Service request procedure for tools, material and equipment • Sorting and selection of scaffold components • Load carrying capacity of various type of scaffold • Single pole and double pole scaffold • Use of water level tube, Spirit level, plumb bob • Sequential process for erection and dismantling of common customised system scaffold (Pipe & coupler,cuplock wedge lock, ringlock,cuplock scaffolds) • Support to erected scaffold with permanent structure • Checking of erected scaffold for line, level plumb, rigidity, stability • Standard tolerance for scaffolding work **Demonstration/ Practical :-** • Read and explain scaffolding detail from drawing • Calculation of quantity of scaffold material	Hand tools 1. Hammer 2. Ring spanner (set) 3. Open end spanner 4. Double end spanner 5. Wrench 6. Pulley 7. Rope 8. Nuts and bolts 9. Hack saw frame with blade 10.Drilling Machine with bits Measuring Instruments 10. Measuring tape 11. Spirit level 12. Plumb-bob 13. Chalk line 14. Water level tube Materials 15. Cup-lock/frame scaffolding components 16. 40 NB steel pipes 17. Swivel coupler

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Demonstrate erection and dismantle of common customized system scaffold (Pipe & coupler, Frame scaffold) • Demonstrate fixing of guard rail, safety net	18. Fixed clamp 19. Steel walkways 20. Aluminium/ GI ladder 21. Safety net <u>PPEs & safety equipment's</u> 22. Helmet 23. Safety shoes 24. Safety belt 25. Cotton hand gloves 26. Goggles 27. Reflective Jackets 28. Safety message boards 29. Scaffolding Tags 30.Barricade Tape
3	**Erect and dismantle the staircase towers and mobile towers scaffolds** **Theory Duration** (hh:mm) 32:00 **Practical Duration** (hh:mm) 136:00 **Corresponding NOS Code** CON/N0352	**<u>Theory:-</u>** • Component of staircase tower scaffold • Component of mobile tower scaffolds • Hand tools used in staircase tower scaffold and mobile tower scaffold erection • Sequential process for erection and dismantling of staircase tower scaffold • Sequential process for erection and dismantling of mobile tower scaffold • Supporting methodology for staircase tower and mobile tower scaffold • Standard tolerance for scaffolding work **<u>Demonstration/ Practical :-</u>** • Demonstrate erection and dismantling of staircase tower scaffold • Demonstrate erection and dismantle of mobile tower scaffold • Demonstrate/explain support to erected scaffold	<u>Hand tools</u> 1. Hammer 2. Ring spanner (set) 3. Open end spanner 4. Double end spanner 5. Wrench 6. Pulley 7. Rope 8. Nuts and bolts 9. Hack saw frame with blade 10.Drilling Machine with bits <u>Measuring Instruments</u> 10. Measuring tape 11. Spirit level 12. Plumb-bob 13. Chalk Line 14. Water level tube

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			Materials 15. Cup-lock/ frame scaffolding components 16. Staircase tower components with fixtures 17. Castor wheels 18. 40 NB pipes 19. Swivel coupler 20. Fixed clamp 21. Steel walkways 22. Aluminium/ GI ladder 23. Safety net PPEs & safety equipment's 24. Helmet 25. Safety shoes 26. Safety belt 27. Cotton hand gloves 28. Goggles 29. Reflective jackets 30. Safety message boards 31. Scaffolding Tags
4	**Work effectively in a team to deliver desired results at the workplace** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code**	**Theory:-** • Method of oral and written communication skills with co-workers, trade seniors while handling and carrying out visual checks on materials, tools and tackles, equipments • How to interpret scope of scaffolding work, material/ tools handling by adhering to instructions or consulting with seniors • Method of providing instruction to subordinates or reporting to seniors clearly and promptly • Seek necessary support and complete assigned tasks within stipulated time duration	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	CON/N8001	• Keep good relation and maintain well behavior with co-workers **Demonstration/ Practical :-** The skills will be developed and practiced while carrying out following trade related activities: 1. Selection of materials, tools and equipments 2. Handling scaffolding materials, tools and equipments 3. Preparation of base area for erection of scaffold 4. Erection and dismantling of common customized system scaffold 5. Erection and dismantling of staircase tower scaffold 6. Erection and dismantling of mobile tower scaffold	
5	**Plan and organize work to meet expected outcomes** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 12:00 **Corresponding NOS Code** CON/N8002	**Theory:-** • Basic concept of productivity, sequence of working and implementation of safety and organizational norms while working • Optimization of resources • To plan scaffolding work within defined scope of work • Upkeep, storing and stacking methods of tools, materials used for domain specific works • Requisition of resources, reporting for requirement of resources orally and in written to concerned authority • Importance of housekeeping, **Demonstration/ Practical :-** The skills will be developed and practiced while carrying out following trade related activities 1. Selection of materials, tools or devices for defined purpose in an optimum manner 2. Handling material, tools and equipments relevant to scaffolding works 3. Prioritize all works/ activities 4. Erection and dismantling of common customized system scaffold 5. Erection and dismantling of staircase tower scaffold 6. Erection and dismantling of mobile tower scaffold 7. Optimum use of resources while performing task	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		8. Adherence to stipulated timelines for completion of scaffolding work	
6	**Work according to personal health, safety and environment protocol at construction site** **Theory Duration** (hh:mm) 08:00 **Practical Duration** (hh:mm) 16:00 **Corresponding NOS Code** CON/N9001	**Theory:-** • Types of hazards involved in construction sites • Types of hazards involved in scaffolding work • Safe work practices involved in scaffolding work • Fall protection System In Scaffolding Work • Emergency safety control measures and actions to be taken under emergency situation • Identification of unsafe act and unsafe condition • Concept of :- 1. First Aid process 2. Use of fire extinguisher 3. Classification of fires and fire extinguisher 4. Safety drills 5. Types and use of PPEs required for Scaffolding works • Safety protocols and practices • Reporting procedure to the concerned authority in emergency situations • Standard procedure of handling, storing and stacking material • What is safe disposal of waste, type of waste and their disposal • basic ergonomic principles as per applicability **Demonstration/ Practical :-** The skills will be developed and practiced while carrying out following trade related activities: 1. Selection of PPEs and use them appropriately as per working need of scaffolding works, handling, storing, stacking and shifting of scaffolding material, tools and equipments 2. Selection of PPEs and use them appropriately as per working need of erection and dismantling of various types of scaffold. 3. Identification of locations, situations/ circumstances, malpractices which can	PPEs 1. Safety Helmet 2. Safety goggles 3. Safety shoes 4. Safety belt 5. Cotton gloves 6. Ear plugs 7. Reflective jackets 8. Dust mask 9. Fire Prevention kit

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		be hazardous for general or scaffolding works 4. Selection of fire extinguisher based on classification of fire, standard practice of storing & stacking fire-fighting equipments/ materials at work locations 5. Disposal of waste materials as per their nature and effects on weather	
	Total Duration **Theory Duration 84:00** **Practical Duration 320:00**	**Unique Equipment Required:** <u>Classroom Requirement</u> Classroom of 30 students capacity, Black/White board, Projector/LED Monitor, Computer, Trade specific charts and other teaching aids <u>Hand Tools</u> Hammer, Ring spanner (set), Open end spanner, Double end spanner, Wrench, Pulley, Rope, Nuts and bolts, Hack saw frame with blade <u>Measuring Instruments</u> Measuring tape, Spirit level, Water level tube, Plumb-bob, Mason's line <u>General requirement</u> Lifting appliance (Sling, Shackle, Belts) <u>Materials</u> Cup-lock scaffolding components (set)/Frame scaffold components, Staircase tower components with fixtures, Castor wheels , 40 NB pipes, Swivel coupler, Fixed clamp, Steel walkways, Aluminium/ GI ladder, Safety net <u>PPEs</u> Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention kit	

Grand Total Course Duration: 404 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by ***Construction Skill Development Council of India)***

Trainer Prerequisites for Job role: "Scaffolder- System" mapped to Qualification Pack: "CON/Q0305, v1.0"

Sr. No.	Area	Details
1	**Description**	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "CON/Q0305".
2	**Personal Attributes**	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field
3	**Minimum Educational Qualifications**	ITI/12th
4a	**Domain Certification**	Trainer/Assessor-80% in each NOS of Qualification Pack "MEP/Q0102" or "MEP/Q0104" and Lead trainer/Lead Assessors- 90% in each NOS of Qualification Pack "MEP/Q0101" or "MEP/Q0103"
4b	**Platform Certification**	Trainer/Assessor-50% in each NOS of Qualification Pack "MEP/Q0101" or "MEP/Q0103"& 80% overall, Lead trainer/ Lead Assessors- 50% in each NOS of Qualification Pack "MEP/Q0101" or "MEP/Q0103"and overall 90%
5	**Experience**	i. Technical Degree holder with minimum three years of Field experience and preferably two years of teaching experience or, ii. In case of a Diploma Holder five years of field experience and preferably two years of teaching experience or, iii. In case of ITI/12th pass minimum eight years of field experience and preferably two years of teaching Experience.

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role	Scaffolder - System
Qualification Pack	CON/Q0603
Sector Skill Council	Construction

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.
5. The passing percentage for each QP will be 70%. To pass the Qualification Pack, every trainee should score a minimum of 70% individually in each NOS.
6. The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome.
7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
8. After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
9. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified timeframe set by SSC.
10. Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

				Marks Allocation	
		Total Mark	Out Of	Theory	Skills Practical
CON/N0351: Erect and dismantle common customized system scaffolds	PC1. determine the quantity of scaffolding material and component required for erection based on type of scaffolds and height requirements	**100**	20	4	3
	PC2. sort out all the components prior to erection of scaffold and replace the damaged ones				2
	PC3. check for and ensure level, compactness of ground by visual / physical checks				3
	PC4. ensure all the required components, tools, equipment and material are present prior to starting scaffolding work				3
	PC5. check and fix guard rails and safety nets around the scaffold area to ensure safe working conditions in case of already erected scaffold or while working at heights				3
	PC6. prevent unauthorized access to the work area by providing proper barricades around the work area				2
	PC7. place base plates and sole boards on ground as per the marking for setting the scaffolds		10	2	8
	PC8. use proper components and follow erection with respect to types of scaffold used as per standard practices		5	1	4
	PC9. check verticality of scaffold at first level of erection and correct (if required) before moving to the next level		5	1	4
	PC10. check for rigidity and stability of scaffold		5	1	4
	PC11. provide appropriate support to the scaffold erected as per standard practice and instructions from superiors		5	1	4
	PC12. fix walk boards, guard rail, toe boards and other components on the working		5	1	4
	PC13. offer for scaffolding inspection , do any rework as suggested by inspector and get it approve		5	1	4
	PC14. follow and ensure standard dismantling procedure according to types of scaffold		10	2	8
	PC15. check for stability, rigidity of scaffold before dismantling and maintain during dismantling		10	2	8
	PC16. remove guard rails, toe boards, walk boards and components sequentially keeping the overall safety in mind		5	1	4

	PC17. lower scaffold components in a safe manner following the proper laid down procedure		10	2	8
	PC18. clean, repair and store scaffold components for further use		5	1	4
		Total	**100**	**20**	**80**
CON/N0352: Erect and dismantle staircase tower and mobile tower scaffold	PC1. check for and ensure level and compactness of ground by visual / physicalcheck	**100**	8	5	3
	PC2. place base plates and sole boards on ground as per marking		4		4
	PC3. follow erection procedure for staircase tower scaffold as per standard practice		3		3
	PC4. check verticality of staircase tower scaffold at first level of erection and correct before moving on to subsequent levels		3		3
	PC5. check for rigidity and stability of staircase tower scaffold		2		2
	PC6. provide support to staircase tower scaffold as per standard practice		3		3
	PC7. fix guard rail, gap plates, kickboard and other related components on the staircase scaffold		2		2
	PC8. follow dismantling procedure as per standard practices		5	1	4
	PC9. remove guard rails, gap plates, kickboards and components sequentially		5	1	4
	PC10. check for stability, rigidity of scaffold before dismantling and maintain during dismantling		5	1	4
	PC11. lower staircase scaffold components in a safe manner		5	1	4
	PC12. clean, repair and store staircase scaffold components for further use		5	1	4
	PC13. check for and ensure level, compactness of ground by visual / physical check		8	5	3
	PC14. check for working conduction of castor wheel		2		2
	PC15. follow erection procedure for mobile tower scaffold as per standard practice		4		4
	PC16. check verticality of mobile tower scaffold at first level of erection and correct before moving on to subsequent levels		3		3
	PC17. check for rigidity and stability of mobile tower scaffold		2		2
	PC18. provide support to mobile tower scaffold as per standard practices		2		2

	PC19. fix walk boards, guard rail, toe boards and other components		2		2
	PC20. unlock castors and move scaffold as per requirement		1		1
	PC21. maintain prescribed distance from overhead power lines (if any)		1		1
	PC22. follow appropriate dismantling procedure as per standard practices		5	1	4
	PC23. remove guard rails, toe boards, walk boards and components sequentially		5	1	4
	PC24. check for stability, rigidity of scaffold before dismantling and maintain during dismantling		5	1	4
	PC25. lower mobile tower scaffold components in a safe manner		5	1	4
	PC26. clean, repair and store mobile tower scaffold components for further use		5	1	4
		Total	**100**	**20**	**80**
CON/N8001: Work effectively in a team to deliver desired results at the workplace	PC1. pass on work related information/ requirement clearly to the team members	100	10	2	8
	PC2. inform co-workers and superiors about any kind of deviations from work		5	1	4
	PC3. address the problems effectively and report if required to immediate supervisor appropriately		5	1	4
	PC4. receive instructions clearly from superiors and respond effectively on same		5	1	4
	PC5. communicate to team members/subordinates for appropriate work technique and method		5	1	4
	PC6. seek clarification and advice as per requirement and applicability		10	2	8
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams		30	6	24
	PC8. work together with co-workers in a synchronized manner		30	6	24
	Total		**100**	**20**	**80**
CON/N8002: Plan and organize work to meet expected outcomes	PC1. understand clearly the targets and timelines set by superiors	**100**	10	2	8
	PC2. plan activities as per schedule and sequence		10	2	8
	PC3. provide guidance to the subordinates to obtain desired outcome		10	2	8
	PC4. plan housekeeping activities prior to and post completion of work		10	2	8

	PC5. list and arrange required resources prior to commencement of work		10	2	8
	PC6. select and employ correct tools, tackles and equipment for completion of desired work		10	2	8
	PC7. complete the work with allocated resources		10	2	8
	PC8. engage allocated manpower in an appropriate manner		10	2	8
	PC9. use resources in an optimum manner to avoid any unnecessary wastage		5	1	4
	PC10. employ tools, tackles and equipment with care to avoid damage to the same		5	1	4
	PC11. organize work output, materials used, tools and tackles deployed,		5	1	4
	PC12. processes adopted to be in line with the specified standards and instructions		5	1	4
		Total	**100**	**20**	**80**
CON/N9001: Work according to personal health, safety and environment protocol at construction site	PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authoritys	**100**	5	1	4
	PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities		5	1	4
	PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable		10	2	8
	PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site		5	1	4
	PC5. identify near miss , unsafe condition and unsafe act		5	1	4
	PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: • Head Protection (Helmets) • Ear protection • Fall Protection • Foot Protection • Face and Eye Protection • Hand and Body Protection • Respiratory Protection (if required)		10	2	8
	PC7. handle all required tools, tackles , materials & equipment safely		5	1	4
	PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines		5	1	4
	PC9. install and apply properly all safety equipment as instructed		15	3	12

	PC10. follow safety protocol and practices as laid down by site EHS department		15	3	12
	PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes		10	2	8
	PC12. apply ergonomic principles wherever required		10	2	8
		Total	**100**	**20**	**80**