Chargehand - Structural Erection

QP Code: CON/Q0705

Version: 2.0

NSQF Level: 4

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CON/Q0705: Chargehand - Structural Erection

Brief Job Description

The job role is responsible for coordinating the lifting of heavy structural steel assemblies using cranes or suitable equipment and erecting them in appropriate locations as per drawings. Individual in this job role also erects temporary lifting arrangements to facilitate material handling in high-rise structures at construction sites

Personal Attributes

The Chargehand structural erection is expected to be physically fit to work across various locations with varied environmental conditions. The job holder should preferably be free from vertigo problem and cardiovascular diseases.The person should be organized, diligent, methodical, safety-conscious, and a prompt decision-maker. In addition to being a team player, the individual should have good communication skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. CON/N0715: Assemble, install and dismantle temporary material hoist for material lifting at construction site
2. CON/N0716: Coordinate lifting of heavy structural steel assemblies at construction sites
3. CON/N0717: Erect structural steel assemblies at construction sites
4. CON/N8001: Work effectively in a team to deliver desired results at the workplace
5. CON/N8002: Plan and organize work to meet expected outcomes
6. CON/N9001: Work according to personal health, safety and environment protocols at construction site

Qualification Pack (QP) Parameters

Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
Country	India

NSQF Level	4
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7214.07
Minimum Educational Qualification & Experience	10th Class with 9 Years of experience (a non-trained worker should have minimum 9 years site experience in the rigging occupation) OR 10th Class with 3 Years of experience (should have minimum 3 years' site experience as a NSQF Level 4 certified Rigger Structural Erection)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NIL
Minimum Job Entry Age	18 Years
Last Reviewed On	23/07/2021
Next Review Date	23/07/2025
NSQC Approval Date	
Version	2.0

CON/N0715: Assemble, install and dismantle temporary material hoist for material lifting at construction site

Description

This unit describes the skills and knowledge required to assemble, install and dismantle temporary material hoist for material lifting at construction site.

Scope

The scope covers the following :

- Carry out planning and preparatory works for erection of hoist
- Erect lifting system and connect it to lifting equipment
- Carry out inspection, maintenance and dismantling of lifting systems as per requirement

Elements and Performance Criteria

Carry out planning and preparatory works for erection of hoist

To be competent, the user/individual on the job must be able to:

PC1. determine erection work requirements and feasibility for setting up temporary lifting arrangements

PC2. determine appropriate location for setting up brackets, masts or temporary lifting systems

PC3. identify materials, tools and lifting gears required to assemble lifting system according to the load to be lifted

PC4. develop sketches, diagrams of proposed lifting systems which involve dimension of system, height level of erection, materials to be used in fabrication of the assembly, rigging tools and gears to be used within assembly, material movement path and clear distance to nearby locations

PC5. obtain approval for erecting lifting system from concerned authority prior to assembling rigging arrangements

Erect lifting system and connect it to lifting equipment

To be competent, the user/individual on the job must be able to:

PC6. check the stability of surface (ground or platform at height) where lifting system is to be installed

PC7. use structural steel sections of appropriate dimensions and specifications to assemble the lifting system

PC8. ensure proper welding or bolting of component joints within the lifting system

PC9. ensure rigidity, alignment and orientation is as per approved plan or drawing

PC10. use pulleys of appropriate specification at required positions

PC11. provide adequate support from permanent structures to the lifting system by suitable means

PC12. attach slings, wire ropes to the lifting systems in order to complete the arrangement

PC13. use appropriate load lifting gears for the load lifting operations

PC14. carry out trial run and ensure safe material lifting work under proper supervision

PC15. ensure erection of safety signage and barricades as per work safety requirement

Carry out inspection, maintenance and dismantling of lifting systems as per requirement

To be competent, the user/individual on the job must be able to:

PC16. carry out periodic inspections of the lifting arrangement as per requirement

PC17. install lifting equipment of adequate capacity (Safe working load-SWL) considering the maximum planned load to be lifted

PC18. ensure lubrication, tightening of lifting system components and equipment as per requirement

PC19. ensure shut down of lifting machine/ equipment post lifting work

PC20. carry out safe dismantling of lifting arrangement after completion of work in proper sequence

PC21. lower the dismantled parts safely and ensure proper storing and staking of dismantled parts

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for rigging works

KU2. safety rules and regulations for handling and storing relevant tools and equipment and materials for rigging works

KU3. personal protection including the use of the related safety gears and euipment

KU4. precautions and measures required in the lifting and movement of heavy components and materials

KU5. service request procedures for tools, materials and equipments

KU6. statutory compliance requirements related to working at height

KU7. basic sketches / schematic working drawing relevant to rigging works

KU8. basic principles of measurement, geometry and arithmetic calculation

KU9. conversion of units of linear, areal and volumetric measurements

KU10. how to read and interpret drawings, sketches related to structural erection works

KU11. how to develop sketches and what details to be covered in the sketches

KU12. use of different kind of common lifting gears like hooks, shackles, wire rope slings, chain slings, belts, eye bolts, rings, links, swivels and spreader beams

KU13. load carrying capacity of each lifting gears and their specifications

KU14. different safety checks to be carried out for respective safety gears to determine their usability for lifting

KU15. structural steel components to be used in lifting systems and their sectional dimensions

KU16. standard checks to be carried out at locations where lifting system is to be erected

KU17. standard joining procedures to be adopted for lifting systems

KU18. how to attach lifting gears to lifting systems

KU19. safe distance to be maintained from structure as per standard norms

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write in one or more language, preferably in the local language of the site and basic English

GS2. read sketches, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site

GS3. speak in one or more language, preferably one of the local language at the site

GS4. communicate orally and effectively with team members

GS5. analyze the safety aspect of the workplace

GS6. plan work and organize required resource effectively

GS7. complete work as per agreed time schedule and quality parameters

GS8. resolve any conflict within the teammates

GS9. evaluate the complexity of the tasks

GS10. identify any violation of safety norms during the work

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Carry out planning and preparatory works for erection of hoist	**6**	**14**	**-**	**-**
PC1. determine erection work requirements and feasibility for setting up temporary lifting arrangements	-	-	-	-
PC2. determine appropriate location for setting up brackets, masts or temporary lifting systems	-	-	-	-
PC3. identify materials, tools and lifting gears required to assemble lifting system according to the load to be lifted	-	-	-	-
PC4. develop sketches, diagrams of proposed lifting systems which involve dimension of system, height level of erection, materials to be used in fabrication of the assembly, rigging tools and gears to be used within assembly, material movement path and clear distance to nearby locations	-	-	-	-
PC5. obtain approval for erecting lifting system from concerned authority prior to assembling rigging arrangements	-	-	-	-
Erect lifting system and connect it to lifting equipment	**15**	**35**	**-**	**-**
PC6. check the stability of surface (ground or platform at height) where lifting system is to be installed	-	-	-	-
PC7. use structural steel sections of appropriate dimensions and specifications to assemble the lifting system	-	-	-	-
PC8. ensure proper welding or bolting of component joints within the lifting system	-	-	-	-
PC9. ensure rigidity, alignment and orientation is as per approved plan or drawing	-	-	-	-
PC10. use pulleys of appropriate specification at required positions	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. provide adequate support from permanent structures to the lifting system by suitable means	-	-	-	-
PC12. attach slings, wire ropes to the lifting systems in order to complete the arrangement	-	-	-	-
PC13. use appropriate load lifting gears for the load lifting operations	-	-	-	-
PC14. carry out trial run and ensure safe material lifting work under proper supervision	-	-	-	-
PC15. ensure erection of safety signage and barricades as per work safety requirement	-	-	-	-
Carry out inspection, maintenance and dismantling of lifting systems as per requirement	**9**	**21**	**-**	**-**
PC16. carry out periodic inspections of the lifting arrangement as per requirement	-	-	-	-
PC17. install lifting equipment of adequate capacity (Safe working load-SWL) considering the maximum planned load to be lifted	-	-	-	-
PC18. ensure lubrication, tightening of lifting system components and equipment as per requirement	-	-	-	-
PC19. ensure shut down of lifting machine/ equipment post lifting work	-	-	-	-
PC20. carry out safe dismantling of lifting arrangement after completion of work in proper sequence	-	-	-	-
PC21. lower the dismantled parts safely and ensure proper storing and staking of dismantled parts	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N0715
NOS Name	Assemble, install and dismantle temporary material hoist for material lifting at construction site
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	23/07/2021
Next Review Date	23/07/2025

CON/N0716: Coordinate lifting of heavy structural steel assemblies at construction sites

Description

This unit describes the skills and knowledge required to coordinate lifting of heavy structural steel assemblies using lifting equipment

Scope

The scope covers the following :

- Ensure that preparatory works are completed as per work requirement prior to lifting
- Coordinate the lifting operations and provide signals to lifting equipment operators
- Carry out heavy lifting operations using multiple lifting equipment (Tandem Lifting)

Elements and Performance Criteria

Ensure that preparatory works are completed as per work requirement prior to lifting

To be competent, the user/individual on the job must be able to:

PC1. ensure the lifting route is free from obstacles such as live overhead electrical cables, service lines and close vicinity to existing structures or persons

PC2. ensure area of operation (lifting, unloading) is safely marked, barricaded and safe access path is available to the lifting point

PC3. ensure that the lifting area is adequately illuminated and clear visibility can be maintained from lifting point to erection location

PC4. ensure loads to be lifted are placed appropriately at the point of lifting

PC5. confirm that the lifting equipment and their accessories under operation are in safe working condition

PC6. check and ensure safe working conditions of lifting gears like shackles, pulleys, hooks, ropes, slings etc

PC7. check for adequate tightness of slings, belts or ropes anchored to the load as per applicable standard procedure, prior to lifting

Coordinate the lifting operations and provide signals to lifting equipment operators

To be competent, the user/individual on the job must be able to:

PC8. use specified lifting gears considering weight, shape and size of the load

PC9. monitor the lifting operation considering the size and shape of the load being lifted

PC10. monitor the angle between slings under tension and tightness of locks at attached points to ensure stability of the suspended load

PC11. ensure elements or assemblies do not get damaged during lifting operations

PC12. guide the movement of suspended loads using tag line or guy rope

PC13. maintain clear line of vision with the equipment operator

PC14. provide appropriate signals during various stages of lifting as per standard hand signaling guidelines

PC15. seek assistance for signaling if load or operator is not visible from own location

Carry out heavy lifting operations using multiple lifting equipment (Tandem Lifting)

To be competent, the user/individual on the job must be able to:

PC16. brief subordinates about lifting plan and safe working methods prior to commencing heavy lifting operations

PC17. ensure safe distance of equipment and objects from human and other objects while carrying out lifting activity as per agreed work plan

PC18. • assess position of cranes and load to ensure they comply with load
• lifting plan and safety norms provided for conducting tandem lifting operations

PC19. • confirm full functional tests have been carried out on all power,
• transmission, control and safety systems of the equipment by a competent personnel prior to the commencement of the lift

PC20. confirm that the weather condition is favorable for heavy lifting activities

PC21. prioritize and sequence activities related to tandem lifting operations

PC22. monitor and control speed of lifting when multiple lifting equipment are engaged simultaneously

PC23. coordinate with equipment operators to maintain synchronization throughout the lifting activity

PC24. maintain stable position of objects under suspension (while being lifted) as per standard practice, by providing signals to the equipment operators

PC25. guide loads/objects to the desired locations and ensure their safe lowering to the specified positions

PC26. complete work as per work plan, limit of tolerance specified in applicable work methodology and safety control measures during heavy lifting work

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for rigging works

KU2. safety rules and regulations for handling and storing relevant tools, equipment, and materials required for relevant works in accordance with organizational norms

KU3. importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms

KU4. precautions required in the lifting and movement of heavy components and materials

KU5. service request procedures for tools, materials and equipment as per organizational norms

KU6. statutory compliance requirements related to working at height

KU7. basic sketches / schematic working drawing relevant to rigging works

KU8. basic principles of measurement, geometry and arithmetic calculation

KU9. conversion of units of linear, areal and volumetric measurements

KU10. how to interpret lifting plans and schedules

KU11. how to select lifting gears considering weight, size and shape of loads to be lifted

KU12. ideal weather and environment condition to carry out lifting

KU13. factors affecting lifting operations such as presence of electrical cable,movement of vehicle or person, slope and compaction of base of lifting equipment

KU14. working mechanism and capacity (safe working load- SWL) of different kind of cranes such as mobile, crawler, telescopic, tower or gantry cranes

KU15. operational details of different types of cranes including load lifting posture of the equipment, angle of outrigger to be kept during lifting and maximum reach of the equipment

KU16. working mechanism and SWL of winch machines

KU17. preventive actions to be taken to the cranes under adverse weather condition like thunder-storm, heavy wind flow

KU18. use of different kind of common lifting gears like hooks, shackles, wire rope slings, chain slings, belts, eye bolts, rings, links, swivels and spreader beams

KU19. load carrying capacity of lifting gears and their specifications

KU20. different safety checks to be carried out for various safety gears to determine their safe usability

KU21. standard hand signaling procedures to be provided during lifting operations

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write in one or more language, preferably in the local language of the site and basic English

GS2. read sketches, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site

GS3. speak in one or more language, preferably one of the local language at the site

GS4. communicate orally and effectively with team members

GS5. analyze the safety aspect of the workplace

GS6. plan work and organize required resource effectively

GS7. complete work as per agreed time schedule and quality parameters

GS8. resolve any conflict within the teammates

GS9. evaluate the complexity of the tasks

GS10. identify any violation of safety norms during the work

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure that preparatory works are completed as per work requirement prior to lifting	**6**	**14**	**-**	**-**
PC1. ensure the lifting route is free from obstacles such as live overhead electrical cables, service lines and close vicinity to existing structures or persons	-	-	-	-
PC2. ensure area of operation (lifting, unloading) is safely marked, barricaded and safe access path is available to the lifting point	-	-	-	-
PC3. ensure that the lifting area is adequately illuminated and clear visibility can be maintained from lifting point to erection location	-	-	-	-
PC4. ensure loads to be lifted are placed appropriately at the point of lifting	-	-	-	-
PC5. confirm that the lifting equipment and their accessories under operation are in safe working condition	-	-	-	-
PC6. check and ensure safe working conditions of lifting gears like shackles, pulleys, hooks, ropes, slings etc	-	-	-	-
PC7. check for adequate tightness of slings, belts or ropes anchored to the load as per applicable standard procedure, prior to lifting	-	-	-	-
Coordinate the lifting operations and provide signals to lifting equipment operators	**12**	**28**	**-**	**-**
PC8. use specified lifting gears considering weight, shape and size of the load	-	-	-	-
PC9. monitor the lifting operation considering the size and shape of the load being lifted	-	-	-	-
PC10. monitor the angle between slings under tension and tightness of locks at attached points to ensure stability of the suspended load	-	-	-	-
PC11. ensure elements or assemblies do not get damaged during lifting operations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. guide the movement of suspended loads using tag line or guy rope	-	-	-	-
PC13. maintain clear line of vision with the equipment operator	-	-	-	-
PC14. provide appropriate signals during various stages of lifting as per standard hand signaling guidelines	-	-	-	-
PC15. seek assistance for signaling if load or operator is not visible from own location	-	-	-	-
Carry out heavy lifting operations using multiple lifting equipment (Tandem Lifting)	**12**	**28**	**-**	**-**
PC16. brief subordinates about lifting plan and safe working methods prior to commencing heavy lifting operations	-	-	-	-
PC17. ensure safe distance of equipment and objects from human and other objects while carrying out lifting activity as per agreed work plan	-	-	-	-
PC18. • assess position of cranes and load to ensure they comply with load • lifting plan and safety norms provided for conducting tandem lifting operations	-	-	-	-
PC19. • confirm full functional tests have been carried out on all power, • transmission, control and safety systems of the equipment by a competent personnel prior to the commencement of the lift	-	-	-	-
PC20. confirm that the weather condition is favorable for heavy lifting activities	-	-	-	-
PC21. prioritize and sequence activities related to tandem lifting operations	-	-	-	-
PC22. monitor and control speed of lifting when multiple lifting equipment are engaged simultaneously	-	-	-	-
PC23. coordinate with equipment operators to maintain synchronization throughout the lifting activity	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. maintain stable position of objects under suspension (while being lifted) as per standard practice, by providing signals to the equipment operators	-	-	-	-
PC25. guide loads/objects to the desired locations and ensure their safe lowering to the specified positions	-	-	-	-
PC26. complete work as per work plan, limit of tolerance specified in applicable work methodology and safety control measures during heavy lifting work	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N0716
NOS Name	Coordinate lifting of heavy structural steel assemblies at construction sites
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	23/07/2021
Next Review Date	23/07/2025

CON/N0717: Erect structural steel assemblies at construction sites

Description

This unit describes the skills and knowledge required to erect structural steel assemblies at construction sites

Scope

The scope covers the following :

- Prepare for the erection of structural steel assemblies
- Erect structural steel assemblies as per drawing

Elements and Performance Criteria

Prepare for the erection of structural steel assemblies

To be competent, the user/individual on the job must be able to:

PC1. ensure that proper access to the erection site is available to both erection team and load lifting equipment/ machine

PC2. ensure that survey marks and reference points are available for the erection work

PC3. carry out necessary measurement and marking to ascertain the exact location of erection

PC4. ensure the availability of base plates or other level correction provisions are provided at the base of erection as per requirement

PC5. check the availability of provisions for bolting, welding, post-tensioning connections as per the drawing

PC6. ensure designed bearing area in the platform or support is available for efficient erection of the components

PC7. check for hazardous situations at erection site, such as the presence of live electrical cables, absence of proper barricading, excessive wind speed and report it to the concerned authority promptly as per requirement

PC8. check availability of all materials and support equipment (identified by the seniors and required to proceed with the work) and report any shortages

Erect structural steel assemblies as per drawing

To be competent, the user/individual on the job must be able to:

PC9. install shoring, bracing and guying materials as directed by the foreman/ supervisor or specified by erection drawings and details considering local conditions

PC10. pull, push and hold suspended structural steel assemblies/ components approximately to their exact location by hand or suitable means during lowering of load

PC11. communicate efficiently to the signalman or operator for precise movements required to place the object/ assemblies at accurate location

PC12. ensure units are guided to their appropriate locations

PC13. place the steel assemblies/ components to its accurate location efficiently and make required adjustments as per erection requirement

PC14. ensure proper orientation and alignment of the erected steel assembly/ component by carrying out required measurement and checks using appropriate measuring tools and instruments

PC15. check installation of temporary connections using appropriate tools prior to final positioning of precast units/ steel assemblies for their stability

PC16. bolt connections to the specified tolerance and torque using appropriate torque wrench wherever required

PC17. check bolt tightness in case of units having slotted connections

PC18. install special steel washers to ensure that the specified tension has been developed in the bolt

PC19. check location of shims, bearing pads for their proper positioning

PC20. install expansion bolts using prescribed installation procedures and quality control specifications

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for rigging works

KU2. safety rules and regulations for handling and storing relevant tools, equipment, and materials for rigging works

KU3. importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms

KU4. precautions and measures required in the lifting and movement of heavy components and materials

KU5. service request procedures for tools, materials and equipment as per organizational norms

KU6. statutory compliance requirements related to working at height

KU7. basic sketches / schematic working drawing relevant to rigging works

KU8. basic principles of measurement, geometry and arithmetic calculation

KU9. how to interpret lifting plans and schedules

KU10. applicable tolerance to respective erection job

KU11. sequence of erection works as per proposed work method statement

KU12. checks to be carried out to ensure the readiness of base for erections

KU13. how to check alignment of erected elements using measuring tools and instruments

KU14. the techniques of positioning of elements at their locations within tolerance limits

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write in one or more language, preferably in the local language of the site andbasic English

GS2. read drawing/sketches, work, and safety-related instructions/signboards, etc. in one or more languages, preferably in the local language of the site

GS3. speak one or more language, preferably the local language of the site

GS4. communicate orally and efficiently with team members

GS5. analyze the safety aspect of the workplace
GS6. plan work & organize required resource in coordination with team members and superior
GS7. perform work as per agreed time schedule and quality
GS8. resolve any conflict within the team
GS9. evaluate the complexity of the task and seek assistance and support wherever required
GS10. identify violation of any safety norms which may lead to accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for the erection of structural steel assemblies	**6**	**14**	**-**	**-**
PC1. ensure that proper access to the erection site is available to both erection team and load lifting equipment/ machine	-	-	-	-
PC2. ensure that survey marks and reference points are available for the erection work	-	-	-	-
PC3. carry out necessary measurement and marking to ascertain the exact location of erection	-	-	-	-
PC4. ensure the availability of base plates or other level correction provisions are provided at the base of erection as per requirement	-	-	-	-
PC5. check the availability of provisions for bolting, welding, post-tensioning connections as per the drawing	-	-	-	-
PC6. ensure designed bearing area in the platform or support is available for efficient erection of the components	-	-	-	-
PC7. check for hazardous situations at erection site, such as the presence of live electrical cables, absence of proper barricading, excessive wind speed and report it to the concerned authority promptly as per requirement	-	-	-	-
PC8. check availability of all materials and support equipment (identified by the seniors and required to proceed with the work) and report any shortages	-	-	-	-
Erect structural steel assemblies as per drawing	**24**	**56**	**-**	**-**
PC9. install shoring, bracing and guying materials as directed by the foreman/ supervisor or specified by erection drawings and details considering local conditions	-	-	-	-
PC10. pull, push and hold suspended structural steel assemblies/ components approximately to their exact location by hand or suitable means during lowering of load	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. communicate efficiently to the signalman or operator for precise movements required to place the object/ assemblies at accurate location	-	-	-	-
PC12. ensure units are guided to their appropriate locations	-	-	-	-
PC13. place the steel assemblies/ components to its accurate location efficiently and make required adjustments as per erection requirement	-	-	-	-
PC14. ensure proper orientation and alignment of the erected steel assembly/ component by carrying out required measurement and checks using appropriate measuring tools and instruments	-	-	-	-
PC15. check installation of temporary connections using appropriate tools prior to final positioning of precast units/ steel assemblies for their stability	-	-	-	-
PC16. bolt connections to the specified tolerance and torque using appropriate torque wrench wherever required	-	-	-	-
PC17. check bolt tightness in case of units having slotted connections	-	-	-	-
PC18. install special steel washers to ensure that the specified tension has been developed in the bolt	-	-	-	-
PC19. check location of shims, bearing pads for their proper positioning	-	-	-	-
PC20. install expansion bolts using prescribed installation procedures and quality control specifications	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N0717
NOS Name	Erect structural steel assemblies at construction sites
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging, Fabrication
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

CON/N8001: Work effectively in a team to deliver desired results at the workplace

Description

This unit describes the skills and knowledge required to work effectively within a team to achieve the desired results

Scope

The scope covers the following :

- Interact and communicate in an effective manner
- Support co-workers to execute the project requirements
- Practice inclusion

Elements and Performance Criteria

Interact and communicate in an effective manner

To be competent, the user/individual on the job must be able to:

PC1. pass on work related information/ requirement clearly to the team members

PC2. inform co-workers and superiors about any kind of deviations from work

PC3. report any unresolved problem to the supervisor immediately

PC4. obtain instructions from superiors and respond on the same

PC5. communicate to team members/subordinates for appropriate work technique and method

PC6. seek clarification and advice as per the requirement

Support co-workers to execute the project requirements

To be competent, the user/individual on the job must be able to:

PC7. hand over the required material, tools, tackles, equipment and work fronts timely to interfacing teams

PC8. work together with co-workers in a synchronized manner

Practice inclusion

To be competent, the user/individual on the job must be able to:

PC9. maintain cultural inclusivity at work place

PC10. maintain disability friendly work practices

PC11. follow gender neutral practices at workplace

PC12. address discriminatory and offensive behaviour in a professional manner as per organizational policy

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. own roles and responsibilities

KU2. importance of effective communication

KU3. the consequence of poor teamwork on project outcomes, timelines, safety at the construction site, etc.

KU4. different modes of communication used at workplace

KU5. importance of creating healthy and cooperative work environment among the gangs of workers

KU6. different activities within the work area where interaction with other workers is required

KU7. applicable techniques of work, properties of materials used, tools and tackles used, safety standards that co-workers might need as per the requirement

KU8. importance of proper and effective communication and the expected adverse effects in case of failure relating to quality, timeliness, safety, risks at the construction project site

KU9. importance and need of supporting co-workers facing problems for the smooth functioning of work

KU10. the fundamental concept of gender equality

KU11. how to recognise and be sensitive to issues of disability, culture and gender

KU12. legislation, policies, and procedures relating to gender sensitivity and cultural diversity including their impact on the area of operation

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write in at least one language, preferably in the local language of the site

GS2. read the communication regarding work completion, materials used, tools and tackles used, the resource required, etc,

GS3. speak in one or more languages, preferably in one of the local language of the site

GS4. listen and follow instructions / communication shared by superiors/ co-workers regarding team requirements or interfaces during work processes

GS5. communicate orally and effectively with co-workers considering their educational and social background

GS6. decide on what information is to be shared with co-workers within the team or to the interfacing gang of workers

GS7. plan work and organize the required resources in coordination with team members

GS8. complete all assigned task in coordination with team members

GS9. take initiative in resolving issues among co-workers or report the same to superiors

GS10. ensure best ways of coordination among team members

GS11. evaluate the complexity of task and determine if any guidance is required from superiors

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Interact and communicate in an effective manner	**18**	**42**	**-**	**-**
PC1. pass on work related information/ requirement clearly to the team members	-	-	-	-
PC2. inform co-workers and superiors about any kind of deviations from work	-	-	-	-
PC3. report any unresolved problem to the supervisor immediately	-	-	-	-
PC4. obtain instructions from superiors and respond on the same	-	-	-	-
PC5. communicate to team members/subordinates for appropriate work technique and method	-	-	-	-
PC6. seek clarification and advice as per the requirement	-	-	-	-
Support co-workers to execute the project requirements	**6**	**14**	**-**	**-**
PC7. hand over the required material, tools, tackles, equipment and work fronts timely to interfacing teams	-	-	-	-
PC8. work together with co-workers in a synchronized manner	-	-	-	-
Practice inclusion	**6**	**14**	**-**	**-**
PC9. maintain cultural inclusivity at work place	-	-	-	-
PC10. maintain disability friendly work practices	-	-	-	-
PC11. follow gender neutral practices at workplace	-	-	-	-
PC12. address discriminatory and offensive behaviour in a professional manner as per organizational policy	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N8001
NOS Name	Work effectively in a team to deliver desired results at the workplace
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Generic 2
NSQF Level	4
Credits	TBD
Version	6.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

CON/N8002: Plan and organize work to meet expected outcomes

Description

This unit describes the knowledge and the skills required for an individual to plan and organize own work in order to meet expected outcome

Scope

The scope covers the following :

- Plan and prepare for work
- Organise required resources as per work plan
- Complete work as per the plan

Elements and Performance Criteria

Plan and prepare for work

To be competent, the user/individual on the job must be able to:

PC1. identify the targets and timelines set by superiors

PC2. determine the work requirements corresponding to task(drawings/schedules/instructions/methodology), safety, tools and equipment prior to commencement of task

PC3. plan the work by analyzing the required outcomes, work procedures, allotted time, resource availability and known priorities

PC4. prepare the work areas in coordination with team members

PC5. plan for waste collection and disposal prior to and after completion of work

Organise required resources as per work plan

To be competent, the user/individual on the job must be able to:

PC6. arrange the required manpower prior to commencement of work

PC7. organize the required materials, tools and tackles required for the task

Complete work as per the plan

To be competent, the user/individual on the job must be able to:

PC8. engage allocated manpower in an appropriate manner

PC9. employ correct tools, tackles and equipment for the desired work

PC10. provide guidance to the subordinates to obtain desired outcome

PC11. use resources in an optimum manner to avoid any unnecessary wastage

PC12. use tools, tackles and equipment carefully to avoid damage

PC13. ensure the work processes adopted are in line with the specified standards and instructions

PC14. complete the work with the allocated resources within specified time

PC15. clean and organise the workplace after completion of task

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. importance of proper housekeeping including safe waste disposal
KU2. policies, procedures and work targets set by superiors
KU3. how to identify work activities that need to be planned and organized
KU4. how to determine the task requirements
KU5. how to determine the quality requirements related to the task
KU6. how to undertake all aspect of planning and organizing the task, including interpretation of task, reading drawing/schedules, arranging resources, reporting problems etc.
KU7. how to implement the planned activities
KU8. how to use available resources in a judicious and appropriate manner to minimize wastages or damage

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write in one or more language, preferably the local language at the site
GS2. read communication from co-workers, superiors and notices from other departments as per requirement of the level
GS3. speak in one or more language, preferably one of the local language at the site
GS4. follow communication shared by co-workers regarding standard work processes, resources available, timelines, etc.
GS5. communicate effectively with co-workers and subordinates
GS6. decide on what sequence is to be adopted for execution of work
GS7. plan and organize the materials, tools, tackles and equipment required to execute the work
GS8. complete all assigned task with proper planning and organizing
GS9. analyze areas of work which could result in a delay of work, wastage of material or damage to tools and tackles
GS10. evaluate potential solutions to minimize avoidable delays and wastages at the construction site

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan and prepare for work	**9**	**21**	**-**	**-**
PC1. identify the targets and timelines set by superiors	-	-	-	-
PC2. determine the work requirements corresponding to task(drawings/schedules/instructions/methodology), safety, tools and equipment prior to commencement of task	-	-	-	-
PC3. plan the work by analyzing the required outcomes, work procedures, allotted time, resource availability and known priorities	-	-	-	-
PC4. prepare the work areas in coordination with team members	-	-	-	-
PC5. plan for waste collection and disposal prior to and after completion of work	-	-	-	-
Organise required resources as per work plan	**6**	**14**	**-**	**-**
PC6. arrange the required manpower prior to commencement of work	-	-	-	-
PC7. organize the required materials, tools and tackles required for the task	-	-	-	-
Complete work as per the plan	**15**	**35**	**-**	**-**
PC8. engage allocated manpower in an appropriate manner	-	-	-	-
PC9. employ correct tools, tackles and equipment for the desired work	-	-	-	-
PC10. provide guidance to the subordinates to obtain desired outcome	-	-	-	-
PC11. use resources in an optimum manner to avoid any unnecessary wastage	-	-	-	-
PC12. use tools, tackles and equipment carefully to avoid damage	-	-	-	-
PC13. ensure the work processes adopted are in line with the specified standards and instructions	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. complete the work with the allocated resources within specified time	-	-	-	-
PC15. clean and organise the workplace after completion of task	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N8002
NOS Name	Plan and organize work to meet expected outcomes
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Generic 2
NSQF Level	4
Credits	TBD
Version	5.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

CON/N9001: Work according to personal health, safety and environment protocols at construction site

Description

This NOS covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocols at construction site

Scope

The scope covers the following :

- Follow safety norms as defined by organization
- Adopt healthy & safe work practices
- Implement good housekeeping and environment protection process and activities
- Follow infection control guidelines as per applicability

Elements and Performance Criteria

Follow safety norms as defined by the organization

To be competent, the user/individual on the job must be able to:

PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority

PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities

PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable

PC4. follow all the protocols and safety techniques conveyed during safety awareness programs like Tool Box Talks, safety demonstrations and mock drills conducted at the site

PC5. select and operate different types of fire extinguishers corresponding to various types of fires as per EHS guideline

PC6. identify near miss, unsafe condition and unsafe act

Adopt healthy & safe work practices

To be competent, the user/individual on the job must be able to:

PC7. use appropriate Personal Protective Equipment (PPE) as per work requirements for : Head Protection, Ear protection, Fall Protection ,Foot Protection, Face and Eye Protection, Hand and Body Protection , and Respiratory Protection (if required)

PC8. handle all required tools, tackles, materials and equipment safely

PC9. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines

PC10. check and install all safety equipment as per standard guidelines

PC11. follow safety protocols and practices as laid down by site EHS department

PC12. obtain "height pass" clearance for working at heights

Implement good housekeeping practices

To be competent, the user/individual on the job must be able to:

PC13. collect, segregate and deposit construction waste into appropriate containers based on their toxicity or hazardous nature

PC14. apply ergonomic principles wherever required

Follow infection control guidelines as per applicability

To be competent, the user/individual on the job must be able to:

PC15. follow recommended personal hygiene, workplace hygiene and sanitization practices

PC16. clean and disinfect all materials, tools and supplies before and after use

PC17. report immediately to concerned authorities regarding signs and symptoms of illness of self and others

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. reporting procedures in cases of breaches or hazards for site safety, accidents, and emergency situations as per guidelines

KU2. types of safety hazards at construction sites

KU3. basic ergonomic principles as per applicability

KU4. the procedure for responding to accidents and other emergencies at site

KU5. use of appropriate personal protective equipment based on various working conditions

KU6. importance of handling tools, equipment, and materials as per applicable norms

KU7. effect of construction material on health and environments as per applicability

KU8. various environmental protection methods as per applicability

KU9. storage of waste including non-combustible scrap material and debris, combustible scrap material and debris, general construction waste and trash (non-toxic, non-hazardous), any other hazardous wastes and any other flammable wastes at the appropriate location

KU10. how to keep the workplace neat and tidy so as to be safe

KU11. how to use hazardous material in a safe and appropriate manner as per applicability

KU12. types of fire

KU13. procedure of operating different types of fire extinguishers

KU14. safety relevant to tools, tackles, and equipment as per applicability

KU15. housekeeping activities relevant to task

KU16. ways of transmission of infection

KU17. ways to manage infectious risks at the workplace

KU18. different methods of cleaning, disinfection, sterilization, and sanitization

KU19. symptoms of infection like fever, cough, redness, swelling, and inflammation

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write in at least one language, preferably in the local language of the site

GS2. fill safety formats for near miss, unsafe conditions and safety suggestions

GS3. read in one or more language, preferably in the local language of the site

GS4. speak in one or more language, preferably in one of the local language of the site

GS5. listen to instructions/communication shared by site EHS and superiors regarding site safety, and conducting the toolbox talk

GS6. identify potential safety risks and report to the appropriate authority

GS7. assess and analyze areas which may affect health, safety and environment protocol on the site

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Follow safety norms as defined by the organization	**6**	**14**	**-**	**-**
PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority	-	-	-	-
PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities	-	-	-	-
PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable	-	-	-	-
PC4. follow all the protocols and safety techniques conveyed during safety awareness programs like Tool Box Talks, safety demonstrations and mock drills conducted at the site	-	-	-	-
PC5. select and operate different types of fire extinguishers corresponding to various types of fires as per EHS guideline	-	-	-	-
PC6. identify near miss, unsafe condition and unsafe act	-	-	-	-
Adopt healthy & safe work practices	**15**	**35**	**-**	**-**
PC7. use appropriate Personal Protective Equipment (PPE) as per work requirements for : Head Protection, Ear protection, Fall Protection ,Foot Protection, Face and Eye Protection, Hand and Body Protection , and Respiratory Protection (if required)	-	-	-	-
PC8. handle all required tools, tackles, materials and equipment safely	-	-	-	-
PC9. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines	-	-	-	-
PC10. check and install all safety equipment as per standard guidelines	-	-	-	-
PC11. follow safety protocols and practices as laid down by site EHS department	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. obtain "height pass" clearance for working at heights	-	-	-	-
Implement good housekeeping practices	**6**	**14**	**-**	**-**
PC13. collect, segregate and deposit construction waste into appropriate containers based on their toxicity or hazardous nature	-	-	-	-
PC14. apply ergonomic principles wherever required	-	-	-	-
Follow infection control guidelines as per applicability	**3**	**7**	**-**	**-**
PC15. follow recommended personal hygiene, workplace hygiene and sanitization practices	-	-	-	-
PC16. clean and disinfect all materials, tools and supplies before and after use	-	-	-	-
PC17. report immediately to concerned authorities regarding signs and symptoms of illness of self and others	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N9001
NOS Name	Work according to personal health, safety and environment protocols at construction site
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Generic Safety
NSQF Level	4
Credits	TBD
Version	6.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC)/ Element 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/ Element.

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.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Minimum Passing % at NOS Level: 70

(**Please note**: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N0715.Assemble, install and dismantle temporary material hoist for material lifting at construction site	30	70	-	-	100	15
CON/N0716.Coordinate lifting of heavy structural steel assemblies at construction sites	30	70	-	-	100	20
CON/N0717.Erect structural steel assemblies at construction sites	30	70	-	-	100	25
CON/N8001.Work effectively in a team to deliver desired results at the workplace	30	70	-	-	100	10
CON/N8002.Plan and organize work to meet expected outcomes	30	70	-	-	100	15

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N9001.Work according to personal health, safety and environment protocols at construction site	30	70	-	-	100	15
Total	**180**	**420**	**-**	**-**	**600**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.