





Supervisor - Erection

QP Code: CON/Q0709

Version: 1.0

NSQF Level: 6

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CON/Q0709: Supervisor - Erection

Brief Job Description

Supervisor Erection is responsible for planning activities, managing and allocating resources for heavy lifting and erection operations of structural steel assemblies and RCC precast components at construction sites. The individual is responsible for supervising and monitoring heavy lifting, erection works and activities by workforce while ensuring observation of health, safety and environmental practices at work site and completing necessary documentation as per work requirement.

Personal Attributes

This job role requires the individual to have considerable domain expertise to plan, sequence, supervise and troubleshoot activities at construction sites. Individual in job role should possess good analytical skills to carry out calculation for resource and anticipate consequences of various activities in heavy lifting and erection. Moreover, the job holder should preferably be free from vertigo problem, cardiovascular diseases as the nature of work involves handling heavy loads and working at heights.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

- 1. CON/N0728: Prepare work plan for erection and ensure completion of preparatory work
- 2. CON/N0729: Manage equipment, manpower involved in heavy lifting and erection work
- 3. CON/N0730: Supervise and monitor lifting operations as per agreed work plan
- 4. CON/N0731: Supervise and ensure erection works in accordance with agreed work plan
- 5. CON/N8003: Supervise, monitor and evaluate performance of subordinates at workplace
- 6. CON/N9002: Manage workplace for safe and healthy work environment

Qualification Pack (QP) Parameters

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





NSQF Level	6
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7214.90
Minimum Educational Qualification & Experience	12th Class with 5-10 Years of experience as a certified Foreman Erection OR 12th Class with 10-15 Years of experience in case of a Non trained worker, in same occupation
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Recommended training period of 16-20 weeks as per QP of Supervisor Erection
Minimum Job Entry Age	18 Years
Last Reviewed On	14/08/2015
Next Review Date	31/03/2022
Deactivation Date	31/03/2022
NSQC Approval Date	19/12/2018
Version	1.0
Reference code on NQR	2019/CON/CSDCI/03120
NQR Version	1.0





CON/N0728: Prepare work plan for erection and ensure completion of preparatory work

Description

This unit describes the skills and knowledge required to prepare work plan for erection and ensure completion of preparatory work

Scope

This unit/ task covers the following:

- Provide required inputs for planning of lifting and erection
- Supervise and ensure completion of preparatory works

Elements and Performance Criteria

Provide required inputs for planning of lifting and erection

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

- identify work activities as per GFC drawing requirements and report to concerned superior
- PC2. assist engineer in sequencing key activities related to lifting and erection for making schedule
- PC3. assist engineer in planning of duration and time require for identified key activities
- PC4. determine requirement of manpower to complete works in accordance with lifting and erection work schedule
- PC5. ascertain type and capacity of lifting equipment to be used as per nature of lifting/ load to be
- PC6. provide inputs to concerned engineer regarding requirements for manpower, tools, and materials as per work requirements
- determine method of lifting, route and mode of transportation of structural elements from PC7. stock yard to erection point
- PC8. determine resources to be used in accordance with safety practices to be observed during material lifting, shifting and erection operations
- PC9. prepare indent for required material, tools and tackles as per requirement and instruction
- **PC10.** ensure proper survey points are available at respective locations for erection

Supervise and ensure completion of preparatory works

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

- **PC11.** check and carry out required measurements to erection base for designed area of bearing. embedded anchor bolts, insert plates or any other relevant provisions according to drawing or specification
- **PC12.** ensure shifting of structural elements from yard to lifting points in accordance with lifting
- **PC13.** supervise base preparation for lifting equipments and ensure completion of all other relevant works





- PC14. ensure erection of relevant safety arrangement such as signage, barricading at specified work locations as per work safety plan
- PC15. check for license of operators and certificates relevant to statutory requirements of equipments to be used
- **PC16.** deal with client, superior and subordinate as and when required

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. standard practices for rigging work
- safety rules and regulations for handling and storing relevant tools and equipment and KU2. materials for rigging works
- personal protection including the use of the related safety gears and euipment KU3.
- concept of job related safety precautions and deployment of safety measurement to be KU4. observed at workplace
- KU5. service request procedures for tools, materials and equipments
- KU6. statutory compliance requirements related to working at height
- **KU7.** statutory compliance requirement related to workmen engagement
- KU8. how to read relevant structural drawings and extract technical specifications related to erection
- standard procedure for heavy load lifting operations using lifting equipments KU9.
- **KU10.** sequence of lifting and erection operation as per agreed erection plan
- **KU11.** factors affecting lifting and erection operations such as details of the load to be handled details of the lifting equipment and lifting gears to be used statutory requirement of heavy lifting cranes and their operators means of communications during lifting and erection works key competencies required from the personnel involved in the relevant operations ideal physical and environmental conditions for heavy lifting and erection operations details of the zone of operation
- **KU12.** approved code of practice related load lifting and rigging operations
- **KU13.** concept of arithmetic and basic geometry applicable to lifting and erection operations
- **KU14.** documentation related to rigging operation such as filling up check lists, permits, preparation of reports etc
- **KU15.** documentation required to resource management such as preparation of indents, material and manpower calculation, preparation of daily labour reports

Generic Skills (GS)

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

- GS1. write in at least two language, preferably in the local language of the site and basic English
- provide clear and simple instructions, details & sketches to subordinate
- GS3. record and documents daily productivity report, daily labour attendance & details regarding
- GS4. prepare basic status updates for the superiors in the prescribed format





- read one or more language, preferably in the local language of the site GS5.
- **GS6.** read drawing, rigging specification and standards
- **GS7.** read key documents including quality standards, standards working methods & applicable tolerance limits
- GS8. read various, sign boards, safety rules and safety tags, instructions related to exit routes during emergency at the workplace
- speak in one or more language, preferably in one of the local languages of the site GS9.
- **GS10.** listen and follow instructions clearly given by the superior
- **GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- **GS12.** estimate required material and resources for work
- **GS13.** decide alternate course of action in case of hindrance to work
- **GS14.** decide whether the tools and equipments are safe to use for erection works
- **GS15.** decide on appropriate method of lifting, route and mode of transportation of structural elements from stock yard to erection point
- **GS16.** plan work & organize required resource in coordination with team members and superior
- **GS17.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- **GS18.** ensure completion of work as per agreed time schedule and quality
- **GS19.** engage with client as per requirements
- **GS20.** resolve and solve any conflict within the team
- **GS21.** assess quantity of materials and personnel for work as per plan
- **GS22.** optimize resources
- **GS23.** minimize wastages
- **GS24.** analyze the type and capacity of lifting equipment to be used
- **GS25.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requirements
- **GS26.** identify and assess how violation of any safety norms may lead to accidents





Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Provide required inputs for planning of lifting and erection	34	34	-	-
PC1. identify work activities as per GFC drawing requirements and report to concerned superior	5	5	-	-
PC2. assist engineer in sequencing key activities related to lifting and erection for making schedule	4	4	-	-
PC3. assist engineer in planning of duration and time require for identified key activities	4	4	-	-
PC4. determine requirement of manpower to complete works in accordance with lifting and erection work schedule	3	3	-	-
PC5. ascertain type and capacity of lifting equipment to be used as per nature of lifting/ load to be lifted	4	4	-	-
PC6. provide inputs to concerned engineer regarding requirements for manpower, tools, and materials as per work requirements	3	3	-	-
PC7. determine method of lifting, route and mode of transportation of structural elements from stock yard to erection point	3	3	-	-
PC8. determine resources to be used in accordance with safety practices to be observed during material lifting, shifting and erection operations	3	3	-	-
PC9. prepare indent for required material, tools and tackles as per requirement and instruction	3	3	-	-
PC10. ensure proper survey points are available at respective locations for erection	2	2	-	-
Supervise and ensure completion of preparatory works	16	16	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check and carry out required measurements to erection base for designed area of bearing, embedded anchor bolts, insert plates or any other relevant provisions according to drawing or specification	3	3	-	-
PC12. ensure shifting of structural elements from yard to lifting points in accordance with lifting plan	2	2	-	-
PC13. supervise base preparation for lifting equipments and ensure completion of all other relevant works	2	2	-	-
PC14. ensure erection of relevant safety arrangement such as signage, barricading at specified work locations as per work safety plan	3	3	-	-
PC15. check for license of operators and certificates relevant to statutory requirements of equipments to be used	3	3	-	-
PC16. deal with client, superior and subordinate as and when required	3	3	-	-
NOS Total	50	50	-	-





National Occupational Standards (NOS) Parameters

NOS Code	CON/N0728
NOS Name	Prepare work plan for erection and ensure completion of preparatory work
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
NSQF Level	6
Credits	TBD
Version	1.0
Last Reviewed Date	14/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/12/2018

Skill Development Council

Oualification Pack



CON/N0729: Manage equipment, manpower involved in heavy lifting and erection work

Description

This unit describes the skills and knowledge required to manage equipment manpower involved in heavy lifting and erection work

Scope

This unit/ task covers the following:

- Ensure optimum utilization of material, equipment and manpower resources
- Brief lifting and erection teams on lifting plan, safe lifting

Elements and Performance Criteria

Ensure optimum utilization of material, equipment and manpower resources

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

- **PC1.** monitor operation of lifting equipment and keep track of runtime, idle time and break down of cranes
- **PC2.** instruct concerned authorities, equipment operators for starting and stopping lifting works as per daily work plan
- **PC3.** monitor signaling and material movement by equipments to meet timeline and equipment productivity
- **PC4.** allocate manpower to respective activities on the basis of work requirement
- **PC5.** ensure productivity of manpower by providing instruction, checking completed works as per drawing and reporting to senior authorities
- **PC6.** report efficiently to the concerned authorities for equipment breakdown, discrepancies found in the jobs

Brief lifting and erection teams on lifting plan, safe lifting

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

- **PC7.** brief about scope and timelines to be adhered for respective activities
- **PC8.** describe about rigging gears to be used in material lifting operations and standard procedure for checking the same
- **PC9.** describe standard procedure of using rigging gears while lifting heavy loads by equipments
- **PC10.** provide information about hazards and risks involved in heavy lifting and erection operations
- **PC11.** provide direction regarding PPEs to be used during lifting and erection operations by respective gangs
- **PC12.** brief about standard hand signaling procedure to be adhered and use of communication devices during material handling
- **PC13.** provide direction for reporting procedure to be maintained during activity and under emergency situations

Knowledge and Understanding (KU)





The individual on the job needs to know and understand:

- **KU1.** standard practices for rigging work
- **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.** concept of job related safety precautions and deployment of safety measurement to be observed at workplace
- **KU5.** service request procedures for tools, materials and equipments
- **KU6.** statutory compliance requirements related to working at height
- **KU7.** statutory compliance requirement related to workmen engagement
- **KU8.** how to calculate productivity of equipment used in rigging works
- **KU9.** ideal time of day to conduct heavy lifting operations
- **KU10.** standard procedure of signaling using hand and communication devices
- **KU11.** job requirement and level of competencies required from a worker to execute specific works
- **KU12.** how to communicate efficiently to achieve desired outcome form a teams
- **KU13.** reporting procedure as per organisational norms
- **KU14.** scope of work and timelines to be met according to agreed lifting and erection plan
- KU15. commonly used rigging gears for heavy material lifting and their respective uses
- **KU16.** safe working load, selection and method of inspecting lifting gears for their usability
- **KU17.** hazards and risk associated with lifting and erection operation their evaluation and risk control measures

Generic Skills (GS)

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

- **GS1.** write in at least two language, preferably in the local language of the site and basic English
- **GS2.** provide clear and simple instructions, details & sketches to subordinate
- **GS3.** record and documents daily productivity report, daily labour attendance & details regarding works
- **GS4.** prepare basic status updates for the superiors in the prescribed format
- **GS5.** read one or more language, preferably in the local language of the site
- **GS6.** read drawing, rigging specification and standards
- **GS7.** read key documents including quality standards, standards working methods & applicable tolerance limits
- **GS8.** read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
- **GS9.** speak in one or more language, preferably in one of the local languages of the site
- **GS10.** listen and follow instructions clearly given by the superior
- **GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- **GS12.** estimate required material and resources for work





- GS13. decide alternate course of action in case of hindrance to work
- GS14. plan work & organize required resource in coordination with team members and superior
- **GS15.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- **GS16.** assess the timelines and scope of work in order to brief the team appropriately
- **GS17.** ensure completion of work as per agreed time schedule and quality
- **GS18.** engage with client as per requirements
- **GS19.** resolve and solve any conflict within the team
- **GS20.** allocate necessary resources and manpower to necessary work basis requirements
- **GS21.** assess quantity of materials and personnel for work as per plan
- **GS22.** optimize resources
- **GS23.** minimize wastages
- **GS24.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requiremented
- GS25. identify and assess how violation of any safety norms may lead to accidents





Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure optimum utilization of material, equipment and manpower resources	27	27	-	-
PC1. monitor operation of lifting equipment and keep track of runtime, idle time and break down of cranes	5	5	-	-
PC2. instruct concerned authorities, equipment operators for starting and stopping lifting works as per daily work plan	3	3	-	-
PC3. monitor signaling and material movement by equipments to meet timeline and equipment productivity	5	5	-	-
PC4. allocate manpower to respective activities on the basis of work requirement	5	5	-	-
PC5. ensure productivity of manpower by providing instruction, checking completed works as per drawing and reporting to senior authorities	5	5	-	-
PC6. report efficiently to the concerned authorities for equipment breakdown, discrepancies found in the jobs	4	4	-	-
Brief lifting and erection teams on lifting plan, safe lifting	23	23	-	-
PC7. brief about scope and timelines to be adhered for respective activities	4	4	-	-
PC8. describe about rigging gears to be used in material lifting operations and standard procedure for checking the same	3	3	-	-
PC9. describe standard procedure of using rigging gears while lifting heavy loads by equipments	5	5	-	-
PC10. provide information about hazards and risks involved in heavy lifting and erection operations	4	4	-	-
PC11. provide direction regarding PPEs to be used during lifting and erection operations by respective gangs	2	2	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. brief about standard hand signaling procedure to be adhered and use of communication devices during material handling	3	3	-	-
PC13. provide direction for reporting procedure to be maintained during activity and under emergency situations	2	2	-	-
NOS Total	50	50	-	-





National Occupational Standards (NOS) Parameters

NOS Code	CON/N0729
NOS Name	Manage equipment, manpower involved in heavy lifting and erection work
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
NSQF Level	6
Credits	TBD
Version	1.0
Last Reviewed Date	14/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/12/2018

Development Council

Oualification Pack



CON/N0730: Supervise and monitor lifting operations as per agreed work plan

Description

This unit describes the skills and knowledge required to supervise and monitor lifting operations as per agreed work plan

Scope

This unit/ task covers the following:

• Ensure lifting operations comply with agreed work plan

Elements and Performance Criteria

Ensure lifting operations comply with agreed work plans

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

- **PC1.** ensure that the equipment being used for lifting is as per plan, specifications and meets following required purpose Adequate capacity of lifting Height and distance to be covered for erection Number of lift possible within specified time duration Period of time for the lifting operation Suitability of working on the available base Provision for extending boom length
- **PC2.** ensure that only registered crane operators, appointed riggers and appointed signalmen participate in respective operations involving the use of mobile and tower cranes
- **PC3.** ensure load lifting equipments are in appropriate working position as per standard practice for load lifting operations
- **PC4.** ensure safe distance of lifting equipments from existing structures, live electrical cables, service lines and stability of its outriggers
- **PC5.** ensure proper use of rigging gears and their usability for lifting
- **PC6.** ensure proper sequence is followed for continuous lifting process
- **PC7.** read, interpret and adhere manufacturers specification and load chart provided for lifting equipment while undertaking lifting operations
- **PC8.** monitor and ensure effective signalling procedure while carrying out heavy lifting operations
- **PC9.** monitor, supervise and provide direction to the subordinates for safe and effective lifting operation as per work requirement
- **PC10.** monitor weather and wind speed and stop work in adverse condition in consultation of subordinate workmen and superior authority
- **PC11.** ensure adequate illumination is provided and they are functioning properly at lifting area

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices for rigging work





- **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.** concept of job related safety precautions and deployment of safety measurement to be observed at workplace
- **KU5.** service request procedures for tools, materials and equipments
- **KU6.** statutory compliance requirements related to working at height
- **KU7.** statutory compliance requirement related to workmen engagement
- **KU8.** approved code of practice related load lifting and rigging operations
- KU9. factors to be considered while selecting heavy lifting equipments
- **KU10.** hazard and risk associated with operation of heavy lifting machines
- **KU11.** job requirement and level of competencies required from a worker to execute specific works
- **KU12.** ideal position of lifting equipment while lifting heavy loads as per manufacturers specification and standard practice
- KU13. commonly used rigging gears for heavy material lifting and their respective uses
- **KU14.** safe working load, selection and method of inspecting lifting gears for their usability
- **KU15.** sequence of lifting activities as per agreed work plan
- **KU16.** how to read and interpret load chart and its implementation while lifting heavy loads
- **KU17.** standard procedure of signaling using hand and communication devices
- **KU18.** how to communicate efficiently to achieve desired outcome form a team
- **KU19.** weathering effects which has direct influence on lifting and erection operations such as rain, heavy wind flow, storm etc.
- **KU20.** requirement of proper illumination in lifting works

Generic Skills (GS)

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

- **GS1.** write in at least two language, preferably in the local language of the site and basic English
- **GS2.** provide clear and simple instructions, details & sketches to subordinate
- **GS3.** record and documents daily productivity report, daily labour attendance & details regarding works
- **GS4.** prepare basic status updates for the superiors in the prescribed format
- **GS5.** read one or more language, preferably in the local language of the site
- **GS6.** read drawing, rigging specification and standards
- **GS7.** read key documents including quality standards, standards working methods & applicable tolerance limits
- **GS8.** read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
- **GS9.** speak in one or more language, preferably in one of the local languages of the site
- **GS10.** listen and follow instructions clearly given by the superior
- **GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality





- **GS12.** estimate required material and resources for work
- **GS13.** decide alternate course of action in case of hindrance to work
- **GS14.** decide on whether equipment used for lifting meets the required purpose
- **GS15.** decide on appropriate sequence of work for continuous lifting operations
- GS16. plan work & organize required resource in coordination with team members and superior
- **GS17.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- GS18. ensure completion of work as per agreed time schedule and quality
- GS19. engage with client as per requirements
- **GS20.** resolve and solve any conflict within the team
- GS21. stop work in adverse weather and wind conditions to avoid undue risks
- GS22. assess quantity of materials and personnel for work as per plan
- GS23. optimize resources
- **GS24.** minimize wastages
- **GS25.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requiremented
- GS26. identify and assess how violation of any safety norms may lead to accidents





Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure lifting operations comply with agreed work plans	50	50	-	-
PC1. ensure that the equipment being used for lifting is as per plan, specifications and meets following required purpose Adequate capacity of lifting Height and distance to be covered for erection Number of lift possible within specified time duration Period of time for the lifting operation Suitability of working on the available base Provision for extending boom length	12	12	-	-
PC2. ensure that only registered crane operators, appointed riggers and appointed signalmen participate in respective operations involving the use of mobile and tower cranes	4	4	-	-
PC3. ensure load lifting equipments are in appropriate working position as per standard practice for load lifting operations	4	4	-	-
PC4. ensure safe distance of lifting equipments from existing structures, live electrical cables, service lines and stability of its outriggers	3	3	-	-
PC5. ensure proper use of rigging gears and their usability for lifting	4	4	-	-
PC6. ensure proper sequence is followed for continuous lifting process	4	4	-	-
PC7. read, interpret and adhere manufacturers specification and load chart provided for lifting equipment while undertaking lifting operations	5	5	-	-
PC8. monitor and ensure effective signalling procedure while carrying out heavy lifting operations	4	4	-	-
PC9. monitor, supervise and provide direction to the subordinates for safe and effective lifting operation as per work requirement	4	4	-	-
PC10. monitor weather and wind speed and stop work in adverse condition in consultation of subordinate workmen and superior authority	3	3	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure adequate illumination is provided and they are functioning properly at lifting area	3	3	-	-
NOS Total	50	50	-	-





National Occupational Standards (NOS) Parameters

NOS Code	CON/N0730
NOS Name	Supervise and monitor lifting operations as per agreed work plan
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
NSQF Level	6
Credits	TBD
Version	1.0
Last Reviewed Date	14/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/12/2018

Table of Skill Development Council

Oualification Pack



CON/N0731: Supervise and ensure erection works in accordance with agreed work plan

Description

This unit describes the skills and knowledge required to supervise and ensure erection works in accordance with agreed work plan

Scope

This unit/ task covers the following:

- Ensure erection process is according to the work plan
- Ensure appropriate erection in structural steel bridge construction works using strand jack

Elements and Performance Criteria

Ensure erection process is according to the work plan

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

- **PC1.** ensure timely completion of the erection activity on daily basis
- **PC2.** coordinate with respective departments for required supporting activities to achieve smooth erection work
- **PC3.** ensure adequate illumination at the location of erection
- **PC4.** ensure proper location, elevation and alignment of erected structural components are as per drawing and specification and within limit of tolerance
- **PC5.** ensure joining activities such as bolting, riveting welding are being carried out as per specifications and checked by respective authorised personnel
- **PC6.** monitor weather and wind speed and stop work in adverse condition in consultation of subordinate workmen and superior authority
- **PC7.** trouble shoot if any critical situation arises and report to senior authority if cannot be resolved
- **PC8.** keep records of work stoppage, labour report, force majeure and report it to senior authority as per company norms
- **PC9.** ensure presence and efficient use of PPEs, work permits and work relevant safety devices at work area

Ensure appropriate erection in structural steel bridge construction works using strand jack

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

- **PC10.** check for positioning of anchor plates at steel assembly to be erected
- **PC11.** check for proper locking of strands in to specified locations in order to pull assembly safely
- **PC12.** ensure that optimum torque is provided for locking of strands
- **PC13.** carry out visual inspection for rigidity of guiderails provided
- **PC14.** ensure adequate number and thickness of bearing pads prior to exposing the structure to load
- **PC15.** check displacements of structural assembly periodically at appropriate intervals as per work method statement

The skill Development Council

Oualification Pack



PC16. provide appropriate direction during pulling to equipment operators to ensure its appropriate location, alignment as per drawing

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** standard practices for rigging work
- **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.** concept of job related safety precautions and deployment of safety measurement to be observed at workplace
- **KU5.** service request procedures for tools, materials and equipments
- **KU6.** statutory compliance requirements related to working at height
- **KU7.** statutory compliance requirement related to workmen engagement
- **KU8.** work and time scheduled to be adhered during erection operations
- **KU9.** details of authorized persons of respective departments and mode of communication to be followed
- **KU10.** requirement of proper illumination in lifting works
- **KU11.** structural specification to be followed in erection works regarding alignment, orientation and elevation of erected structure
- **KU12.** permissible limit of tolerance for specific erection activities
- **KU13.** how to read relevant structural drawings and extract technical specifications related to erection
- **KU14.** weathering effects which has direct influence on lifting and erection operations such as rain, heavy wind flow, storm etc.
- **KU15.** technical specifications related to use of bolts, rivets or welded joints as per applicability
- **KU16.** standard torque to be provided during bolting works as per specification
- **KU17.** how to resolve undesired occurrences and procedure of reporting as per organizational norms
- **KU18.** hazards and risk associated with lifting and erection operation their evaluation and risk control measures

Generic Skills (GS)

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

- **GS1.** write in at least two language, preferably in the local language of the site and basic English
- **GS2.** provide clear and simple instructions, details & sketches to subordinate
- **GS3.** record and documents daily productivity report, daily labour attendance & details regarding works
- **GS4.** prepare basic status updates for the superiors in the prescribed format
- **GS5.** read one or more language, preferably in the local language of the site





- **GS6.** read drawing, rigging specification and standards
- **GS7.** read key documents including quality standards, standards working methods & applicable tolerance limits
- **GS8.** read various, sign boards, safety rules and safety tags, instructions related to exit routes during emergency at the workplace
- **GS9.** speak in one or more language, preferably in one of the local languages of the site
- **GS10.** listen and follow instructions clearly given by the superior
- **GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- **GS12.** estimate required material and resources for work
- **GS13.** decide alternate course of action in case of hindrance to work
- **GS14.** decide on optimum level of torque for locking of strands
- **GS15.** decide on appropriate number and thickness of bearing pads required
- GS16. plan work & organize required resource in coordination with team members and superior
- **GS17.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- **GS18.** ensure completion of work as per agreed time schedule and quality
- **GS19.** engage with client as per requirements
- **GS20.** resolve and solve any conflict within the team
- **GS21.** stop work in adverse weather and wind conditions to avoid undue risks
- **GS22.** assess quantity of materials and personnel for work as per plan
- **GS23.** optimize resources
- **GS24.** minimize wastages
- **GS25.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requiremented
- **GS26.** identify and assess how violation of any safety norms may lead to accidents





Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure erection process is according to the work plan	35	35	-	-
PC1. ensure timely completion of the erection activity on daily basis	3	3	-	-
PC2. coordinate with respective departments for required supporting activities to achieve smooth erection work	5	5	-	-
PC3. ensure adequate illumination at the location of erection	2	2	-	-
PC4. ensure proper location, elevation and alignment of erected structural components are as per drawing and specification and within limit of tolerance	5	5	-	-
PC5. ensure joining activities such as bolting, riveting welding are being carried out as per specifications and checked by respective authorised personnel	5	5	-	-
PC6. monitor weather and wind speed and stop work in adverse condition in consultation of subordinate workmen and superior authority	3	3	-	-
PC7. trouble shoot if any critical situation arises and report to senior authority if cannot be resolved	5	5	-	-
PC8. keep records of work stoppage, labour report, force majeure and report it to senior authority as per company norms	5	5	-	-
PC9. ensure presence and efficient use of PPEs, work permits and work relevant safety devices at work area	2	2	-	-
Ensure appropriate erection in structural steel bridge construction works using strand jack	15	15	-	-
PC10. check for positioning of anchor plates at steel assembly to be erected	2	2	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check for proper locking of strands in to specified locations in order to pull assembly safely	2	2	-	-
PC12. ensure that optimum torque is provided for locking of strands	2	2	-	-
PC13. carry out visual inspection for rigidity of guiderails provided	2	2	-	-
PC14. ensure adequate number and thickness of bearing pads prior to exposing the structure to load	2	2	-	-
PC15. check displacements of structural assembly periodically at appropriate intervals as per work method statement	2	2	-	-
PC16. provide appropriate direction during pulling to equipment operators to ensure its appropriate location, alignment as per drawing	3	3	-	-
NOS Total	50	50	-	-





National Occupational Standards (NOS) Parameters

NOS Code	CON/N0731
NOS Name	Supervise and ensure erection works in accordance with agreed work plan
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Rigging
NSQF Level	6
Credits	TBD
Version	1.0
Last Reviewed Date	14/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/12/2018





CON/N8003: Supervise, monitor and evaluate performance of subordinates at workplace

Description

This OS covers the skills and knowledge required by an individual to supervise, monitor and evaluate performance of subordinates at work place

Scope

The scope covers the following:

 Monitor all construction work activities performed by subordinates and evaluate their performance and ensure strict adherence to quality instructions & timelines as per organizational policies and procedures

Elements and Performance Criteria

Supervise, monitor and evaluate performance of all subordinates and ensure adherence to organizational policies and procedures

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

- **PC1.** fix expected targets for the respective gang as per site requirements and allocate work to subordinates
- **PC2.** establish expected performance standards and expectations for the respective gang of workers to meet the desired outcomes
- **PC3.** inspect assigned work to the respected gang of workers through progressive checking
- **PC4.** observe and verify the work activities performed by the subordinates at the construction site
- **PC5.** monitor overall performance of subordinates on the designed measures to ensure quality requirements set by the concerned authority
- **PC6.** ensure adherence to the organizational policies and procedures for all relevant construction activities by the workmen subordinations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** policies, procedures and work targets for performance evaluation and appraisals
- **KU2.** organizational policies, procedures and protocol for smooth completion of work at the respective workplace
- **KU3.** complete work/task accurately by following standard specifications and procedures by optimized and correct used of materials , tools, tackles and equipment

Generic Skills (GS)

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





- **GS1.** write in at one or more language, preferably the local language
- **GS2.** read in at one or more language, preferably the local language at the site
- **GS3.** speak in at one or more language, preferably one of the local language at the site
- **GS4.** effectively communicate with team members at workplace
- **GS5.** rectify errors, select workman according to the performance and carry out appropriate allocation of task
- **GS6.** motivate the subordinate for better quality work
- **GS7.** plan work as per right sequence and organize required resources in coordination with the team members
- **GS8.** complete work as per the requirement
- **GS9.** solve any anomalies in work processes, critical problems & cause for delays at workplace
- **GS10.** sort workers activities in order of sequence and importance workers
- **GS11.** identify root cause and effects of workers conflicts at workplace
- **GS12.** evaluate and find solutions to minimize errors and suggest improvements for optimizing resource utilization
- **GS13.** assess which situations would require intervention of superiors





Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Supervise, monitor and evaluate performance of all subordinates and ensure adherence to organizational policies and procedures	50	50	-	-
PC1. fix expected targets for the respective gang as per site requirements and allocate work to subordinates	7.5	7.5	-	-
PC2. establish expected performance standards and expectations for the respective gang of workers to meet the desired outcomes	7.5	7.5	-	-
PC3. inspect assigned work to the respected gang of workers through progressive checking	10	10	-	-
PC4. observe and verify the work activities performed by the subordinates at the construction site	10	10	-	-
PC5. monitor overall performance of subordinates on the designed measures to ensure quality requirements set by the concerned authority	7.5	7.5	-	-
PC6. ensure adherence to the organizational policies and procedures for all relevant construction activities by the workmen subordinations	7.5	7.5	-	-
NOS Total	50	50	-	-





National Occupational Standards (NOS) Parameters

NOS Code	CON/N8003
NOS Name	Supervise, monitor and evaluate performance of subordinates at workplace
Sector	Construction
Sub-Sector	Generic
Occupation	Generic
NSQF Level	6
Credits	TBD
Version	1.1
Last Reviewed Date	23/03/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/05/2015

Skill Development Council

Oualification Pack



CON/N9002: Manage workplace for safe and healthy work environment

Description

This unit describes the skill and knowledge required to maintain a healthy & safe working environment for the group of people working under an individual

Scope

This unit/task covers the following:

- Ensure healthy and safe working environment for subordinates.
- Ensure effective implementation of health, safety and environment policies and procedures
- Identify and respond to risks / fire and emergencies associated with the work practices, workplace and ensure related organizational & statuary requirement as followed

Elements and Performance Criteria

Ensure healthy and safe working environment for subordinates

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

- **PC1.** ensure proper housekeeping at workplace
- **PC2.** implement safe handling , stacking methods at workplace / store
- **PC3.** ensure that health and safety plan is followed by all subordinates
- **PC4.** Identify any hazard in workplace and notify them to appropriate authority
- **PC5.** ensure that all safety and protection installation are correctly placed & adequate
- **PC6.** ensure safe access is available at work place for movement of workers & materials
- **PC7.** ensure safe use of tools and tackles by the workmen as per applicability
- PC8. ensure appropriate use of following Personal Protective Equipment (PPE) as per applicability: Head Protection (Helmets Ear Protection Fall Protection Foot Protection Face and Eye Protection, Hand &Body Protection Respiratory Protection
- **PC9.** maintain entrances & exit from confined spaces, excavated pits and other location in concurrence with safety parameters or instruction form safety personals

Identify and respond to risks / fire and emergencies associated with the work practices, workplace and ensure related organizational & statuary requirement as followed

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

- **PC10.** ensure organizational policies and procedures are followed for health, safety and welfare, in relation to: methods of receiving or sourcing information dealing with accidents and emergencies associated with the work and environment reporting stooping work evacuation fire risks and safe exit procedures
- **PC11.** follow procedures for accident recording and reporting as per organizational and statuary requirements
- PC12. ensure effective adherence to response to emergency procedures /protocols
- **PC13.** report any case of emergency / risks to the concern people at the construction site
- PC14. report any perceived risk hazards to the superiors / concerned EHS
- **PC15.** demonstrate the use of fire protection equipments for different type of fire hazard

Skill Development Council

Oualification Pack



PC16. implement control measures to reduce risk & meet legal requirement as per organizational policies

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- **KU1.** the policies, procedures and protocol set up by the EHS Department With respect to Health, Safety and Environment at the respective construction site
- **KU2.** reporting procedures in cases of breaches or hazards in site safety, accidents or emergency situations
- **KU3.** safe working practices for tools, tackles and equipment
- **KU4.** workplace policies and health and safety requirements for dealing with potential risks as defined by the EHS department
- **KU5.** how to respond to accidents & emergencies
- **KU6.** the appropriate personal protective equipment to be used based on various working conditions
- **KU7.** how to use necessary material ,tools, tackles and equipment in a safe and appropriate manner as specified by site EHS for each level and respective workman gang
- KU8. monitoring working in workplace keeping safety & health in mind

Generic Skills (GS)

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

- **GS1.** write in one or more language
- **GS2.** read in one or more language
- **GS3.** read instructions, rules, guidelines, sign boards related to safety as per the requirements
- **GS4.** speak in one or more language, preferably one of the local language at the site
- **GS5.** listen and follow instructions shared by site EHS and superiors regarding site safety
- **GS6.** communicate reporting of site conditions, hazards, accidents, etc.
- **GS7.** decide upon the appropriate application & installation of safety equipments like barricades and nets
- **GS8.** decide upon the tools box talks contents
- **GS9.** identify any hazards in workplace organize safety equipments prior to commencing work
- **GS10.** work to ensure safe and healthy environmental conditions at workplace
- **GS11.** identify analysis & report hazards, accidents, health and safety risks, etc. or seek help from the appropriate authorities to address the same as per the guidelines laid down by site EHS
- **GS12.** analyze areas of work which are potential safety hazards and could result in damage to life or property for the respective gang at the construction site
- **GS13.** respond to critical health risks or accidents on an urgent basis through appropriate actions





Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure healthy and safe working environment for subordinates	25	25	-	-
PC1. ensure proper housekeeping at workplace	2.5	2.5	-	-
PC2. implement safe handling , stacking methods at workplace / store	2.5	2.5	-	-
PC3. ensure that health and safety plan is followed by all subordinates	2.5	2.5	-	-
PC4. Identify any hazard in workplace and notify them to appropriate authority	2.5	2.5	-	-
PC5. ensure that all safety and protection installation are correctly placed & adequate	2.5	2.5	-	-
PC6. ensure safe access is available at work place for movement of workers & materials	2.5	2.5	-	-
PC7. ensure safe use of tools and tackles by the workmen as per applicability	2.5	2.5	-	-
PC8. ensure appropriate use of following Personal Protective Equipment (PPE) as per applicability: Head Protection (Helmets Ear Protection Fall Protection Foot Protection Face and Eye Protection, Hand &Body Protection Respiratory Protection	5	5	-	-
PC9. maintain entrances & exit from confined spaces , excavated pits and other location in concurrence with safety parameters or instruction form safety personals	2.5	2.5	-	-
Identify and respond to risks / fire and emergencies associated with the work practices, workplace and ensure related organizational & statuary requirement as followed	25	25	-	-





Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. ensure organizational policies and procedures are followed for health, safety and welfare, in relation to: methods of receiving or sourcing information dealing with accidents and emergencies associated with the work and environment reporting stooping work evacuation fire risks and safe exit procedures	5	5	-	-
PC11. follow procedures for accident recording and reporting as per organizational and statuary requirements	2.5	2.5	-	-
PC12. ensure effective adherence to response to emergency procedures /protocols	3.75	3.75	-	-
PC13. report any case of emergency / risks to the concern people at the construction site	3.75	3.75	-	-
PC14. report any perceived risk hazards to the superiors / concerned EHS	3.75	3.75	-	-
PC15. demonstrate the use of fire protection equipments for different type of fire hazard	3.75	3.75	-	-
PC16. implement control measures to reduce risk & meet legal requirement as per organizational policies	2.5	2.5	-	-
NOS Total	50	50	-	-





National Occupational Standards (NOS) Parameters

NOS Code	CON/N9002
NOS Name	Manage workplace for safe and healthy work environment
Sector	Construction
Sub-Sector	Generic
Occupation	Generic
NSQF Level	6
Credits	TBD
Version	1.1
Last Reviewed Date	23/03/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/05/2015

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) (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 theory part will be based on knowledge bank of questions created by the SSC.
- 3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
- 4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
- 5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
- 6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

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.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N0728.Prepare work plan for erection and ensure completion of preparatory work	50	50	-	-	100	15
CON/N0729.Manage equipment, manpower involved in heavy lifting and erection work	50	50	-	-	100	20
CON/N0730.Supervise and monitor lifting operations as per agreed work plan	50	50	-	-	100	20
CON/N0731.Supervise and ensure erection works in accordance with agreed work plan	50	50	-	-	100	20
CON/N8003.Supervise, monitor and evaluate performance of subordinates at workplace	50	50	-	-	100	10
CON/N9002.Manage workplace for safe and healthy work environment	50	50	-	-	100	15
Total	300	300	-	-	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.