Qualification Pack

Technician - Prestress

QP Code: CON/Q0802

Version: 1.0

NSQF Level: 4

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CON/Q0802: Technician - Prestress

Brief Job Description

This job role is responsible for cutting, laying and fixing of tendons and ducts through the specified/ marked locations and fix anchorage cones and accessories at designated locations. Individual also assists in tensioning works of laid tendons and monitors pressure grouting works of ducts/ vents after completion of stressing

Personal Attributes

This job role requires the individual to be physically and mentally fit to work at a construction site. The individual should be organized, methodical, and able to implement and maintain preciseness/ tolerance as applicable to placing of pre-stressing components. The individual should possess good organizational, interpersonal and communication skills along with factual knowledge of Prestressing works. The job holder should preferably be physically sound, free from vertigo problem, cardiovascular diseases as the nature of work involves sometimes working at height.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. CON/N0804: Fix anchorage and lay ducts for installing pre-stressing systems
2. CON/N0805: Lay pre-stressing tendons through anchorages and bearing plates
3. CON/N0806: Assist in stressing of tendons and monitor pressure grouting works
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 protocol at construction site

Qualification Pack (QP) Parameters

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

NSQF Level	4
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2004/NIL
Minimum Educational Qualification & Experience	10th Class with 3-5 Years of experience as a certified Assistant Technician Prestress OR 10th Class with 5-10 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 12-16 weeks as per QP of Technician - Prestress
Minimum Job Entry Age	18 Years
Last Reviewed On	23/08/2015
Next Review Date	31/03/2022
Deactivation Date	31/03/2022
NSQC Approval Date	09/10/2017
Version	1.0
Reference code on NQR	2017/CON/CSDCI/02014
NQR Version	1.0

CON/N0804: Fix anchorage and lay ducts for installing pre-stressing systems

Description

This unit describes the skills and knowledge required to fix anchorage and lay ducts for installing pre-stressing systems

Scope

The scope covers the following: Fix anchorage guide cones to the formwork shutters as per marking

- Lay sheathing ducts as per drawing

Elements and Performance Criteria

Fix anchorage guide cones to the formwork shutters as per marking

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

PC1. carry out necessary measurements to mark location of inserts on the formwork shutters

PC2. mark location of the inserts, embedded components using appropriate marking tools/ paints

PC3. cut opening in the shutter panels by using power cutting tools

PC4. make wooden templates as pockets as per drawing within dimensional tolerance limit for fixing guide cones

PC5. cut holes/ grooves to the templates as per guide cones dimension wooden appropriate hand and power tools

PC6. check shape of reinforcement bars, centre to centre distance, covers, tying of bars at the location of fixing anchorages in reference to applicable drawing

PC7. fix pockets, anchorage guide cones, inserts to the formwork shutters as per marking by using suitable hand tools

PC8. fix foam sheets, stoppers to the inserts for making pockets as per applicability

PC9. carry out suitable adjustments to the anchorage cones to maintain its alignment and level as per drawing

PC10. ensure water tightness and leakage through the embedded components

PC11. carry out measurement of distance among multiple anchorage cones to cross check the locations as per drawing

PC12. use appropriate PPEs while working at height/ night

Lay sheathing ducts as per drawing

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

PC13. check sheathing ducts visually for diameter, corrosion, distortion and cracks prior to laying

PC14. check duct laying location for completion of preparatory works (reinforcement/ shuttering works, cleaning etc

PC15. place tendon/ duct supports at specified interval

PC16. lock supports by tying with reinforcement or by suitable means as per approved method

PC17. ensure supports are rigidly fixed and secured against movements

PC18. lay ducts through the supports and join the duct terminals to the anchorage guide cones as per drawing/ specification

PC19. tie sheathing ducts to the supports ensuring adequate tightness and rigidity

PC20. connect sheathing ducts by screwing or sealant tapes as per applicability ensuring water tightness

PC21. apply appropriate sealant to the joint of duct and anchorage cone

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices for Prestressing works

KU2. safety rules and regulation for handling and storing Prestressing tools, equipment and materials

KU3. personal protection including the use of the related safety gears & safety equipment

KU4. requesting tools and materials as per set procedures

KU5. maintenance of tools and equipment

KU6. concepts of linear, areal and volumetric measurement and conversion of units

KU7. use of measuring instruments like measuring tapes, plumb bobs, spirit level etc.

KU8. use of measuring instruments like measuring tapes, plumb bobs, spirit level etc.

KU9. use of power cutting tools and its operation

KU10. use power drill machine and its operation

KU11. concept of reinforcement steel works and factors related to the same, such as clear cover, spacing, shape of bending, diameter of bars etc

KU12. use of hand tools and tackles like hammer, nails, threads etc

KU13. how to measure, cut and fix foam sheets

KU14. standard method of fixing sealants, tapes etc. to embedded stressing components

KU15. function of sheathing ducts and material used for making the same (steel/ PVC etc.)

KU16. essential characteristics of sheathing ducts to be maintained and storage condition of the same as per specified norms of pre-stressing works

KU17. ideal physical condition to be maintained for laying of sheathing works

KU18. method of fixing duct supports as per approved methodology

KU19. how to lock supports at their position using appropriate means of locking

KU20. appropriate location of laying ducts as per drawing

KU21. standard method of laying ducts and their joining technique

KU22. positioning of duct supports with respect to duct joints and other embedded parts

KU23. standard method of joining ducts and use of approved joining materials

KU24. application of sealant to the joints

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 in one or more language, preferably in the local language of the site

GS3. read sketches/routine working drawing or instructions provided for the work

GS4. read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace

GS5. speak in one or more language, preferably in one of the local languages of the site

GS6. listen and follow instructions communicated by supervisors

GS7. orally and effectively communicate with team member

GS8. decide whether the workplace is safe for working and also the relevant work is not creating hazardous conditions for others

GS9. select appropriate hand and power tools for marking, cutting, etc. while carrying out work

GS10. ddetermine suitability of sheathing ducts to ensure appropriate diameter and that they are free of corrosion, cracks, etc.

GS11. determine whether preparatory works are complete prior to laying sheathing ducts

GS12. determine the suitable method for locking of supports securely

GS13. plan work and organize required resource in coordination with team member and superior

GS14. complete work as per agreed time schedule and quality

GS15. resolve any conflict within the team

GS16. check for leakages through the embedded components and rectify

GS17. optimize resources

GS18. minimize wastages

GS19. assess and evaluate alignment and level, and make suitable adjustment to anchorage cones as per requirements

GS20. evaluate the complexity of the tasks and determine if any guidance is required from superior

GS21. assess and analyze whether shape of reinforcement bars, centre to centre distance, covers, tying of bars at the location of fixing anchorages, etc. comply with the drawings

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Fix anchorage guide cones to the formwork shutters as per marking	**17**	**39**	**-**	**-**
PC1. carry out necessary measurements to mark location of inserts on the formwork shutters	1	3	-	-
PC2. mark location of the inserts, embedded components using appropriate marking tools/ paints	1	3	-	-
PC3. cut opening in the shutter panels by using power cutting tools	2	3	-	-
PC4. make wooden templates as pockets as per drawing within dimensional tolerance limit for fixing guide cones	2	3	-	-
PC5. cut holes/ grooves to the templates as per guide cones dimension wooden appropriate hand and power tools	1.5	3.5	-	-
PC6. check shape of reinforcement bars, centre to centre distance, covers, tying of bars at the location of fixing anchorages in reference to applicable drawing	1.5	3.5	-	-
PC7. fix pockets, anchorage guide cones, inserts to the formwork shutters as per marking by using suitable hand tools	1.5	3.5	-	-
PC8. fix foam sheets, stoppers to the inserts for making pockets as per applicability	1.5	3.5	-	-
PC9. carry out suitable adjustments to the anchorage cones to maintain its alignment and level as per drawing	1.5	3.5	-	-
PC10. ensure water tightness and leakage through the embedded components	1	3	-	-
PC11. carry out measurement of distance among multiple anchorage cones to cross check the locations as per drawing	1.5	3.5	-	-
PC12. use appropriate PPEs while working at height/ night	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Lay sheathing ducts as per drawing	**13**	**31**	**-**	**-**
PC13. check sheathing ducts visually for diameter, corrosion, distortion and cracks prior to laying	1.5	3.5	-	-
PC14. check duct laying location for completion of preparatory works (reinforcement/ shuttering works, cleaning etc	1.5	3.5	-	-
PC15. place tendon/ duct supports at specified interval	1.5	3.5	-	-
PC16. lock supports by tying with reinforcement or by suitable means as per approved method	1.5	3.5	-	-
PC17. ensure supports are rigidly fixed and secured against movements	1.5	3.5	-	-
PC18. lay ducts through the supports and join the duct terminals to the anchorage guide cones as per drawing/ specification	1.5	3.5	-	-
PC19. tie sheathing ducts to the supports ensuring adequate tightness and rigidity	1.5	3.5	-	-
PC20. connect sheathing ducts by screwing or sealant tapes as per applicability ensuring water tightness	1.5	3.5	-	-
PC21. apply appropriate sealant to the joint of duct and anchorage cone	1	3	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N0804
NOS Name	Fix anchorage and lay ducts for installing pre-stressing systems
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Prestressing
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017

CON/N0805: Lay pre-stressing tendons through anchorages and bearing plates

Description

This unit describes the skills and knowledge required to lay pre-stressing tendons through anchorages and bearing plates

Scope

The scope covers the following:

- Cut tendons as per marking
- Lay tendons through ducts and anchorages

Elements and Performance Criteria

Cut tendons as per marking

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

PC1. check exposed tendons for corrosion and any visible deviation

PC2. monitor uncoiling and expansion of tendons

PC3. place one or multiple tendons together and fix them at appropriate location

PC4. carry out necessary measurements and mark required cutting lengths using appropriate marking tools

PC5. cut tendons using abrasive cutting tools

PC6. ensure smooth edge of tendons after completion of cutting

PC7. use appropriate PPEs while unwinding coils and carry out cutting works

Lay tendons through ducts andanchorages

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

PC8. pull and push tendons through sheathing ducts

PC9. ensure no harm is caused to sheathing ducts during insertion and passing of tendons through the same

PC10. place specified number of tendons of specified grade through each duct

PC11. carry out threading of tendons using appropriate threading tools as and when necessary

PC12. pass the tendons through anchorage cones and bearing plates and expose them out of the ducts

PC13. insert the Bearing Ring over the Bearing Plate at both ends of the Tendon and press to fully to sit properly over the Guide Ring

PC14. insert the Pressure Plate as per the orientation of the Bearing Plate Hole

PC15. mount steel grips to the bearing plate holes and tighten them in prior to start tensioning

PC16. prepare bulbs in tendon terminals using appropriate tools, in case of laying in blind (dead) end anchorage zone

PC17. lock tendons by putting swaged sleeves and distribution plates in case of blind end anchorage (if applicable)

PC18. close all the opening in ducts by using suitable/ approved material as per instruction

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices for Prestressing works
KU2. safety rules and regulation for handling and storing Prestressing tools, equipment and materials
KU3. personal protection including the use of the related safety gears & safety equipment
KU4. requesting tools and materials as per set procedures
KU5. maintenance of tools and equipment
KU6. desired physical condition of the tendons to be used for pre-stressing work
KU7. standard method of uncoiling and expanding tendons for cutting
KU8. dos and donts regarding handling/ storing of pre-stressing tendons as per manufacturers guidelines
KU9. concepts of liner, areal and volumetric measurement
KU10. use of measuring instruments like measuring tapes, plumb bobs, spirit leveletc.
KU11. use of power cutting tools and its operation
KU12. essential parameters to be checked and maintained in pre-stressing tendons before and after cutting tendon such as condition of edge, cutting length etc.
KU13. standard/ approved method of placing tendons through the ducts andanchorages
KU14. how to lay tendon through the sheathing ducts
KU15. what checks are to be carried out to the sheathing ducts to ensure intactness of the same, such as check for damage, rupture, corrosion
KU16. how to fix grips to the tendons and tighten the same
KU17. how to form bulbs to the steel tendons using appropriate tools/ machine
KU18. locking/ fixing of tendons at blind end anchorage as per specification/ approved method
KU19. reason behind proper closing of ducts and materials to be used for closing

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 in one or more language, preferably in the local language of the site
GS3. read sketches/routine working drawing or instructions provided for the work
GS4. read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
GS5. speak in one or more language, preferably in one of the local languages of the site
GS6. listen and follow instructions communicated by supervisors
GS7. orally and effectively communicate with team member

GS8. decide whether the workplace is safe for working and also the relevant work is not creating hazardous conditions for others

GS9. select appropriate hand and power tools for marking, cutting, etc. while carrying out work

GS10. select appropriate tools for cutting, marking, etc. while carrying out work

GS11. determine whether tendon edge is smooth after completing cutting

GS12. determine approved materials for closing openings in ducts

GS13. plan work and organize required resources in coordination with team members and superiors

GS14. complete work as per agreed time schedule and quality

GS15. resolve any conflict within the team

GS16. check for deviation / corrosion of exposed tendons and rectify

GS17. check for any damage to sheathing ducts due to laying of tendons

GS18. optimize resources

GS19. minimize wastage

GS20. assess orientation of Bearing Plate hole while inserting the Pressure Plate

GS21. evaluate the complexity of the tasks to determine if any guidance is required from the superior

GS22. avoid violation of any safety norms which may lead to accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Cut tendons as per marking	**11.5**	**26.5**	**-**	**-**
PC1. check exposed tendons for corrosion and any visible deviation	1.5	3.5	-	-
PC2. monitor uncoiling and expansion of tendons	1.5	3.5	-	-
PC3. place one or multiple tendons together and fix them at appropriate location	1.5	3.5	-	-
PC4. carry out necessary measurements and mark required cutting lengths using appropriate marking tools	2.5	5.5	-	-
PC5. cut tendons using abrasive cutting tools	1.5	3.5	-	-
PC6. ensure smooth edge of tendons after completion of cutting	1.5	3.5	-	-
PC7. use appropriate PPEs while unwinding coils and carry out cutting works	1.5	3.5	-	-
Lay tendons through ducts andanchorages	**18.5**	**43.5**	**-**	**-**
PC8. pull and push tendons through sheathing ducts	1.5	3.5	-	-
PC9. ensure no harm is caused to sheathing ducts during insertion and passing of tendons through the same	1.5	3.5	-	-
PC10. place specified number of tendons of specified grade through each duct	1.5	4.5	-	-
PC11. carry out threading of tendons using appropriate threading tools as and when necessary	2.5	5.5	-	-
PC12. pass the tendons through anchorage cones and bearing plates and expose them out of the ducts	1.5	3.5	-	-
PC13. insert the Bearing Ring over the Bearing Plate at both ends of the Tendon and press to fully to sit properly over the Guide Ring	2.5	5.5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. insert the Pressure Plate as per the orientation of the Bearing Plate Hole	1.5	3.5	-	-
PC15. mount steel grips to the bearing plate holes and tighten them in prior to start tensioning	1.5	3.5	-	-
PC16. prepare bulbs in tendon terminals using appropriate tools, in case of laying in blind (dead) end anchorage zone	1.5	3.5	-	-
PC17. lock tendons by putting swaged sleeves and distribution plates in case of blind end anchorage (if applicable)	1.5	3.5	-	-
PC18. close all the opening in ducts by using suitable/ approved material as per instruction	1.5	3.5	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N0805
NOS Name	Lay pre-stressing tendons through anchorages and bearing plates
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Prestressing
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017

CON/N0806: Assist in stressing of tendons and monitor pressure grouting works

Description

This unit describes the skills and knowledge required to assist in stressing of tendons and monitor pressure grouting works

Scope

The scope covers the following:

- Shift and fix stressing jacks to the tensions
- Monitor grout preparation and grouting works

Elements and Performance Criteria

Shift and fix stressing jacks to the tensions

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

PC1. check stressing equipments(jacks/ power packs) visually for any visible damage or leakage prior to shifting

PC2. shift stressing jacks, power packs and their accessories to the appropriate location of stressing

PC3. erect signage and barricading to the pre-stressing points to restrict entry of unauthorized person or vehicle

PC4. pass tendons through the jack as per instruction

PC5. lock the tendons by using master grips prior to start stressing

PC6. connect power pack, hydraulic jack through hose

PC7. connect pre-stressing jacks and power pack units to electrical outlets

Monitor grout preparation andgrouting works

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

PC8. monitor storing and stacking of grouting materials from store to work site

PC9. check grouting material visually to ensure their usability

PC10. check grouting pump visually for visible damages and dislocation/ breakage of accessories

PC11. monitor fixing of grouting nozzles as per specification

PC12. check connections of grouting nozzle and grouting hose for adequate tightness

PC13. check and ensure grouting vent are closed appropriately using approved material against ingression of dust, moisture etc

PC14. ensure grouting materials are mixed in appropriate proportion

PC15. monitor grout is applied in specified pressure by using appropriate grouting pump

PC16. check pressure gauge and monitor pressure of grouting

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices for Prestressing works
KU2. safety rules and regulation for handling and storing Prestressing tools, equipment and materials
KU3. personal protection including the use of the related safety gears & safety equipment
KU4. requesting tools and materials as per set procedures
KU5. maintenance of tools and equipment
KU6. function of tensioning equipments and their working mechanism, such as hydraulic jacks, power packs etc
KU7. standard method of uncoiling and expanding tendons for cutting
KU8. requirement of safety control measures at pre-stressing site as per agreed work plan
KU9. procedure of placing tendons through the stressing jacks
KU10. how to connect power pack, hydraulic jack and hose as per standard practice/ applicable guidelines
KU11. standard procedure of handling grouting materials used in pre-stressing works and their specified storing procedure
KU12. visual checks to be carried out grouting materials and grouting pumps to determine their usability
KU13. required condition of grouting vent to be kept and materials to be used for closing of the same
KU14. desired mix proportion of grouting mix
KU15. desired gauge pressure to be maintained while carrying out grouting of the sheathing/ tendon ducts
KU16. basic concept of calibration of pressure gauges used in grouting pump

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 in one or more language, preferably in the local language of the site
GS3. read sketches/routine working drawing or instructions provided for the work
GS4. read instructions, guidelines, sign boards, safety rules ,safety tag and instructions related to exit routes during emergencies at the work place
GS5. speak in one or more language, preferably in one of the local languages of the site
GS6. listen and follow instructions communicated by supervisors
GS7. orally and effectively communicate with team member
GS8. decide whether the workplace is safe for working and also the relevant work is not creating hazardous conditions for others
GS9. determine the appropriate location for stressing works
GS10. determine suitability and usability of grouting mater
GS11. select approved material for closing grouting vent

GS12. plan work and organize required resources in coordination with team members and superiors
GS13. complete work as per agreed time schedule and quality
GS14. resolve any conflict within the team
GS15. check for damage / leakage in stressing equipments and take necessary action
GS16. check for damage to the grouting pump and take necessary action
GS17. optimize resources
GS18. minimize wastage
GS19. assess and evaluate tightness of grouting nozzle and grouting hose
GS20. assess the appropriate proportion for mixing of grouting material
GS21. evaluate the complexity of the tasks to determine if any guidance is required from the superior
GS22. avoid violation of any safety norms which may lead to accidents
GS23. determine whether appropriate pressure has been applied while using the grouting pump

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Shift and fix stressing jacks to the tensions	**12**	**32**	**-**	**-**
PC1. check stressing equipments(jacks/ power packs) visually for any visible damage or leakage prior to shifting	1	5	-	-
PC2. shift stressing jacks, power packs and their accessories to the appropriate location of stressing	1	5	-	-
PC3. erect signage and barricading to the pre-stressing points to restrict entry of unauthorized person or vehicle	2	4	-	-
PC4. pass tendons through the jack as per instruction	2	4	-	-
PC5. lock the tendons by using master grips prior to start stressing	2	4	-	-
PC6. connect power pack, hydraulic jack through hose	2	4	-	-
PC7. connect pre-stressing jacks and power pack units to electrical outlets	2	6	-	-
Monitor grout preparation andgrouting works	**18**	**38**	**-**	**-**
PC8. monitor storing and stacking of grouting materials from store to work site	2	4	-	-
PC9. check grouting material visually to ensure their usability	2	4	-	-
PC10. check grouting pump visually for visible damages and dislocation/ breakage of accessories	2	4	-	-
PC11. monitor fixing of grouting nozzles as per specification	2	4	-	-
PC12. check connections of grouting nozzle and grouting hose for adequate tightness	2	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. check and ensure grouting vent are closed appropriately using approved material against ingression of dust, moisture etc	2	4	-	-
PC14. ensure grouting materials are mixed in appropriate proportion	2	4	-	-
PC15. monitor grout is applied in specified pressure by using appropriate grouting pump	2	6	-	-
PC16. check pressure gauge and monitor pressure of grouting	2	4	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N0806
NOS Name	Assist in stressing of tendons and monitor pressure grouting works
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Prestressing
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017

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 effectively with co-workers, superiors and sub-ordinates across different teams
- Support co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task

Elements and Performance Criteria

Interact and communicate in effective and conclusive 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. address the problems effectively and report if required to immediate supervisor appropriately

PC4. receive instructions clearly from superiors and respond effectively on the same

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

PC6. seek clarification and advice as per the requirement and applicability

Support co-workers to execute 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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. own roles and responsibilities

KU2. importance of effective communication and establishing strong working

KU3. risks of a failure in teamwork in terms of effects on project outcomes, timelines, safety at the construction site, etc.

KU4. different modes of communication, and its appropriate usage

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

KU6. different activities within his work area where an 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

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

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

GS3. read communication from team members regarding work completed, materials used, tools and tackles used, support required

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

GS5. listen and follow instructions / communication shared by superiors/ co-workers regarding team requirements or interfaces during work processes

GS6. orally communicate with co-workers regarding support required to complete the respective work

GS7. decide on what information is to be shared with co-workers within the team or from interfacing gang of workers

GS8. plan work and organize required resources in coordination with team members

GS9. complete all assigned task in coordination with team members

GS10. take initiative in resolving issues among co-workers or report the same to superiors

GS11. ensure best ways of coordination among team members

GS12. communicate with co-workers considering their educational / social background

GS13. 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 effective and conclusive manner	**14**	**34**	**-**	**-**
PC1. pass on work related information/ requirement clearly to the team members	2	5	-	-
PC2. inform co-workers and superiors about any kind of deviations from work	2	5	-	-
PC3. address the problems effectively and report if required to immediate supervisor appropriately	3	7	-	-
PC4. receive instructions clearly from superiors and respond effectively on the same	2	5	-	-
PC5. communicate to team members/subordinates for appropriate work technique and method	3	7	-	-
PC6. seek clarification and advice as per the requirement and applicability	2	5	-	-
Support co-workers to execute project requirements	**16**	**36**	**-**	**-**
PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams	8	18	-	-
PC8. work together with co-workers in a synchronized manner	8	18	-	-
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	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.1
Last Reviewed Date	23/05/2015
Next Review Date	31/03/2022
NSQC Clearance Date	21/07/2016

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

Elements and Performance Criteria

Prioritize work activities to achieve desired results

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

PC1. understand clearly the targets and timelines set by superiors

PC2. plan activities as per schedule and sequence

PC3. provide guidance to the subordinates to obtain desired outcome

PC4. plan housekeeping activities prior to and post completion of work

Organize desired resources prior to commencement of work

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

PC5. list and arrange required resources prior to commencement of work

PC6. select and employ correct tools, tackles and equipment for completion of desired work

PC7. complete the work with allocated resources

PC8. engage allocated manpower in an appropriate manner

PC9. use resources in an optimum manner to avoid any unnecessary wastage

PC10. employ tools, tackles and equipment with care to avoid damage to the same

PC11. organize work output, materials used, tools and tackles deployed

PC12. processes adopted to be in line with the specified standards and instructions

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. importance of proper housekeeping

KU2. policies, procedures and work targets set by superiors

KU3. roles and responsibilities in executing the work for subordinates and self

KU4. standard practices of work to be adopted for assigned task

KU5. 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 at least one language, preferably in the local language of the site

GS2. list out the assigned works and targets

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

GS4. read communication from co-workers, superiors and notices from other departments as per requirement of the level

GS5. speak in one or more language, preferably one of the local language at the site

GS6. listen and follow communication shared by co-workers regarding standard work processes, resources available, timelines, etc.

GS7. communicate effectively with co-workers and subordinates

GS8. decide on what sequence is to be adopted for execution of work

GS9. plan and organize the materials, tools, tackles and equipment required to execute the work

GS10. complete all assigned task with proper planning and organizing

GS11. arrange or seek help to arrange for material, tools and tackles in case of shortfall

GS12. analyze areas of work which could result in a delay of work, wastage of material or damage to tools and tackles

GS13. 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
Prioritize work activities to achieve desired results	**9**	**22**	**-**	**-**
PC1. understand clearly the targets and timelines set by superiors	2	5	-	-
PC2. plan activities as per schedule and sequence	2	5	-	-
PC3. provide guidance to the subordinates to obtain desired outcome	3	7	-	-
PC4. plan housekeeping activities prior to and post completion of work	2	5	-	-
Organize desired resources prior to commencement of work	**21**	**48**	**-**	**-**
PC5. list and arrange required resources prior to commencement of work	3	7	-	-
PC6. select and employ correct tools, tackles and equipment for completion of desired work	3	7	-	-
PC7. complete the work with allocated resources	3	7	-	-
PC8. engage allocated manpower in an appropriate manner	3	6	-	-
PC9. use resources in an optimum manner to avoid any unnecessary wastage	3	6	-	-
PC10. employ tools, tackles and equipment with care to avoid damage to the same	2	5	-	-
PC11. organize work output, materials used, tools and tackles deployed	2	5	-	-
PC12. processes adopted to be in line with the specified standards and instructions	2	5	-	-
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	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	23/03/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/05/2015

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

Description

This NOS covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocol 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

Elements and Performance Criteria

Follow safety norms as defined by 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. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site

PC5. 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:

PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: Head Protection (Helmets) Ear protection Fall Protection Foot Protection Face and Eye Protection, Hand and Body Protection Respiratory Protection (if required)

PC7. handle all required tools, tackles , materials & equipment safely

PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines

PC9. install and apply properly all safety equipment as instructed

PC10. follow safety protocol and practices as laid down by site EHS department

Implement good housekeeping practices

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

PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes

PC12. apply ergonomic principles wherever required

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. appropriate personal protective equipment to used based on various
KU6. importance of handling tools, equipment and materials as per applicable
KU7. health and environments effect of construction materials as per
KU8. various environmental protection methods as per applicability
KU9. storage of waste including the following at appropriate location: non-combustible scrap material and debris combustible scrap material and debris general construction waste and trash (non-toxic, non-hazardous) any other hazardous wastes any other flammable wastes
KU10. how to use hazardous material, in a safe and appropriate manner as per
KU11. safety relevant to tools, tackles, & requirement as per applicability
KU12. housekeeping activities relevant to task

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. read sign boards, notice boards relevant to safety
GS5. speak in one or more language, preferably in one of the local language of the site
GS6. listen instructions / communication shared by site EHS and superiors regarding site safety, and conducting tool box talk
GS7. communicate reporting of site conditions, hazards, accidents, etc.
GS8. not create unsafe conditions for others
GS9. keep the workplace clean and tidy
GS10. identify safety risks that affect the health, safety and environment for self and others working in the vicinity, tackle it if within limit or report to appropriate authority
GS11. assess and analyze areas which may affect health, safety and environment protocol on the site
GS12. ensure personal safety behavior
GS13. respond to emergency

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Follow safety norms as defined by organization	**11**	**27**	**-**	**-**
PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority	2	5	-	-
PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities	2	5	-	-
PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable	3	7	-	-
PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site	2	5	-	-
PC5. identify near miss , unsafe condition and unsafe act	2	5	-	-
Adopt healthy & safe work practices	**15**	**33**	**-**	**-**
PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: Head Protection (Helmets) Ear protection Fall Protection Foot Protection Face and Eye Protection, Hand and Body Protection Respiratory Protection (if required)	3	7	-	-
PC7. handle all required tools, tackles , materials & equipment safely	2	5	-	-
PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines	2	5	-	-
PC9. install and apply properly all safety equipment as instructed	4	8	-	-
PC10. follow safety protocol and practices as laid down by site EHS department	4	8	-	-
Implement good housekeeping practices	**4**	**10**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes	2	5	-	-
PC12. apply ergonomic principles wherever required	2	5	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N9001
NOS Name	Work according to personal health, safety and environment protocol at construction site
Sector	Construction
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.2
Last Reviewed Date	23/05/2015
Next Review Date	31/03/2022
NSQC Clearance Date	21/07/2016

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/N0804.Fix anchorage and lay ducts for installing pre-stressing systems	30	70	-	-	100	20
CON/N0805.Lay pre-stressing tendons through anchorages and bearing plates	30	70	-	-	100	22
CON/N0806.Assist in stressing of tendons and monitor pressure grouting works	30	70	-	-	100	26
CON/N8001.Work effectively in a team to deliver desired results at the workplace	30	70	-	-	100	8
CON/N8002.Plan and organize work to meet expected outcomes	30	70	-	-	100	10
CON/N9001.Work according to personal health, safety and environment protocol at construction site	30	70	-	-	100	14
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.