Qualification Pack

Multi Skill Technician - Fabrication

QP Code: CON/Q1210

Version: 1.0

NSQF Level: 3

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CON/Q1210: Multi Skill Technician - Fabrication

Brief Job Description

This job role entails carrying out tack welding works on steel elements and support to welders and fitters in various activities related to fit-up and fabrication of steel components in a fabrication yard.

Personal Attributes

The individual should possess good factual knowledge, and shall be able to maintain safe and quality work practices. The individual is expected to be physically fit and mentally alert. Moreover the individual should preferably not be suffering from any physical disorder. They should have good communication skills and shall be able to work within a team to handle various tools and materials.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. CON/N1201: Identify, and handle materials, tools, tackles and consumables used for fabrication of structural steel elements
2. CON/N1202: Provide support and assistance to fabrication activities
3. CON/N1204: Identify, use various tools, tackles and handle heavy materials used in fit-up offabricated components
4. CON/N1205: Assist in preparatory activities, edge reparation and positioning of steel sections for fit-up
5. CON/N1208: Carry out marking on structural steel elements to complete the fitup in accordance with shop drawings
6. CON/N1209: Carry out fitup of assemblies in fabrication yard
7. CON/N1251: Perform tack welding operations on structural steel elements
8. CON/N1252: Carry out preheating of materials before cutting and welding process
9. CON/N8001: Work effectively in a team to deliver desired results at the workplace
10. CON/N9001: Work according to personal health, safety and environment protocol at construction site
11. FIC/N9005: Evaluate and develop entrepreneur skills

Qualification Pack (QP) Parameters

Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
Country	India
NSQF Level	3
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7214.70
Minimum Educational Qualification & Experience	10th Class OR 10th Class OR 10th Class
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	01/03/2017
Next Review Date	30/09/2021
Deactivation Date	30/09/2021
NSQC Approval Date	05/02/2018
Version	1.0
Reference code on NQR	2018/CON/CSDCI/02114
NQR Version	1.0

CON/N1201: Identify, and handle materials, tools, tackles and consumables used for fabrication of structural steel elements

Description

This unit describes the skills and knowledge required by workman to identify and handle materials, tools, tackles and consumables used for fabrication of structural steel elements

Scope

The scope covers the following:

- Identify and differentiate materials, tools and consumables used in the fabrication process
- Handle tools, tackles, consumables and lightweight materials used in fabrication

Elements and Performance Criteria

Identify and differentiate materials, tools and consumables used in the fabrication process

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

PC1. identify and differentiate between various types of Kits process of welding works

PC2. identify the various shielding gas cylinders

PC3. identify and differentiate between gases based on their uses and applications related to gas cutting works

PC4. identify and differentiate between different types of filler rods used in different welding processes

PC5. identify and differentiate types of grinding wheels

PC6. identify and differentiate between different types of grinders such as fixed grinding machine, angle or portable grinders bend grinders etc

PC7. identify and differentiate between various tools and tackles employed in fitup operations

Handle tools, tackles, onsumables and lightweight materials used in fabrication

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

PC8. handle and stack different tools that are required for welding operations

PC9. coil cables and pipes and shift them as per instructions

PC10. stack the wire/ cables as per manufactures guidelines as per standard safety norms and instruction

PC11. shift gas cylinders in upright position only, by employing trolleys or any other suitable mechanical means

PC12. stack full and empty cylinders separately as per instructions or standard practice

PC13. shift lightweight materials as per instruction applying the ergonomics of material handling

PC14. stack the light weight material at proper location as per instruction

PC15. carry out basic upkeep of various hand tools and tackles

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices of fabrication works
KU2. safety rules and regulation for handling and storing required fabrication tools, equipment and materials
KU3. personal protection including the use of related safety gears & equipment
KU4. procedure for issue of tools and materials
KU5. different types of welding processes
KU6. different kits, tools and tackles used in different welding processes
KU7. different types of consumables, their classification based upon size, material and application in process
KU8. different types of gases used for fabrication activity and their distinguishing factors
KU9. importance of transporting gases in upright position
KU10. different types of grinding machines and their consumables
KU11. storage and stacking of different consumables used in different process of fabrication
KU12. various tools and tackles required in fabrication works
KU13. ergonomic principles to carry loads

Generic Skills (GS)

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

GS1. write in one or more language, preferably in the local language of the site
GS2. read one or more language, preferably the local language of the site
GS3. read instructions, guidelines, sign boards, safety rules & safety tags
GS4. instruction related to exit routes during emergency at the workplace
GS5. speak in one or more language, preferably in one of the local language of thesite
GS6. listen and follow instructions / communication shared by superiors/ coworkers regarding team requirements or interfaces during work processes
GS7. orally communicate with co-workers regarding support required to completethe respective work
GS8. decide how to apply ergonomics principles while shifting and stacking light weight materials
GS9. identify location at which violation of any safety norms or protocols (with regards to stacking of heavy objects, controlling position of suspendedobjects, etc.) may lead to accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify and differentiate materials, tools and consumables used in the fabrication process	**11**	**42**	**-**	**-**
PC1. identify and differentiate between various types of Kits process of welding works	1	4	-	-
PC2. identify the various shielding gas cylinders	1	4	-	-
PC3. identify and differentiate between gases based on their uses and applications related to gas cutting works	2	8	-	-
PC4. identify and differentiate between different types of filler rods used in different welding processes	2	8	-	-
PC5. identify and differentiate types of grinding wheels	1	4	-	-
PC6. identify and differentiate between different types of grinders such as fixed grinding machine, angle or portable grinders bend grinders etc	2	6	-	-
PC7. identify and differentiate between various tools and tackles employed in fitup operations	2	8	-	-
Handle tools, tackles, onsumables and lightweight materials used in fabrication	**9**	**38**	**-**	**-**
PC8. handle and stack different tools that are required for welding operations	1	2	-	-
PC9. coil cables and pipes and shift them as per instructions	-	2	-	-
PC10. stack the wire/ cables as per manufactures guidelines as per standard safety norms and instruction	1	3	-	-
PC11. shift gas cylinders in upright position only, by employing trolleys or any other suitable mechanical means	1	4	-	-
PC12. stack full and empty cylinders separately as per instructions or standard practice	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. shift lightweight materials as per instruction applying the ergonomics of material handling	2	8	-	-
PC14. stack the light weight material at proper location as per instruction	1	7	-	-
PC15. carry out basic upkeep of various hand tools and tackles	2	8	-	-
NOS Total	**20**	**80**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1201
NOS Name	Identify, and handle materials, tools, tackles and consumables used for fabrication of structural steel elements
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	1
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1202: Provide support and assistance to fabrication activities

Description

This unit describes the skills and knowledge required to have good working knowledge of fabrication to enable the helper to provide assistance and support for fabrication activities

Scope

The scope covers the following:

- Provide support in welding/ gas cutting/ grinding operations
- Provide support in fitting operations
- Carry out bolting connections under continuous instructions and close supervision for jigs and fixtures

Elements and Performance Criteria

Provide support in welding/ gas cutting/ grinding operations

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

PC1. carry welding tools equipment and consumables to instructed location

PC2. clean the base material to remove any dust, oil, rust, paint etc. from the surface as per instructions

PC3. clean the base material to remove any dust. Oil, rust, paint, etc. from the surface as per instructions

PC4. ensure that cables / gas pipes are not tangled

PC5. carry portable grinding machines and consumables to instructed locations

PC6. store and stack the consumables as per requirement/ instructions and guidelines

Provide support in fitting operations

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

PC7. remove any scrap materials, dust etc from the fabrication platform

PC8. place the clamps and arrestors in place as per instructions

PC9. store and stack required tools and tackles as per instructions

PC10. carry light weight material to proper position as per instruction

PC11. assist in measurement activity as per instructions

PC12. mark the measurements and alignment as per instructions

PC13. carry out cleaning of assemblies and components prior to erection of the same

Carry out bolting connections under continuous instructions and close supervision for jigs and fixtures

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

PC14. identify the correct bolts for fixing as per instructions

PC15. identify the correct location of bolt/ group etc. as per instructions

PC16. identify and use washers and nuts as per instructions

PC17. tighten the bolts till desired torque is achieved as per instructions

PC18. fix the bolts in a sequential manner as per as instructions
PC19. ensure that no scratches are inflicted upon the surface during bolting operation

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices of fabrication works
KU2. safety rules and regulation for handling and storing required fabrication tools, equipment and materials
KU3. personal protection including the use of related safety gears & equipment
KU4. how to request tools and materials as per set procedures
KU5. maintenance of tools and equipment
KU6. standard sizes of relevant fabrication tools
KU7. importance of clean joints in welding activity
KU8. process of removal of paint from base metal surface
KU9. process of removal of dust from base metal surface
KU10. importance of ventilation in welding
KU11. importance of proper illumination in welding
KU12. importance of proper fitting
KU13. process of preparing fabrication platform
KU14. importance of clamps and arrestors on fabrication platform
KU15. different tools and tackles required in fitting activity
KU16. importance of proper marking
KU17. procedure for marking on metal
KU18. different types of bolts
KU19. different methods of cleaning
KU20. components of a bolting assembly
KU21. common terminologies used in welding, gas cutting operations
KU22. common terminologies used in bolting and fitting operations
KU23. process of marking and measuring the dimensions of the assemblies
KU24. various tools and tackles used in joining assemblies through boltedconnections
KU25. use and upkeep of different tools and tackles used
KU26. housekeeping, its importance and various practices involved

Generic Skills (GS)

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

GS1. write in one or more language, preferably in the local language of the site
GS2. read one or more language, preferably the local language of the site
GS3. read instructions, guidelines, sign boards, safety rules & safety tags

GS4. instruction related to exit routes during emergency

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

GS6. listen and follow instructions communicated by supervisors

GS7. orally and efficiently communicate with team member

GS8. ensure work is done within time and as per desired quality as per instructions provided by superiors

GS9. identify location at which violation of any safety norms may lead to accident

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Provide support in welding/ gas cutting/ grinding operations	**6**	**28**	**-**	**-**
PC1. carry welding tools equipment and consumables to instructed location	1	4	-	-
PC2. clean the base material to remove any dust, oil, rust, paint etc. from the surface as per instructions	1	11	-	-
PC3. clean the base material to remove any dust. Oil, rust, paint, etc. from the surface as per instructions	1	2	-	-
PC4. ensure that cables / gas pipes are not tangled	-	1	-	-
PC5. carry portable grinding machines and consumables to instructed locations	1	4	-	-
PC6. store and stack the consumables as per requirement/ instructions and guidelines	2	6	-	-
Provide support in fitting operations	**8**	**31**	**-**	**-**
PC7. remove any scrap materials, dust etc from the fabrication platform	1	4	-	-
PC8. place the clamps and arrestors in place as per instructions	1	4	-	-
PC9. store and stack required tools and tackles as per instructions	1	1	-	-
PC10. carry light weight material to proper position as per instruction	1	6	-	-
PC11. assist in measurement activity as per instructions	1	4	-	-
PC12. mark the measurements and alignment as per instructions	2	8	-	-
PC13. carry out cleaning of assemblies and components prior to erection of the same	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Carry out bolting connections under continuous instructions and close supervision for jigs and fixtures	**6**	**21**	**-**	**-**
PC14. identify the correct bolts for fixing as per instructions	2	8	-	-
PC15. identify the correct location of bolt/ group etc. as per instructions	1	4	-	-
PC16. identify and use washers and nuts as per instructions	1	2	-	-
PC17. tighten the bolts till desired torque is achieved as per instructions	-	1	-	-
PC18. fix the bolts in a sequential manner as per as instructions	1	2	-	-
PC19. ensure that no scratches are inflicted upon the surface during bolting operation	1	4	-	-
NOS Total	**20**	**80**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1202
NOS Name	Provide support and assistance to fabrication activities
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	1
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1204: Identify, use various tools, tackles and handle heavy materials used in fit-up offabricated components

Description

This unit describes the skills and knowledge required to identify and use various tools, tackles and handle heavy materials used in fit-up of fabricated components

Scope

The scope covers the following:

- Work according to standard health and safety requirements
- Identify and use of tools &tackles to be used in fit-up
- Shift structural steel sections to instructed locations

Elements and Performance Criteria

Work according to standard health and safety requirements

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

PC1. identify any potential hazard in the work area related to own work and report the same to appropriate authority

PC2. avoid any unsafe act by self particularly while working at site

PC3. wear the yard jumpsuit or any other uniform issued at site and not wear any loose clothing

PC4. select and correctly use personnel protective equipment as per work requirement

PC5. dispose of any unwanted material from the work area as per instructions

PC6. participate in safety drills organized at site

PC7. participate in perp talks and tool box talks organized at site

Identify and use of tools & tackles to be used in fit-up

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

PC8. identify and use correct tools and tackles required for Marking like scribers, dividers, punches etc

PC9. identify and use correct tool and tackle for liner and angular measurements like steel rule, tapes, angle gauges etc

PC10. identify and use correct tool and tackle for holding and tightening the metal pieces such as wrenches, vices, different types of clamps etc

PC11. identify and use correct tool for cutting and striking metal such as file, chisels, hammers etc

PC12. identify and use different types of lifting and shifting arrangements such as chain pulley blocks, trolleys etc

PC13. carry out basic upkeep of all hand tools and tackles

Shift structural steelsections to instructed locations

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

PC14. identify the material to be shifted

PC15. check the access if any obstructions and report to concerned authority

PC16. perform visual checks for good working condition of hand tools like sling, rope, clamp hook etc

PC17. anchor the structural member in its right position during lifting to avoid accidents, overturning of lifting machines

PC18. control position of suspended objects when being shifted by means of mobile hydraulic lifting equipments

PC19. stack heavy objects appropriately as per standard practice

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices of construction fitting works

KU2. safety rules and regulation for handling and storing required construction fitting tools, equipment and materials

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

KU4. how to request tools and materials as per set procedures

KU5. maintenance of tools and equipment

KU6. different hand and power tools available in market for fabrication activity

KU7. application of commonly used hand and power tools used in fabrication shop

KU8. selection and correct use of different tools and tackles as per the work requirement

KU9. how to use the tools in optimized manner

KU10. how to carry out basic maintenance of different hand and power tools

KU11. tolerance limits and range of operation for all common hand and power tools

KU12. ergonomic principles to carry loads

KU13. tools and tackles to be used in basic rigging work

KU14. standard practices regarding heavy material lifting and shifting

KU15. safety measures to be taken while object to be shifted is in mobility

KU16. correct posture of lifting equipment during lifting and shifting an object

KU17. idea about load lifting capacity of lifting equipment

KU18. different hazards associated with fabrication activities

KU19. types of fires and different fire safety equipments used

KU20. safety evacuation points

KU21. safety guidelines for working in a fabrication yard

KU22. identify and dispose waste and scrape materials from the workplace

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

GS3. read instructions, guidelines, sign boards, safety rules and safety tags

GS4. read instructions and exit routes during emergency

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

GS6. listen and follow instructions communicated by supervisors

GS7. orally and effectively communicate with team member

GS8. decide the tool or instrument to be used for a particular task

GS9. decide whether the selected tool requires repairs to perform intended task

GS10. plan self-work as per instructions given by superiors

GS11. ensure work is done within time and as per desired quality as per instructions provided by superiors

GS12. check and confirm that the anchorage provided to the structural members isas per instructions to avoid accident while lifting

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work according to standard health and safety requirements	**6**	**20**	**-**	**-**
PC1. identify any potential hazard in the work area related to own work and report the same to appropriate authority	1	2	-	-
PC2. avoid any unsafe act by self particularly while working at site	1	1	-	-
PC3. wear the yard jumpsuit or any other uniform issued at site and not wear any loose clothing	1	2	-	-
PC4. select and correctly use personnel protective equipment as per work requirement	1	7	-	-
PC5. dispose of any unwanted material from the work area as per instructions	1	4	-	-
PC6. participate in safety drills organized at site	-	1	-	-
PC7. participate in perp talks and tool box talks organized at site	1	3	-	-
Identify and use of tools & tackles to be used in fit-up	**9**	**41**	**-**	**-**
PC8. identify and use correct tools and tackles required for Marking like scribers, dividers, punches etc	2	8	-	-
PC9. identify and use correct tool and tackle for liner and angular measurements like steel rule, tapes, angle gauges etc	2	8	-	-
PC10. identify and use correct tool and tackle for holding and tightening the metal pieces such as wrenches, vices, different types of clamps etc	2	8	-	-
PC11. identify and use correct tool for cutting and striking metal such as file, chisels, hammers etc	1	6	-	-
PC12. identify and use different types of lifting and shifting arrangements such as chain pulley blocks, trolleys etc	1	7	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. carry out basic upkeep of all hand tools and tackles	1	4	-	-
Shift structural steelsections to instructed locations	**5**	**19**	**-**	**-**
PC14. identify the material to be shifted	-	2	-	-
PC15. check the access if any obstructions and report to concerned authority	1	1	-	-
PC16. perform visual checks for good working condition of hand tools like sling, rope, clamp hook etc	1	4	-	-
PC17. anchor the structural member in its right position during lifting to avoid accidents, overturning of lifting machines	1	4	-	-
PC18. control position of suspended objects when being shifted by means of mobile hydraulic lifting equipments	1	4	-	-
PC19. stack heavy objects appropriately as per standard practice	1	4	-	-
NOS Total	**20**	**80**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1204
NOS Name	Identify, use various tools, tackles and handle heavy materials used in fit-up offabricated components
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	2
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1205: Assist in preparatory activities, edge reparation and positioning of steel sections for fit-up

Description

This unit describes the skills and knowledge required to assist in preparatory activities, edge preparation and positioning of steel sections

Scope

The scope covers the following:

- Prepare fabrication platform before starting fit-up operations
- Prepare the edges of the components of assemblies
- Position and fix structural elements

Elements and Performance Criteria

Prepare fabrication platform before starting fitup operations

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

PC1. clean the platform to remove any scrap metal

PC2. dispose the scrap at instructed location

PC3. remove any temporary anchors, supports etc. installed previously for other fit-up

PC4. check all the tools and tackles for holding, tightening, striking etc

PC5. rearrange all jacks, clamps as per requirement

PC6. clean the surface of the structural sections or components before starting the welding works

PC7. clear the fabrication platform area so that there is no obstruction for shifting of components

PC8. carry out layout of components/ sections on prepared fabrication platform

Prepare the edges of the components of assemblies

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

PC9. mark the positions of the edges to be prepared as per hand sketches and instructions

PC10. read and understand hand sketches to interpret edge preparation requirements and confirm the same from superiors if required

PC11. confirm the orientation of bevel and scallop from superiors

PC12. operate the bevelling machine if required for scalloping and bevelling as per instructions

PC13. follow all safety guidelines while operating bevelling machine

PC14. confirm that profile of bevel and scallop is as per instructions or work requirements

PC15. identify any undulations or other faults in the section if any and report the same to superiors

PC16. carryout jacking or striking operations as per instructions for removal off minor defects under close supervision

Position and fix structural elements

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

PC17. place the structural component on the fabrication platform as per instructions

PC18. ensure that position and orientation of the component is as per instruction
PC19. check if the markings on the section are clearly visible prior to fixing the section
PC20. check that material has been scalloped as per instructions or hand sketches
PC21. check that edge preparation has been done as per instructions or hand sketches
PC22. place and tighten the clamps at required positions to restrict the movement of section
PC23. place other components post dimensional checking upon the fixed section as per requirements and tighten the required clamps
PC24. adjust the fit-up precisely using striking, jacking or other methods as per instruction
PC25. mark the locations for tack welds as per instructions
PC26. recheck the dimensions of the assembly post tack welding
PC27. loosen the clamps or vices etc. to facilitate the removal of fitted section/ assembly
PC28. attach proper ropes, belts etc. for lifting and shifting of material as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard practices of construction fitting works
KU2. safety rules and regulation for handling construction fitting tools
KU3. personal protection including the use of related safety gears & equipments
KU4. how to request tools and materials as per set procedures
KU5. maintenance of tools and equipments
KU6. how to identify the scrap metal lying on the fabrication platform according to section and dimensions
KU7. how and where to dispose of the scrap
KU8. importance of housekeeping in relevance with fabrication activities
KU9. introduction to fabrication terminologies like jacking, heating, job, etc
KU10. how to install temporary supports and clamps for restricting the movements of work pieces and holding the in position
KU11. importance of clamps and its functions in fit-up work
KU12. steps involved in removing the work pieces from the platform postfit-up
KU13. basic concept of working principle of jacks (hydraulic and pneumatic) and respective uses
KU14. technique of checking the workability of tools and tackles according to acceptance criteria
KU15. how to identify obstructions for lifting
KU16. how to read and interpret hand sketches and simplified fabricationdrawings
KU17. importance of proper orientation of work piece
KU18. how to identify and know the steps to be taken to finish the surface before fitting
KU19. the steps of checking the dimensions of the work pieces during fit-up
KU20. importance of accurate fit-up
KU21. know hows of accurate fit-up
KU22. what is meant by welding shrinkage, its causes, and effects
KU23. distortion control techniques and their areas of applications

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 at least one language, preferably in the local language of the site
GS3. read instructions, guidelines, sign boards, safety rules and safety tags
GS4. read instructions and exit routes during emergency
GS5. speak in one or more language, preferably in one of the local language of thesite
GS6. listen and follow instructions communicated by supervisors
GS7. orally and effectively communicate with team member
GS8. decide whether the surface of structural sections and components are suitably cleaned prior to initiating welding works
GS9. plan self-work as per instructions given by superiors
GS10. ensure work is done within time and as per desired quality as per instructionsprovided by superiors
GS11. check for undulations / faults in the section and report the same to superiors
GS12. remove minor defects by carrying out jacking or striking operations undersupervision
GS13. confirm the orientation of job before carrying out edge preparation
GS14. analyze the actions of self that may result in unsafe conditions
GS15. review the markings for edge preparation to confirm their compliance withgiven instructions

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare fabrication platform before starting fitup operations	**8**	**19**	**-**	**-**
PC1. clean the platform to remove any scrap metal	1	2	-	-
PC2. dispose the scrap at instructed location	1	2	-	-
PC3. remove any temporary anchors, supports etc. installed previously for other fit-up	1	2	-	-
PC4. check all the tools and tackles for holding, tightening, striking etc	1	2	-	-
PC5. rearrange all jacks, clamps as per requirement	1	2	-	-
PC6. clean the surface of the structural sections or components before starting the welding works	1	5	-	-
PC7. clear the fabrication platform area so that there is no obstruction for shifting of components	1	2	-	-
PC8. carry out layout of components/ sections on prepared fabrication platform	1	2	-	-
Prepare the edges of the components of assemblies	**10**	**27**	**-**	**-**
PC9. mark the positions of the edges to be prepared as per hand sketches and instructions	1	5	-	-
PC10. read and understand hand sketches to interpret edge preparation requirements and confirm the same from superiors if required	1	2	-	-
PC11. confirm the orientation of bevel and scallop from superiors	3	7	-	-
PC12. operate the bevelling machine if required for scalloping and bevelling as per instructions	1	5	-	-
PC13. follow all safety guidelines while operating bevelling machine	1	2	-	-
PC14. confirm that profile of bevel and scallop is as per instructions or work requirements	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. identify any undulations or other faults in the section if any and report the same to superiors	1	2	-	-
PC16. carryout jacking or striking operations as per instructions for removal off minor defects under close supervision	1	2	-	-
Position and fix structural elements	**12**	**24**	**-**	**-**
PC17. place the structural component on the fabrication platform as per instructions	1	2	-	-
PC18. ensure that position and orientation of the component is as per instruction	1	2	-	-
PC19. check if the markings on the section are clearly visible prior to fixing the section	1	2	-	-
PC20. check that material has been scalloped as per instructions or hand sketches	1	2	-	-
PC21. check that edge preparation has been done as per instructions or hand sketches	1	5	-	-
PC22. place and tighten the clamps at required positions to restrict the movement of section	1	2	-	-
PC23. place other components post dimensional checking upon the fixed section as per requirements and tighten the required clamps	1	5	-	-
PC24. adjust the fit-up precisely using striking, jacking or other methods as per instruction	1	1	-	-
PC25. mark the locations for tack welds as per instructions	1	-	-	-
PC26. recheck the dimensions of the assembly post tack welding	1	2	-	-
PC27. loosen the clamps or vices etc. to facilitate the removal of fitted section/ assembly	1	1	-	-
PC28. attach proper ropes, belts etc. for lifting and shifting of material as per requirement	1	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1205
NOS Name	Assist in preparatory activities, edge reparation and positioning of steel sections for fit-up
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	2
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1208: Carry out marking on structural steel elements to complete the fitup in accordance with shop drawings

Description

This unit describes the skills and knowledge required to carry out marking structural steel elements and assemblies for completing fitup operations in accordance with shop drawings

Scope

The scope covers the following:

- Compute dimensions of assemblies or components from shop drawings
- Select the correct work pieces
- Make accurate markings on work pieces

Elements and Performance Criteria

Compute the dimensions of assemblies or components from shop drawings

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

PC1. identify the correct drawing and section therein as per requirement

PC2. compute required dimensions as from the section using linear calculations

PC3. note the orientation of the sections

PC4. simplify and reproduce the drawing as a hand sketch for subordinates for explaining the work requirements

Select the correct work pieces

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

PC5. refer the drawing for identifying the correct material based upon its dimensions

PC6. measure the dimensions of the identified the material to check its compliance with job if the said is not marked

PC7. check the work piece for its preparation such as beveling, scalloping etc

Make accurate markings on work pieces

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

PC8. clean the surface of the section to remove any dust, paint, oil, rust etc

PC9. identify the start point for measuring and marking the dimensions on the section as per drawing

PC10. use appropriate tools and instruments for measurement

PC11. use correct tools and instruments for marking such as scribers etc

PC12. make accurate and distinguishable markings on the external surface of sections

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for construction fitting works

KU2. safety rules and regulation for marking structural steel elements and performing fitting operations

KU3. personal protection including use of safety gears and equipment

KU4. service request procedures for tools, materials and equipment

KU5. the technical nomenclature of the assemblies under fabrication

KU6. how to read the correct dimensions from the sectional drawings

KU7. interpret the required parameters such as

KU8. dimension of sections

KU9. orientation of section in terms of edge preparation

KU10. different symbols on the drawing sheet and their correct interpretations

KU11. identify material based upon its shape, dimension and grade

KU12. basics of arithmetic and geometry.

KU13. other procedures involved in fabrication such as gas cutting and using the heating torch grinding, different types of portable and installed grinders, their applications and different types of blades available in the market process of drilling and various equipments used in grinding work other methods of cutting a metal section such as shearing. procedure of installing bolts, importance of washers and torque requirements procedure of installing rivets, different equipment used in the process

KU14. correct methodology to be followed while straightening or bending different types of sections or plates

KU15. selection of different marking instruments based upon the surface and other requirements

KU16. use of different marking instruments as per requirements

KU17. selection of different measuring instruments and tools based upon the work requirements

KU18. use of different measurement instruments and tools

KU19. the correct procedure for measuring and marking the sections

Generic Skills (GS)

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

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

GS2. read one or more language, preferably in the local language of the site

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

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

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

GS6. listen and follow instructions given by the superior

GS7. orally communicate with co-workers regarding support required to complete the respective work

GS8. identify correct drawings and decide upon the sections to work upon after evaluating the shop drawings

GS9. decide the tools and instruments to be used for measuring and marking on the base metal

GS10. decide if the marking is distinguishable and clear

GS11. plan self work as per work sequence and instructions

GS12. complete work as per agreed time and quality

GS13. assess work piece for its preparation and make necessary corrections

GS14. confirm with superiors in case off any ambiguity in computation of dimensions, marking the same on base metal

GS15. assess, identify and use correct tools and instruments for markings (eg. - scribers) and make accurate and distinguishable markings on external surfaces

GS16. confirm the orientation of the material

GS17. check the dimensions of the identified materials and confirm that it is notundulated or distorted

GS18. analyze actions of self that may result in wastage of materials and consumables so as to optimize their use

GS19. identify and assess actions of self that can cause unsafe conditions

GS20. evaluate the complexity of the tasks to and seek assistance and support wherever required from the superior

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Compute the dimensions of assemblies or components from shop drawings	**6**	**24**	**-**	**-**
PC1. identify the correct drawing and section therein as per requirement	1	4	-	-
PC2. compute required dimensions as from the section using linear calculations	2	8	-	-
PC3. note the orientation of the sections	1	4	-	-
PC4. simplify and reproduce the drawing as a hand sketch for subordinates for explaining the work requirements	2	8	-	-
Select the correct work pieces	**5**	**20**	**-**	**-**
PC5. refer the drawing for identifying the correct material based upon its dimensions	2	8	-	-
PC6. measure the dimensions of the identified the material to check its compliance with job if the said is not marked	2	8	-	-
PC7. check the work piece for its preparation such as beveling, scalloping etc	1	4	-	-
Make accurate markings on work pieces	**9**	**36**	**-**	**-**
PC8. clean the surface of the section to remove any dust, paint, oil, rust etc	1	4	-	-
PC9. identify the start point for measuring and marking the dimensions on the section as per drawing	2	8	-	-
PC10. use appropriate tools and instruments for measurement	2	8	-	-
PC11. use correct tools and instruments for marking such as scribers etc	2	8	-	-
PC12. make accurate and distinguishable markings on the external surface of sections	2	8	-	-
NOS Total	**20**	**80**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1208
NOS Name	Carry out marking on structural steel elements to complete the fitup in accordance with shop drawings
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	3
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1209: Carry out fitup of assemblies in fabrication yard

Description

This unit describes the skills and knowledge required to carry out fitup of assemblies in fabrication yard

Scope

The scope covers the following:

- Work according to standard health and safety requirements
- Place and fix the components as per marking
- Carry out adjustments such that the components are properly aligned and accurate
- Check the dimensions post tack welding and offer the same for quality check prior to welding
- Repair any defects found in the components

Elements and Performance Criteria

Work according to standard health and safety requirements

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

PC1. identify any potential hazard in the work area related to own work and report the same to appropriate authority

PC2. avoid any unsafe act by self particularly while working at site

PC3. avoid wearing any loose clothing and preferably wear the yard jumpsuit or any other uniform issued at site

PC4. select and correctly use personnel protective equipment as per work requirement

PC5. dispose of any unwanted material from the work area as per instructions

PC6. participate in safety drills organized at site

PC7. participate in prep talks and tool box talks organized at site

Placing and fixing the components as per marking

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

PC8. estimate the required number of fixtures such as clamps etc for completing the assigned task

PC9. decide the locations and position for erecting temporary supports and anchors

PC10. erect temporary support and anchors at identified locations as per work requirement

PC11. check the working condition of fixtures

PC12. inspect the fabrication bed before commencing the fit-up

PC13. estimate the scope of grinders and gas cutters for completing the job

PC14. identify the orientation of the components as shown in the drawings

PC15. assist in lowering of heavy sections at proper location as per work requirement

PC16. anchor the section at proper location to restrict its movement

PC17. place the sections as per markings

PC18. ensure that proper root gap is maintained throughout the assembly for welded connections

PC19. oversee the preparation of fabrication bed and other fitting activities such as placing and tightening the clamps, jacking and striking etc

Carry out adjustments such that the components are properly aligned and accurate

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

PC21. identify any defects in positioning of components in reference to the markings

PC22. carry out operations such as striking, realignment etc. for accurate positioning of structural components

PC23. identify locations for tack welding such that root gap is maintained consistent and the joint is stable

PC24. check the requirements for preheating in consultation with superiors

PC25. supervise the finishing of the tack weld as carried out by grinder

PC26. oversee the finishing of the surface

PC27. check the tack weld visually to ensure no defects in welding

PC28. recheck the dimensions post tack welding to ensure that change due to shrinkage is within tolerance limit

PC29. submit the fitted assembly to superiors for inspection

PC30. rectify any repairs indicated by superior by following standard procedure

PC31. assist the foreman in preparation of fit-up report

PC20. check the accuracy of positioning of sections as per requirement

Repair any defects found in the components

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

PC32. conduct straightening and bending operations on sections if required

PC33. locate the distortions identified by superiors

PC34. apply suitable method for correcting distortions like application of heat, application of force or a combination there off

PC35. oversee or conduct heating of distorted material as per instruction

PC36. use vice or jack efficiently to remove distortion

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for construction fitting works

KU2. safety rules and regulation for preparing and handling relevant tools and equipment

KU3. personal protection including use of safety gears and equipment

KU4. service request procedures for tools, materials and equipment

KU5. how to estimate the requirements of fitup like the space required for completing the fit-up work the requirements of number of clamps and fixture for restricting the movement of sections the requirements for erecting temporary supports and anchorages at required places as per need of fit-up

KU6. how to check the workability of the clamps and fixtures

KU7. what are the ideal conditions for an anchor point

KU8. how to decide the anchor points

KU9. need and importance of Tack welding
KU10. how to identify the location of tack welding
KU11. importance of preparing fabrication platform or bed
KU12. what is root gap, why is it required
KU13. basic maintenance of different tools, tackles and equipments
KU14. different hazards associated with fabrication activities
KU15. types of fires and different fire safety equipments used
KU16. safety evacuation points
KU17. safety guidelines for working in a fabrication yard
KU18. identification and disposal of waste and scarp materials at workplace
KU19. different methods and process for making connections in metal sections
KU20. how to place and position sections of different shapes, dimensions etc
KU21. how to align the sections as per the markings
KU22. different types of jacks(based upon mechanics, principle of functioning, manufacture and capacity), their application and use
KU23. how to operate different jacks, vices, clamps and other fixtures
KU24. different equipments used for load lifting and shifting
KU25. visual inspection of weld to check cracks, undercut, spatters etc.
KU26. definition of distortion, its causes and physical effects
KU27. procedures employed to correct distortion (application of heat, application of force)
KU28. process of bending plates or sections using bending machines
KU29. types of bending machines, their application and limitations

Generic Skills (GS)

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

GS1. write in one or more language, preferably in the local language of the site
GS2. read one or more language, preferably in the local language of the site
GS3. read /sketches/routine working drawing or instructions provided for thework
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 language of the site
GS6. listen and follow instructions given by the superior
GS7. orally communicate with co-workers regarding support required to completethe respective work
GS8. decide the number and location of temporary support and anchorss
GS9. decide the conformance of fabrication platform for conducting required works
GS10. decide if the fitted assembly is accurate before proceeding with quality checks
GS11. decide on the appropriate locations to erect temporary anchors and supports as per requirements
GS12. arrange for required manpower and consumables as per work requirements

GS13. arrange for required fixtures as per work requirements

GS14. complete work as per agreed time and quality

GS15. dispose off unwanted material from area where work is being carried out

GS16. carry out any repairs as indicated by the superior

GS17. provide heat inputs for carrying out adjustments and tack welds if requiredpost approval from appropriate authority

GS18. identify hazardous conditions prevailing at the workplace

GS19. analyze actions of self that may result in wastage of materials and consumables so as to optimize their use

GS20. identify and assess actions of self that can cause unsafe conditions

GS21. confirm the orientation and edge preparation of the component before fixing the same

GS22. employ methods and processes to reduce the consumption of consumables without compromising the quality and safety aspects of the work

GS23. 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
Work according to standard health and safety requirements	**5**	**10**	**-**	**-**
PC1. identify any potential hazard in the work area related to own work and report the same to appropriate authority	1	2	-	-
PC2. avoid any unsafe act by self particularly while working at site	1	2	-	-
PC3. avoid wearing any loose clothing and preferably wear the yard jumpsuit or any other uniform issued at site	-	1	-	-
PC4. select and correctly use personnel protective equipment as per work requirement	1	1	-	-
PC5. dispose of any unwanted material from the work area as per instructions	1	2	-	-
PC6. participate in safety drills organized at site	-	1	-	-
PC7. participate in prep talks and tool box talks organized at site	1	1	-	-
Placing and fixing the components as per marking	**12**	**24**	**-**	**-**
PC8. estimate the required number of fixtures such as clamps etc for completing the assigned task	1	2	-	-
PC9. decide the locations and position for erecting temporary supports and anchors	1	2	-	-
PC10. erect temporary support and anchors at identified locations as per work requirement	1	2	-	-
PC11. check the working condition of fixtures	1	2	-	-
PC12. inspect the fabrication bed before commencing the fit-up	1	2	-	-
PC13. estimate the scope of grinders and gas cutters for completing the job	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. identify the orientation of the components as shown in the drawings	1	2	-	-
PC15. assist in lowering of heavy sections at proper location as per work requirement	1	2	-	-
PC16. anchor the section at proper location to restrict its movement	1	2	-	-
PC17. place the sections as per markings	1	2	-	-
PC18. ensure that proper root gap is maintained throughout the assembly for welded connections	1	2	-	-
PC19. oversee the preparation of fabrication bed and other fitting activities such as placing and tightening the clamps, jacking and striking etc	1	2	-	-
Carry out adjustments such that the components are properly aligned and accurate	**10.5**	**24**	**-**	**-**
PC21. identify any defects in positioning of components in reference to the markings	1	2	-	-
PC22. carry out operations such as striking, realignment etc. for accurate positioning of structural components	1	2	-	-
PC23. identify locations for tack welding such that root gap is maintained consistent and the joint is stable	1	2	-	-
PC24. check the requirements for preheating in consultation with superiors	1	2	-	-
PC25. supervise the finishing of the tack weld as carried out by grinder	1	2	-	-
PC26. oversee the finishing of the surface	1	2	-	-
PC27. check the tack weld visually to ensure no defects in welding	1	2	-	-
PC28. recheck the dimensions post tack welding to ensure that change due to shrinkage is within tolerance limit	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC29. submit the fitted assembly to superiors for inspection	0.5	2	-	-
PC30. rectify any repairs indicated by superior by following standard procedure	0.5	2	-	-
PC31. assist the foreman in preparation of fit-up report	0.5	2	-	-
PC20. check the accuracy of positioning of sections as per requirement	1	2	-	-
Repair any defects found in the components	**2.5**	**12**	**-**	**-**
PC32. conduct straightening and bending operations on sections if required	0.5	2	-	-
PC33. locate the distortions identified by superiors	0.5	2.5	-	-
PC34. apply suitable method for correcting distortions like application of heat, application of force or a combination there off	0.5	2.5	-	-
PC35. oversee or conduct heating of distorted material as per instruction	0.5	2.5	-	-
PC36. use vice or jack efficiently to remove distortion	0.5	2.5	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1209
NOS Name	Carry out fitup of assemblies in fabrication yard
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	3
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1251: Perform tack welding operations on structural steel elements

Description

This unit describes the skills and knowledge required to carry out operations related to tack welding on structural steel elements

Scope

The workman is expected to perform tack welding operations by arc welding on mild steel, stainless steel and other ferrous alloys used in construction industry. They are also expected to follow relevant and desired safety practice during execution of work and complete the work within expected quality standards.

- The scope covers the following:
- Work as per standard safety practices
- Carry out preparatory works
- Perform tack welding on structural elements

Elements and Performance Criteria

Work as per standard safety practices

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

PC1. identify any hazardous conditions in the work place relevant to work

PC2. check that electrical cables from the machine are insulated and terminated properly

PC3. avoid wearing loose clothing and wear welding jumpsuits or any other uniform issued on site

PC4. ensure that there is no leakage in gas pipelines

PC5. avoid presence of moisture in vicinity of the working area and work piece

PC6. avoid any unsafe act by self particularly while working in workplace

PC7. identify and use the fire protection tools and equipment based upon the type of fire

PC8. participate in safety drills organized in workplace

PC9. participate in tool box talks as organized in workplace

Carry out preparatory work

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

PC10. identify the location for tack welding

PC11. setup the welding machine as per requirement

PC12. connect work clamps in correct polarity

PC13. ensure that cables do not cause interference in welding

PC14. place the gas cylinders in upright position

PC15. check the welding nozzle prior to begin welding for defects

PC16. check that base metal is properly clamped and secured against movement as applicable

PC17. clean the joint to remove any dust, or foreign particles from the joint

PC18. remove any oil, paints or rust from the joint and its vicinity

PC19. check that all connections are tight and secure

Perform tack welding on structural elements

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

PC20. select suitable position for welding the joint
PC21. adjust the current and electrode feed rate to suite the requirements
PC22. adjust the flow of gas to move it is compatible with the feeding rate
PC23. strike the arc correctly without causing defects
PC24. maintain proper electrode extension length to avoid defects
PC25. finish the tack smoothly
PC26. avoid overheating of base metal by adjusting the voltage
PC27. carry out welding for necessary length only

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for tack welding works
KU2. safety rules and regulation for preparing and handling relevant tools and equipment
KU3. personal protection including the use of relevant safety gears &equipment
KU4. service request procedures for tools, materials and equipment
KU5. different types of base metals and their weld temperature
KU6. different types of consumables to be used for different metals
KU7. basics of different welding procedures
KU8. types of welding procedures
KU9. need and importance of tack welding
KU10. different processes involved in fabrication
KU11. basic concepts of fabrication
KU12. different adjustments in welding machine
KU13. importance of choosing proper body postures for welding
KU14. procedure of carrying out welding smoothly
KU15. correct handling and storage of gas cylinders for welding purposes
KU16. power ratings of welding equipment
KU17. use & importance of welding mask
KU18. effects of unclean surface on welds
KU19. preparation of weld joints
KU20. unsafe acts and conditions while working in yard
KU21. the safety evacuation points established by site EHS department
KU22. various hazards in the workplace
KU23. disease that can occur due to using improper welding

Generic Skills (GS)

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

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

GS2. read one or more language, preferably in the local language of the site

GS3. read /sketches 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 given by the superior

GS7. orally communicate with co-workers regarding support required to complete the respective work

GS8. decide the settings of various parameters of the welding equipment for proper welding as per job requirement

GS9. decide upon the correct posture for welding

GS10. decide upon which fire protection tools and equipment to use based upon the type of fire

GS11. determine whether all connections are tight and secure prior to initiatingwelding operations

GS12. plan work activities for self and request for appropriate tools and consumables accordingly

GS13. complete work as per agreed time and quality

GS14. identify presence of moisture or impurities on the surface to be welded

GS15. analyze actions of self that may result in wastage of materials and consumables so as to optimize their use

GS16. revert to superior for selection/sorting of materials

GS17. identify and assess actions of self that can cause unsafe conditions

GS18. analyze the appropriate the heat input for welding so as to avoid defects in welding

GS19. terminate the weld smoothly

GS20. evaluate the complexity of the tasks to and seek assistance and support wherever required from the superior

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Work as per standard safety practices	**8**	**17**	**-**	**-**
PC1. identify any hazardous conditions in the work place relevant to work	1	3	-	-
PC2. check that electrical cables from the machine are insulated and terminated properly	1	2	-	-
PC3. avoid wearing loose clothing and wear welding jumpsuits or any other uniform issued on site	1	2	-	-
PC4. ensure that there is no leakage in gas pipelines	1	2	-	-
PC5. avoid presence of moisture in vicinity of the working area and work piece	1	2	-	-
PC6. avoid any unsafe act by self particularly while working in workplace	1	2	-	-
PC7. identify and use the fire protection tools and equipment based upon the type of fire	1	2	-	-
PC8. participate in safety drills organized in workplace	1	1	-	-
PC9. participate in tool box talks as organized in workplace	-	1	-	-
Carry out preparatory work	**8**	**23**	**-**	**-**
PC10. identify the location for tack welding	1	2	-	-
PC11. setup the welding machine as per requirement	1	6	-	-
PC12. connect work clamps in correct polarity	1	2	-	-
PC13. ensure that cables do not cause interference in welding	1	1	-	-
PC14. place the gas cylinders in upright position	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. check the welding nozzle prior to begin welding for defects	1	4	-	-
PC16. check that base metal is properly clamped and secured against movement as applicable	0.5	2.5	-	-
PC17. clean the joint to remove any dust, or foreign particles from the joint	1	1	-	-
PC18. remove any oil, paints or rust from the joint and its vicinity	-	1	-	-
PC19. check that all connections are tight and secure	0.5	2.5	-	-
Perform tack welding on structural elements	**4**	**40**	**-**	**-**
PC20. select suitable position for welding the joint	0.5	5.5	-	-
PC21. adjust the current and electrode feed rate to suite the requirements	0.5	7.5	-	-
PC22. adjust the flow of gas to move it is compatible with the feeding rate	0.5	7.5	-	-
PC23. strike the arc correctly without causing defects	0.5	4.5	-	-
PC24. maintain proper electrode extension length to avoid defects	0.5	4.5	-	-
PC25. finish the tack smoothly	0.5	3.5	-	-
PC26. avoid overheating of base metal by adjusting the voltage	0.5	4.5	-	-
PC27. carry out welding for necessary length only	0.5	2.5	-	-
NOS Total	**20**	**80**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1251
NOS Name	Perform tack welding operations on structural steel elements
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	3
Credits	TBD
Version	1.0
Next Review Date	14/08/2017

CON/N1252: Carry out preheating of materials before cutting and welding process

Description

This unit describes the skills and knowledge required to carry out preheating of materials before they undergo cutting and welding

Scope

The scope covers the following:

- Work as per standard safety practices
- Carry out preparatory works
- Carry out pre heating of structural components/ members using heating torches (oxy fuel torch)

Elements and Performance Criteria

Work as per standard safety practices

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

PC1. identify any hazardous conditions in the work place relevant to work

PC2. avoid wearing loose clothing and wear welding jumpsuits or any other uniform issued on site

PC3. ensure that there is no leakage in gas pipelines

PC4. ensure that proper purging is done prior to welding the pipelines or tube sections

PC5. ensure that flash arrestor is installed and functioning properly

PC6. avoid presence of moisture in vicinity of the working area and work piece

PC7. strike the flame with prescribed lighters and not using open flames

PC8. avoid any unsafe act by self particularly while working in workplace

PC9. identify and use the fire protection tools and equipment based upon the type of fire

PC10. participate in safety drills organized in workplace

PC11. participate in tool box talks as organized in workplace

Carry out preparatory works

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

PC16. clean the surface of base metal prior to pre heat

PC17. ensure that temperature measurement instrument is available

PC18. ensure that joint is secure clamped and immovable

PC19. ensure that nozzle of torch is clean

PC12. ascertain the location of pre heat

PC13. ascertain the required temperature

PC14. ensure that gas cylinders are in upright position

PC15. ensure that all knobs, values, switches and gauges of equipment are in working condition

Carry out pre heating of structural components/ members using heating torches (oxy fuel torch)

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

PC20. strike the flame using gas cutting torch lighter
PC21. adjust the fuel gas flow to obtain desired length of flame
PC22. adjust oxygen flow to concentrate the flame into desired thickness for heat transfer
PC23. hold the torch above the metal joint such that it is not too close to overheat the material and not too far to cause heat loss
PC24. move the torch above and around the joint for symmetrical heat transfer
PC25. check the temperature of the metal regularly to avoid overheating of metal
PC26. close the fuel gas flow before turning off oxygen while closing the torch
PC27. carry out basic maintenance of torch and other apparatus as per requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedure for tack welding works
KU2. safety rules and regulation for preparing and handling relevant tools and equipment
KU3. personal protection including the use of relevant safety gears &equipment
KU4. service request procedures for tools, materials and equipment
KU5. different hazards associated with pre heating and gas cutting
KU6. different gases employed in the process
KU7. importance of oxygen
KU8. concept of a neutral flame and its importance
KU9. common terminologies associated with pre heating
KU10. requirements and necessity of preheating
KU11. different parts of the equipment
KU12. method of adjusting gas flow rate
KU13. different temperatures for different metals and alloys
KU14. different metals and alloys that can be heated
KU15. effects of heating on metal both physical and metallurgical
KU16. methods of heat transfer and process of same
KU17. how to measure temperature using different instruments
KU18. importance of proper housekeeping of work area
KU19. effects of heating a painted or oily surface
KU20. effects of rust and dust on heating surface
KU21. heating as a method of cleaning
KU22. importance of restricting the movement of metal while heating
KU23. methods of maintenance of heating apparatus
KU24. importance of correct body postures
KU25. why is positioning of body important for proper heating
KU26. what is meant by symmetrical and asymmetrical heat transfer
KU27. causes of heat loss

KU28. effects of overheating the metals
KU29. importance of shape of flame in heat transfer
KU30. relation of heat transfer and flame size, point and its effect
KU31. unsafe acts and conditions while working in yard
KU32. the safety evacuation points established by site EHS department
KU33. various hazards in the workplace
KU34. disease that can occur due to improper cutting

Generic Skills (GS)

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

GS1. write in one or more language, preferably in the local language of the site
GS2. read one or more language, preferably in the local language of the site
GS3. read /sketches 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 thesite
GS6. listen and follow instructions given by the superior
GS7. orally communicate with co-workers regarding support required to completethe respective work
GS8. decide the gas flow rate for proper heating
GS9. decide if the nozzle of the torch is clean and fit for use
GS10. decide upon the correct body posture for heating the surface of base material
GS11. plan work activities and request for appropriate tools and consumables accordingly
GS12. complete work as per agreed time and quality
GS13. identify presence of moisture or impurities on the surface to be heated
GS14. analyze actions of self that may result in wastage of materials and consumables so as to optimize their use
GS15. identify and assess actions of self that can cause unsafe conditions
GS16. analyze the appropriate the heat input to avoid distortion in element
GS17. conserve consumables and reduce equipment wear and tear
GS18. 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
Work as per standard safety practices	**10**	**22**	**-**	**-**
PC1. identify any hazardous conditions in the work place relevant to work	1	3	-	-
PC2. avoid wearing loose clothing and wear welding jumpsuits or any other uniform issued on site	1	2	-	-
PC3. ensure that there is no leakage in gas pipelines	1	2	-	-
PC4. ensure that proper purging is done prior to welding the pipelines or tube sections	1	1	-	-
PC5. ensure that flash arrestor is installed and functioning properly	1	3	-	-
PC6. avoid presence of moisture in vicinity of the working area and work piece	1	3	-	-
PC7. strike the flame with prescribed lighters and not using open flames	1	2	-	-
PC8. avoid any unsafe act by self particularly while working in workplace	1	2	-	-
PC9. identify and use the fire protection tools and equipment based upon the type of fire	1	2	-	-
PC10. participate in safety drills organized in workplace	-	1	-	-
PC11. participate in tool box talks as organized in workplace	1	1	-	-
Carry out preparatory works	**6**	**18**	**-**	**-**
PC16. clean the surface of base metal prior to pre heat	1	1	-	-
PC17. ensure that temperature measurement instrument is available	-	1	-	-
PC18. ensure that joint is secure clamped and immovable	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. ensure that nozzle of torch is clean	1	2	-	-
PC12. ascertain the location of pre heat	1	4	-	-
PC13. ascertain the required temperature	-	3	-	-
PC14. ensure that gas cylinders are in upright position	1	2	-	-
PC15. ensure that all knobs, values, switches and gauges of equipment are in working condition	1	3	-	-
Carry out pre heating of structural components/ members using heating torches (oxy fuel torch)	**14**	**30**	**-**	**-**
PC20. strike the flame using gas cutting torch lighter	1	2	-	-
PC21. adjust the fuel gas flow to obtain desired length of flame	2	6	-	-
PC22. adjust oxygen flow to concentrate the flame into desired thickness for heat transfer	2	6	-	-
PC23. hold the torch above the metal joint such that it is not too close to overheat the material and not too far to cause heat loss	3	5	-	-
PC24. move the torch above and around the joint for symmetrical heat transfer	3	5	-	-
PC25. check the temperature of the metal regularly to avoid overheating of metal	1	2	-	-
PC26. close the fuel gas flow before turning off oxygen while closing the torch	1	2	-	-
PC27. carry out basic maintenance of torch and other apparatus as per requirements	1	2	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	CON/N1252
NOS Name	Carry out preheating of materials before cutting and welding process
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Fabrication
NSQF Level	2
Credits	TBD
Version	1.0
Last Reviewed Date	25/10/2017
Next Review Date	31/03/2022
NSQC Clearance Date	19/12/2018

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/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

FIC/N9005: Evaluate and develop entrepreneur skills

Description

This OS unit is about evaluating and developing entrepreneur skills before starting a food processing unit

Elements and Performance Criteria

Evaluate before starting foodprocessing unit

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

PC1. self evaluate on the capability to start usiness, develop business, manage an organization, manage time, handle ifferent people (customers, vendors, government officials, bankers, onsultants, etc),make independent and clear decisions under pressure, physical and emotional stamina work long hours

PC2. evaluate the performance of various food processing sectors and sale/market share of various category of processed foods, to decide on starting the food processing sector and food product

PC3. choose the right product based on trengths,potential,capability, market demand,profitability,personal preferences

PC4. conduct market survey to understand the market trend,market needs, opportunity, competition

PC5. review market demand based on ompetitors,customers, market requirement, current market status etc

PC6. consult with experts, experienced people and family on the ideas developed

Develop Entrepreneur Skills

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

PC7. acquire knowledge (through training or other sources like reading books) on communication skills, management skills, accounting skills, marketing skills

PC8. develop / acquire technical skills (through training or through work experience) on raw materials handling product processing, productpreservation, packaging ,quality control, roduct storage, processing machineries, relevant food laws and regulations, food safety hygiene and sanitation

PC9. develop skills on distribution, sales and marketing (through training or discussing and learning from experienced people)

PC10. learn to be realistic and objective while planning business, and discrete in sharing the ideas

PC11. acquire knowledge (through training or other sources like reading books) on communication skills, management skills, accounting skills,marketing skills

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant organisational standards, process standards and procedures required for the food processing unit

KU2. performance evaluation of food processing units

KU3. decision making on products to be produced in the organisation
KU4. methods and importance of market survey
KU5. understanding market demand
KU6. methods and importance of consulting with experts
KU7. various food processing industries, market trend and market share of various processed food
KU8. technical requirement for food processing sector like raw materials, packaging materials, process etc
KU9. food processing machineries
KU10. quality requirement for food
KU11. food laws and regulations
KU12. food safety and hygiene
KU13. good manufacturing practice (GMP)
KU14. hazard analysis and critical control point (HACCP)

Generic Skills (GS)

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

GS1. note thet information to be communicated
GS2. fill relevant applications required for food processing units
GS3. note the information required for establishing and operating food processing unit
GS4. document the process, process equipments and parameters for products processed
GS5. record the raw materials, finished products produced, inventory, stock distribution, marketing and sales
GS6. note down observations (if any) related to the process or organisation
GS7. write communications to government officials, financial institutions and employees
GS8. note down the data for erp or as required by the organization
GS9. read communications from various government departments
GS10. read and interpret and process flowchart and process required for all products produced
GS11. read internal communications from the employees
GS12. read communications from market, various trade related organisations
GS13. discuss task lists, schedules and activities with the employees
GS14. effectively communicate with the employees
GS15. question the employees in order to understand the nature of the problem and to clarify queries
GS16. attentively listen and comprehend the information given by the speaker
GS17. communicate clearly with the employees to understand and resolve issues
GS18. communicate clearly with the vendors, government officials, bankers, employees, customers, consumers etc with respect to organisation, process, product, sales etc
GS19. analyse critical points in day to day tasks through experience and observation and identify control measures to solve the issue

GS20. handle and resolve issues related to entire operation, in case of issues beyond the capability of the employees

GS21. plan and organize the work

GS22. plan and allot work/responsibilities to the employees

GS23. organize raw materials and packaging materials required for all products produced in the organisation

GS24. plan to prioritize work based on organisational needs

GS25. plan to prioritize the work based on the order/market requirement

GS26. plan to utilize the time and equipments effectively

GS27. plan to utilise the time effectively

GS28. support the employees in their tasks to achieve production and sales

GS29. understand customer requirements and their priority and respond as per their needs

GS30. support employees in solving problems by understanding the problems

GS31. arrive at possible solution for problems related to operation, by discussing with experienced/concerned people

GS32. apply domain information about maintenance processes and technical knowledge about tools and equipment

GS33. use common sense and make judgments on day to day basis

GS34. use reasoning skills to identify and resolve basic problems

GS35. use intuition to detect any potential problems which could arise during operations

GS36. use acquired knowledge of the process for identifying and handling issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Evaluate before starting foodprocessing unit	**19**	**41**	**-**	**-**
PC1. self evaluate on the capability to start usiness, develop business, manage an organization, manage time, handle ifferent people (customers, vendors, government officials, bankers, onsultants, etc),make independent and clear decisions under pressure, physical and emotional stamina work long hours	5	10	-	-
PC2. evaluate the performance of various food processing sectors and sale/market share of various category of processed foods, to decide on starting the food processing sector and food product	3	7	-	-
PC3. choose the right product based on trengths,potential,capability, market demand,profitability,personal preferences	3	7	-	-
PC4. conduct market survey to understand the market trend,market needs, opportunity, competition	3	7	-	-
PC5. review market demand based on ompetitors,customers, market requirement, current market status etc	3	7	-	-
PC6. consult with experts, experienced people and family on the ideas developed	2	3	-	-
Develop Entrepreneur Skills	**16**	**24**	**-**	**-**
PC7. acquire knowledge (through training or other sources like reading books) on communication skills, management skills, accounting skills, marketing skills	4	6	-	-
PC8. develop / acquire technical skills (through training or through work experience) on raw materials handling product processing, productpreservation, packaging ,quality control, roduct storage, processing machineries, relevant food laws and regulations, food safety hygiene and sanitation	4	6	-	-
PC9. develop skills on distribution, sales and marketing (through training or discussing and learning from experienced people)	4	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. learn to be realistic and objective while planning business, and discrete in sharing the ideas	2	3	-	-
PC11. acquire knowledge (through training or other sources like reading books) on communication skills, management skills, accounting skills,marketing skills	2	3	-	-
NOS Total	**35**	**65**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9005
NOS Name	Evaluate and develop entrepreneur skills
Sector	Food Processing
Sub-Sector	Fruits and Vegetables, Food Grain Milling, Dairy Products, Meat and Poultry, Fish and Sea Food, Bread and Bakery, Alcoholic Beverages, Aerated Water/Soft Drinks, Soya Food, Packaged Foods
Occupation	Processing-Bread and Bakery
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	30/09/2021
Next Review Date	29/06/2024
NSQC Clearance Date	30/09/2021

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 : 50

(**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/N1201.Identify, and handle materials, tools, tackles and consumables used for fabrication of structural steel elements	20	80	-	-	100	10
CON/N1202.Provide support and assistance to fabrication activities	20	80	-	-	100	10
CON/N1204.Identify, use various tools, tackles and handle heavy materials used in fit-up offabricated components	20	80	-	-	100	10
CON/N1205.Assist in preparatory activities, edge reparation and positioning of steel sections for fit-up	20	80	-	-	100	10
CON/N1208.Carry out marking on structural steel elements to complete the fitup in accordance with shop drawings	20	80	-	-	100	10
CON/N1209.Carry out fitup of assemblies in fabrication yard	30	70	-	-	100	10
CON/N1251.Perform tack welding operations on structural steel elements	20	80	-	-	100	10

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N1252.Carry out preheating of materials before cutting and welding process	20	80	-	-	100	10
CON/N8001.Work effectively in a team to deliver desired results at the workplace	30	70	-	-	100	5
CON/N9001.Work according to personal health, safety and environment protocol at construction site	30	70	-	-	100	10
FIC/N9005.Evaluate and develop entrepreneur skills	35	65	-	-	100	5
Total	**265**	**835**	**-**	**-**	**1100**	**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.