



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 of fabricated components](#)
4. [CON/N1205: Assist in preparatory activities, edge repair 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



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)



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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 the site
- 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 complete the 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 suspended objects, etc.) may lead to accidents



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify and differentiate materials, tools and consumables used in the fabrication process</i>	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	-	-
<i>Handle tools, tackles, onsumables and lightweight materials used in fabrication</i>	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	-	-



Qualification Pack



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	-	-



Qualification Pack



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



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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 bolted connections
- 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



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- GS4.** instruction related to exit routes during emergency
- GS5.** speak in one or more language, preferably in one of the local language of the site
- 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
<i>Provide support in welding/ gas cutting/ grinding operations</i>	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	-	-
<i>Provide support in fitting operations</i>	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	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out bolting connections under continuous instructions and close supervision for jigs and fixtures</i>	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	-	-



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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 scribes, 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 steel sections 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



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- 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



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- GS4.** read instructions and exit routes during emergency
- GS5.** speak in one or more language, preferably in one of the local language of the site
- 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 is as per instructions to avoid accident while lifting



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Work according to standard health and safety requirements</i>	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	-	-
<i>Identify and use of tools & tackles to be used in fit-up</i>	9	41	-	-
PC8. identify and use correct tools and tackles required for Marking like scribes, 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	-	-



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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	-	-
<i>Shift structural steel sections to instructed locations</i>	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	-	-



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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



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- 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 fabrication drawings
- 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 the site
- 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 instructions provided 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 under supervision
- 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 with given instructions



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare fabrication platform before starting fitup operations</i>	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	-	-
<i>Prepare the edges of the components of assemblies</i>	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	-	-



Qualification Pack



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	-	-
<i>Position and fix structural elements</i>	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	-	-



Qualification Pack



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 scribes 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:



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- 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 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 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



Qualification Pack



- 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. - scribes) 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 not undulated 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
<i>Compute the dimensions of assemblies or components from shop drawings</i>	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	-	-
<i>Select the correct work pieces</i>	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	-	-
<i>Make accurate markings on work pieces</i>	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 scribes etc	2	8	-	-
PC12. make accurate and distinguishable markings on the external surface of sections	2	8	-	-
NOS Total	20	80	-	-



Qualification Pack



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



Qualification Pack



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 thereof

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



Qualification Pack



- 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 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 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.** decide the number and location of temporary support and anchors
- 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



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- 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 required post 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
<i>Work according to standard health and safety requirements</i>	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	-	-
<i>Placing and fixing the components as per marking</i>	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	-	-



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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	-	-
<i>Carry out adjustments such that the components are properly aligned and accurate</i>	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	-	-



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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	-	-
<i>Repair any defects found in the components</i>	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	-	-



Qualification Pack



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:



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- 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
<i>Work as per standard safety practices</i>	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	-	-
<i>Carry out preparatory work</i>	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	-	-



Qualification Pack



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	-	-
<i>Perform tack welding on structural elements</i>	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	-	-



Qualification Pack



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, valves, 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:



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- 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



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- 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 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 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
<i>Work as per standard safety practices</i>	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	-	-
<i>Carry out preparatory works</i>	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	-	-



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



Qualification Pack



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



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- 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
<i>Interact and communicate in effective and conclusive manner</i>	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	-	-
<i>Support co-workers to execute project requirements</i>	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	-	-



Qualification Pack



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:



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- 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 be used based on various
- KU6.** importance of handling tools, equipment and materials as per applicable
- KU7.** health and environment 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
<i>Follow safety norms as defined by organization</i>	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	-	-
<i>Adopt healthy & safe work practices</i>	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	-	-
<i>Implement good housekeeping practices</i>	4	10	-	-



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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	-	-



Qualification Pack



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 iffereent 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



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- 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 that 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



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- 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
<i>Evaluate before starting foodprocessing unit</i>	19	41	-	-
PC1. self evaluate on the capability to start usiness, develop business, manage an organization, manage time, handle iffereent 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	-	-
<i>Develop Entrepreneur Skills</i>	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	-	-



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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



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 of fabricated 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



Qualification Pack



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



Qualification Pack



Acronyms

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



Qualification Pack



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.



Qualification Pack



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.