

## **NSQF QUALIFICATION FILE GUIDANCE**

Version 6: Draft of 08 March 2016

### **QUALIFICATION FILE – CONTACT DETAILS OF SUBMITTING BODY**

#### **Name and address of submitting body:**

**Construction Skill Development Council of India**

**Address:** - 204, Aashirwad Complex, D-1, Green Park, New Delhi - 110016

**Tel:** +91-11-46584466

#### **Name and contact details of individual dealing with the submission**

**Name:** Ms. Jancy Mathew

**Position in the organisation:** Head Standards and Research

#### **Address if different from above:**

*Same as above*

**Tel number(s):** +91-11-46584466

**E-mail address:** standards@csdcindia.org

#### **List of documents submitted in support of the Qualifications File**

There are opportunities to submit supporting documents throughout the Qualification File template.

Give the titles and other relevant details of all these documents here.

1. Career Map Fabrication - Annexure 1
2. CON/Q1210 - Annexure 2

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### QUALIFICATION FILE SUMMARY

<b>Qualification Title</b>	Multi Skill Technician-Fabrication - QP/ CON/Q1210		
<b>Body/bodies which will award the qualification</b>	CONSTRUCTION SKILL DEVELOPMENT COUNCIL OF INDIA		
<b>Body which will accredit providers to offer courses leading to the qualification</b>	CONSTRUCTION SKILL DEVELOPMENT COUNCIL OF INDIA		
<b>Body/bodies which will carry out assessment of learners</b>	CONSTRUCTION SKILL DEVELOPMENT COUNCIL OF INDIA		
<b>Occupation(s) to which the qualification gives access</b>	Fabrication		
<b>Licensing requirements</b>	None		
<b>Level of the qualification in the NSQF</b>	3		
<b>Anticipated volume of training/learning required to complete the qualification</b>	600 hours		
<b>Entry requirements and/or recommendations</b>	10 <sup>th</sup> Pass		
<b>Progression from the qualification</b>	Fabricator or Construction Welder MIG/TIG/SMAW (NSQF Level 4) Students can also go for Diploma and BE in Mechanical or Civil Engineering		
<b>Planned arrangements for the Recognition of Prior learning (RPL)</b>	<ul style="list-style-type: none"> <li>The purpose of this Job role for students only whereas RPL is aimed at recognising learnt skills of workers</li> </ul>		
<b>International comparability where known</b>			
<b>Formal structure of the qualification</b>	<p>The entries made here will show how the qualification is designed for delivery and assessment. It will list the components of the qualification, where the learning outcomes to be assessed are grouped together.</p>		
<b>Title of component and identification code.</b>	<b>Mandatory/ Optional</b>	<b>Estimated size (learning hours)</b>	<b>Level</b>
CON/N1201: Identify and handle materials, tools, tackles and consumables used for fabrication of structural steel elements	Mandatory	44	1
CON/N1202: Provide support and assistance to fabrication activities	Mandatory	80	1

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CON/N1204: Identify, use various tools, tackles and handle heavy materials used in fit-up of fabricated components	Mandatory	40	2
CON/N1208: Carry out marking on structural steel elements to complete the fit up in accordance with shop drawing	Mandatory	80	3
CON/N1205: Assist in preparatory activities, edge preparation and positioning of steel sections for fit-up	Mandatory	48	2
CON/N1209: Carry out fit up of assemblies in fabrication yard	Mandatory	120	3
CON/N1252: Carry out pre heating of materials before cutting and welding process	Mandatory	60	3
CON/N1251: Perform tack welding operations on structural steel elements	Mandatory	80	3
CON/N8001: Work effectively in a team to deliver desired results at the workplace	Mandatory	24	3
CON/N9001: Work according to personal health, safety and environment protocol at construction site	Mandatory	24	3

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum Document or a Qualification Pack.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

QP CON/Q1210- Annexure 2

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### SECTION 1

#### ASSESSMENT

**Body/Bodies which will carry out assessment:**

Construction Skill Development Council of India empanelled Assessment Agencies

**How will RPL assessment be managed and who will carry it out?**

**Not Applicable.** The purpose of this Job role for students only whereas RPL is aimed at recognising learnt skills of workers

**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.**

*Note that the strategy and arrangements will have to align with national guidance assessment policy (eg in NQAF Manuals 1 (NQSF Registration of Qualifications) and 3 (Accreditation of Assessment Bodies).*

The emphasis is on practical demonstration of skills & knowledge based on the performance criteria. Each OUTCOME is assessed & marked separately. Student is required to pass in all OUTCOMES individually and marks are allotted. Following assessment methodologies are used.

- A. Written Assessment (Multiple Choice Questions)
- B. Practical Assessment
- C. Viva Voce Assessment

Please attach any documents giving further information about assessment and/or RPL.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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### ASSESSMENT EVIDENCE

In this section, you are asked to show how the assessment tools you will use will cover all the outcomes and criteria in the qualification.

### CRITERIA FOR ASSESSMENT OF TRAINEES

**Job Role** Multi Skill Technician-Fabrication

**Qualification Pack** CON/Q1210

#### Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (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 knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.
5. The passing percentage for each QP will be 50%. To pass the Qualification Pack, every trainee should score a minimum of 50% individually in each NOS.
6. The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome.
7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
8. After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
9. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified timeframe set by SSC.
10. Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

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Assessment outcomes	Assessment Criteria for outcomes	Marks Allocation			
		Total Mark	Out Of	Theory	Skills Practical
CON/N1201: Identify, and handle materials, tools, tackles and consumables used for fabrication of structural steel elements	PC1. identify and differentiate between various types of Kits process of welding works	100	5	1	4
	PC2. identify the various shielding gas cylinders		5	1	4
	PC3. identify and differentiate between gases based on their uses and applications related to gas cutting works		10	2	8
	PC4. identify and differentiate between different types of filler rods used in different welding processes		10	2	8
	PC5. identify and differentiate types of grinding wheels		5	1	4
	PC6. identify and differentiate between different types of grinders such as fixed grinding machine, angle or portable grinders bend grinders etc.		8	2	6
	PC7. identify and differentiate between various tools and tackles employed in fitup operations		10	2	8
	PC8. handle and stack different tools that are required for welding operations		3	1	2
	PC9. coil cables and pipes and shift them as per instructions		6	1	5
	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		5	1	4
	PC13. shift lightweight materials as per instruction applying the ergonomics of material handling		10	2	8
	PC14. stack the light weight material at proper location as per instruction		8	1	7

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	PC15. carry out basic upkeep of various hand tools and tackles		10	2	8
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N1202: Provide support and assistance in fabrication activities	PC1. carry welding tools equipment and consumables to instructed location		5	1	4
	PC2. clean the base material to remove any dust, oil, rust, paint etc. from the surface as per instructions		12	1	11
	PC3. change light and ventilation fitting/fixtures to ensure proper illumination and ventilation at the work location		4	1	3
	PC4. ensure that cables / gas pipes are not tangled				
	PC5. carry portable grinding machines and consumables to instructed locations		5	1	4
	PC6. store and stack the consumables as per requirement/ instructions and guidelines		8	2	6
	PC7. remove any scrap materials, dust etc from the fabrication platform		5	1	4
	PC8. place the clamps and arrestors in place as per instructions		5	1	4
	PC9. arrange, store and stack required tools and tackles as per instructions		2	1	1
	PC10. carry light weight material to proper position as per instruction		8	2	6
	PC11. assist in measurement activity as per instructions		15	3	12
	PC12. mark the measurements and alignment as per instructions				
	PC13. carry out cleaning of assemblies and components prior to erection of the same		5	1	4
	PC14. identify the correct bolts for fixing as per instructions		10	2	8
	PC15. identify the correct location of bolt/ group etc. as per instructions		5	1	4

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	PC16. identify and use washers and nuts as per instructions		3	1	2
	PC17. tighten the bolts till desired torque is achieved as per instructions		4	1	3
	PC18. fix the bolts in a sequential manner as per as instructions		4	1	3
	PC19. ensure that no scratches are inflicted upon the surface during bolting operation		4	1	3
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N1204: Identify, use various tools, tackles and handle heavy materials used in fit-up of fabricated components	PC1. identify any potential hazard in the work area related to own work and report the same to appropriate authority	<b>100</b>	5	2	3
	PC2. avoid any unsafe act by self particularly while working at site		3	1	2
	PC3. wear the yard jumpsuit or any other uniform issued at site and not wear any loose clothing		8	1	7
	PC4. select and correctly use personnel protective equipment as per work requirement		5	1	4
	PC5. dispose of any unwanted material from the work area as per instructions		5	1	4
	PC6. participate in safety drills organized at site		9	2	7
	PC7. participate in perp talks and tool box talks organized at site		9	2	7
	PC8. identify and use correct tools and tackles required for Marking like scribes, dividers, punches etc.		9	2	7
	PC9. identify and use correct tool and tackle for liner and angular measurements like steel rule, tapes, angle gauges etc.		9	2	7
	PC10. identify and use correct tool and tackle for holding and tightening the metal pieces such as wrenches, vices, different types of clamps etc.		9	2	7
	PC11. identify and use correct tool for cutting and striking metal such as file, chisels, hammers etc.		9	2	7



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	PC12. identify and use different types of lifting and shifting arrangements such as chain pulley blocks, trolleys etc.		9	2	7
	PC13. carry out basic upkeep of all hand tools and tackles		5	1	4
	PC14. identify the material to be shifted		4	1	3
	PC15. check the access if any obstructions and report to concerned authority				
	PC16. perform visual checks for good working condition of hand tools like sling, rope, clamp hook etc.		5	1	4
	PC17. anchor the structural member in its right position during lifting to avoid accidents, overturning of lifting machines.		5	1	4
	PC18. control position of suspended objects when being shifted by means of mobile hydraulic lifting equipment's.		5	1	4
	PC19. stack heavy objects appropriately as per standard practice		5	1	4
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N1208: Carry out marking on structural steel elements to complete the fit-up in accordance with shop drawings	PC1. identify the correct drawing and section therein as per requirement	<b>100</b>	5	1	4
	PC2. compute required dimensions as from the section using linear calculations		10	2	8
	PC3. note the orientation of the sections		5	1	4
	PC4. simplify and reproduce the drawing as a hand sketch for subordinates for explaining the work requirements		10	2	8
	PC5. refer the drawing for identifying the correct material based upon its dimensions		10	2	8
	PC6. measure the dimensions of the identified the material to check its compliance with job if the said is not marked		10	2	8
	PC7. check the work piece for its preparation such as		5	1	4

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	beveling, scalloping etc.				
	PC8. clean the surface of the section to remove any dust, paint, oil, rust etc.		5	1	4
	PC9. identify the start point for measuring and marking the dimensions on the section as per drawing		10	2	8
	PC10. use appropriate tools and instruments for measurement		10	2	8
	PC11. use correct tools and instruments for marking such as scribes etc.		10	2	8
	PC12. make accurate and distinguishable markings on the external surface of sections		10	2	8
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N1205: Assist in preparatory activities, edge preparation and positioning of steel sections for fit-up	PC1. clean the platform to remove any scrap metal	<b>100</b>	3	1	2
	PC2. dispose the scrap at instructed location		3	1	2
	PC3. remove any temporary anchors, supports etc. installed previously for other fit-up		3	1	2
	PC4. check all the tools and tackles for holding, tightening, striking etc.		3	1	2
	PC5. rearrange all jacks, clamps as per requirement		3	1	2
	PC6. clean the surface of the structural sections or components before starting the welding works		6	1	5
	PC7. clear the fabrication platform area so that there is no obstruction for shifting of components		3	1	2
	PC8. mark the positions of the edge's to be prepared as per hand sketches and instructions		3	1	2
	PC9. read and understand hand sketches to interpret edge preparation requirements and confirm the same from superiors if required		6	1	5
	PC10. confirm the orientation of bevel and scallop from superiors		3	1	2
	PC11. operate the bevelling machine if required for scalloping and bevelling as per instructions		10	2	8

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PC12. follow all safety guidelines while operating bevelling machine	6	1	5
PC13. confirm that profile of bevel and scallop is as per instructions or work requirements	3	1	2
PC14. identify any undulations or other faults in the section if any and report the same to superiors	3	1	2
PC15. carryout jacking or striking operations as per instructions for removal off minor defects under close supervision	3	1	2
PC16. place the structural component on the fabrication platform as per instructions	3	1	2
PC17. ensure that position and orientation of the component is as per instruction	3	1	2
PC18. check if the markings on the section are clearly visible prior to fixing the section	3	1	2
PC19. check that material has been scalloped as per instructions or hand sketches	3	1	2
PC20. check that edge preparation has been done as per instructions or hand sketches	3	1	2
PC21. place and tighten the clamps at required positions to restrict the movement of section	6	1	5
PC22. place other components post dimensional checking upon the fixed section as per requirements and tighten the required clamps	3	1	2
PC23. adjust the fit-up precisely using striking, jacking or other methods as per instruction	6	1	5
PC24. mark the locations for tack welds as per instructions	3	1	2
PC25. recheck the dimensions of the assembly post tack welding			
PC26. loosen the clamps or vices etc. to facilitate the removal of fitted section/ assembly	3	1	2
PC27. attach proper ropes, belts etc. for lifting and shifting of material as per requirement	3	1	2

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		Total	100	20	80
CON/N1209: Carry out fitup of assemblies in fabrication yard	PC1. identify any potential hazard in the work area related to own work and report the same to appropriate authority	100	3	1	2
	PC2. avoid any unsafe act by self particularly while working at site		3	1	2
	PC3. avoid wearing any loose clothing and preferably wear the yard jumpsuit or any other uniform issued at site		3	1	2
	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		3	1	2
	PC6. participate in safety drills organized at site		3	1	2
	PC7. participate in prep talks and tool box talks organized at site				
	PC8. estimate the required number of fixtures such as clamps etc. for completing the assigned task		3	1	2
	PC9. decide the locations and position for erecting temporary supports and anchors		3	1	2
	PC10. erect temporary support and anchors at identified locations as per work requirement		3	1	2
	PC11. check the working condition of fixtures		3	1	2
	PC12. inspect the fabrication bed before commencing the fit-up		3	1	2
	PC13. estimate the scope of grinders and gas cutters for completing the job.		3	1	2
	PC14. identify the orientation of the components as shown in the drawings		3	1	2
	PC15. assist in lowering of heavy sections at proper location as per work requirement		3	1	2
	PC16. anchor the section at proper location to restrict its movement		3	1	2

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PC17. place the sections as per markings	3	1	2
PC18. ensure that proper root gap is maintained throughout the assembly for welded connections	3	1	2
PC19. oversee the preparation of fabrication bed and other fitting activities such as placing and tightening the clamps, jacking and striking etc.	3	1	2
PC20. check the accuracy of positioning of sections as per requirement	3	1	2
PC21. identify any defects in positioning of components in reference to the markings	3	1	2
PC22. carry out operations such as striking, realignment etc. for accurate positioning of structural components	3	1	2
PC23. identify locations for tack welding such that root gap is maintained consistent and the joint is stable	3	1	2
PC24. check the requirements for preheating in consultation with superiors	3	1	2
PC25. supervise the finishing of the tack weld as carried out by grinder	3	1	2
PC26. oversee the finishing of the surface	3	1	2
PC27. check the tack weld visually to ensure no defects in welding	3	1	2
PC28. recheck the dimensions post tack welding to ensure that change due to shrinkage is within tolerance limit	3	1	2
PC29. submit the fitted assembly to superiors for inspection	4	1	3
PC30. rectify any repairs indicated by superior by following standard procedure			
PC31. assist the foreman in preparation of fit-up report	3	1	2
PC32. conduct straightening and bending operations on sections if required	3	1	2
PC33. locate the distortions identified by superiors	3	1	2

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	PC34. apply suitable method for correcting distortions like application of heat, application of force or a combination there off		3	1	2
	PC35. oversee or conduct heating of distorted material as per instruction		3	1	2
	PC36. use vice or jack efficiently to remove distortion		3	1	2
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N1252: Carry out preheating of materials before cutting and welding process	PC1. identify any hazardous conditions in the work place relevant to work	<b>100</b>	4	1	3
	PC2. avoid wearing loose clothing and wear welding jumpsuits or any other uniform issued on site		3	1	2
	PC3. ensure that there is no leakage in gas pipelines		3	1	2
	PC4. ensure that proper purging is done prior to welding the pipelines or tube sections		2	1	1
	PC5. ensure that flash arrestor is installed and functioning properly		4	1	3
	PC6. avoid presence of moisture in vicinity of the working area and work piece		4	1	3
	PC7. strike the flame with prescribed lighters and not using open flames		3	1	2
	PC8. avoid any unsafe act by self particularly while working in workplace		3	1	2
	PC9. identify and use the fire protection tools and equipment based upon the type of fire		3	1	2
	PC10. participate in safety drills organized in workplace		3	1	2
	PC11. participate in tool box talks as organized in workplace				
	PC12. ascertain the location of pre heat		8	1	7
	PC13. ascertain the required temperature				
	PC14. ensure that gas cylinders are in upright position		3	1	2
	PC15. ensure that all knobs, valves, switches and		4	1	3

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	gauges of equipment are in working condition			
	PC16. clean the surface of base metal prior to pre heat	3	1	2
	PC17. ensure that temperature measurement instrument is available			
	PC18. ensure that joint is secure clamped and immovable	3	1	2
	PC19. ensure that nozzle of torch is clean	3	1	2
	PC20. strike the flame using gas cutting torch lighter	3	1	2
	PC21. adjust the fuel gas flow to obtain desired length of flame	8	2	6
	PC22. adjust oxygen flow to concentrate the flame into desired thickness for heat transfer	8	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	8	2	6
	PC24. move the torch above and around the joint for symmetrical heat transfer	8	2	6
	PC25. check the temperature of the metal regularly to avoid overheating of metal	3	1	2
	PC26. close the fuel gas flow before turning off oxygen while closing the torch.	3	1	2
	PC27. carry out basic maintenance of torch and other apparatus as per requirements	3	1	2
	<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N1251: Perform tack welding operations on structural steel elements	PC1. identify any hazardous conditions in the work place relevant to work	4	1	3
	PC2. check that electrical cables from the machine are insulated and terminated properly	3	1	2
	PC3. avoid wearing loose clothing and wear welding jumpsuits or any other uniform issued on site	3	1	2
	PC4. ensure that there is no leakage in gas pipelines	3	1	2
	PC5. avoid presence of moisture in vicinity of the	3	1	2
	<b>100</b>			

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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
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.
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

3	1	2
3	1	2
3	1	2
3	1	2
10	2	8
2	1	1
2	1	1
5	1	4
3	1	2
3	1	2
3	1	2
6	1	5
8	1	7
8	1	7
5	1	4
5	1	4



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	PC25. finish the tack smoothly		4	1	3
	PC26. avoid overheating of base metal by adjusting the voltage		5	1	4
	PC27. carry out welding for necessary length only		3	1	2
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N8001: Work effectively in a team to deliver desired results at the workplace	PC1. pass on work related information/ requirement clearly to the team members	<b>100</b>	10	2	8
	PC2. inform co-workers and superiors about any kind of deviations from work		5	1	4
	PC3. address the problems effectively and report if required to immediate supervisor appropriately		5	1	4
	PC4. receive instructions clearly from superiors and respond effectively on same		5	1	4
	PC5. communicate to team members/subordinates for appropriate work technique and method		5	1	4
	PC6. seek clarification and advice as per requirement and applicability		10	2	8
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams		30	6	24
	PC8. work together with co-workers in a synchronized manner		30	6	24
		<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>
CON/N9001: Work according to personal health, safety and environment protocol at construction site	PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority		10	2	8
	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	<b>100</b>	10	2	8
	PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site		5	1	4
	PC5. identify near miss , unsafe condition and unsafe		5	1	4

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	act			
	PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: <ul style="list-style-type: none"> <li>• Head Protection (Helmets)</li> <li>• Ear protection</li> <li>• Fall Protection</li> <li>• Foot Protection</li> <li>• Face and Eye Protection,</li> <li>• Hand and Body Protection</li> <li>• Respiratory Protection (if required)</li> </ul>	10	2	8
	PC7. handle all required tools, tackles , materials & equipment safely	10	2	8
	PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines	10	2	8
	PC9. install and apply properly all safety equipment as instructed	10	2	8
	PC10. follow safety protocol and practices as laid down by site EHS department	10	2	8
	PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes	10	2	8
	PC12. apply ergonomic principles wherever required	10	2	8
	<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>

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### **SECTION 2**

#### **EVIDENCE OF LEVEL**

**Awarding bodies will enter a proposed NSQF level for the qualification in the Qualification File Summary. This section asks for the evidence on which that proposal is based. The evidence must refer to the level descriptors of the NSQF.**

NSDA recommends an approach to working out the level of qualifications which starts with the level descriptor domains (Process, Professional knowledge, Professional skill, Core skill and Responsibility: see annex A). Two variants for providing the evidence of level are offered here: Option A and Option B in the following pages. Awarding bodies should choose the option which best suits the qualification.

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### OPTION A

Title/Name of qualification/component: <a href="#">Enter the title here</a>		Level: <a href="#">Add level number</a>	
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Process			
Professional knowledge			
Professional skill			
Core skill			
Responsibility			

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### OPTION B

Title/Name of qualification/component: Multi Skill Technician-Fabrication		Level: 3	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process	A MultiSkill Technician's responsibility is to perform tack welding works on steel elements and support in various activities related to fitup and fabrication of steel components.	<p>The job holder is responsible for tack welding operations on structural steel elements, carry out pre-heating of materials before cutting and welding process. This involves working in predictable, routine situations with a limited range of activities such as carrying out preparatory works, pre-heating of structural components using heating torch and perform tack welding within expected quality standards and by following desired safety practice. This is combined with the responsibility of supporting fitting and fabrication activities that include use of various tools, preparatory activities, and positioning of sections.</p> <p>As the job requires the work in predictable, routine situations with a limited range of activities hence, it qualifies as a Level 3 role.</p>	3
Professional knowledge	A MultiSkill Technician on the job must be able to know and understand the standard procedure for tack welding, safety rules and regulations, using safety gear and equipment for personal protection, whom to approach for support in order to obtain work related instructions, clarifications and support, relevant people and their responsibilities within the work area.	The job holder is expected to have basic facts of field of knowledge or study. For example, the job holder is expected to have knowledge of base metals and consumables, welding procedures, concepts of fabrications, possible hazards in workplace, standard practice of construction fitting works and maintenance of tools and equipment. These are basic facts of the field; the role qualifies for Level 3.	3
Professional skill	A MultiSkill Technician on the job demonstrate practical skills in tack welding and fitting. For instance, the job holder has to plan work activities for self and request for appropriate tools	The job holder is expected to carry out routine and repetitive activities in a narrow range of application, using appropriate rules and tools, prepare and maintain work area and process	3

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Title/Name of qualification/component: Multi Skill Technician-Fabrication			Level: 3
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
	and consumables accordingly, decide the settings of various parameters of the welding equipment as per job requirement, decide upon the correct posture for welding, decide upon which fire protection tools and equipment to use based upon the type of fire, determine whether all connections are tight and secure prior to initiating welding operations,	machineries, attend to the minor repairs/ faults of all machines, post production cleaning and regular maintenance of equipment, identify location at which violation of any safety norms may lead to accident etc. All these activities are mostly repetitive and have a narrow range of application, hence qualifying the role for a Level 3.	
Core skill	A MultiSkill Technician on the job should have some core skills for performing the job which includes writing skills, reading skills, and oral and communication skills. For example, discuss task lists, schedules and activities, effectively communicate with team members, question in order to understand the nature of the problem and to clarify queries, attentively listen and comprehend the information given by the speaker, communicate clearly on the issues being faced.	The job holder is expected to communicate with clarity, have basic arithmetic skills and a basic understanding of political and natural environment. For instance, s/he should be able to read various, sign boards, safety rules and safety tags, instructions related to exit routes during emergency at the workplace, effectively communicate with team members and communicate clearly with the supervisor and cross department teams on the issues faced during process. Hence, this role qualifies for Level 3.	3
Responsibility	A MultiSkill Technician is responsible for producing quality welding on steel components as per requirement through suitable process. S/he is responsible for supporting fabrication and fitting operating and maintaining process.	The job holder is responsible for only own work and learning within a defined limit. S/he is a skilled worker who works under a supervisor and carries out activities after reading and understanding the requirement from the supervisor as required. S/he ensures tack welding is done as per requirement and ensures working and performance of required machineries and tools for fitting and fabrication. Hence, this role qualifies for Level 3.	3

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### SECTION 3

#### EVIDENCE OF NEED

##### **What evidence is there that the qualification is needed?**

According to IBEF, India construction market is expected to more than double to USD649.5 billion by 2020 from USD360 billion in 2010. The number of Indians living in urban areas will increase from the current 377 million to about 600 million by 2031. Total rural housing shortage in India is expected to grow to 48.8 million during XII plan period (2012-2017). According to McKinsey Report 'Building India', While the infrastructure spend has been growing fast, the pool of skilled and semi-skilled manpower (e.g., welders, fitters) has not kept pace with it. This is causing project execution delays. Construction equipment market expected to grow at a CAGR of 50% between FY15-FY20. Fabrication sector is expected to be a \$150 billion industry by 2017.

Construction is a highly fragmented and labour intensive sector with medium & small scale industries. The fabrication occupation in construction sector has significant employment potential as the labour intensity in the micro and small organisation is estimated to be considerably higher than large enterprises.

##### **What is the estimated uptake of this qualification and what is the basis of this estimate?**

This course will be offered in schools in States where the Multi-skill curriculum is already running. As of now, the course is running in around 400 schools in Maharashtra. The estimate is that around 2000-4000 students will be undergoing this certification in the next 2-3 years in Maharashtra alone. Close to 90,000 man-days of skilled and semi-skilled labour are required for every USD 1 million of construction expense. As per survey the incremental Manpower Gap between 2008 and 2022 found out to be 473000 under Fabrication Occupation

##### **What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?**

This course has taken NOSs from other QPs and combined them into a unique package that is relevant for the needs of vocational education in school and for Micro and small scale organisations

##### **What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?**

The Qualification is to be monitored and reviewed every three years.

The following data will be used

1. Results of assessments
2. Employer feedback will be sought post-placement
3. Industry Requirements

Please attach any documents giving further information about any of the topics above.

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Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

### SECTION 4

#### EVIDENCE OF PROGRESSION

**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?**

This qualification comprises both technical and analytic skills and can be linked to any qualification higher than this one in the future. This qualification also provides a sound base for doing Fabricator (NSQF Level 4) and Construction Welder MIG/TIG/SMAW (NSQF Level 4). The students can also go into higher education like Diploma and engineering in Civil and Mechanical sector.

Please attach any documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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### Annexure 1: Career Map

Fabrication						
Level 6	Supervisor Fabrication					
Level 5	Foreman Fabrication			Construction Welder MIG - L5	Construction Welder TIG - L5	Construction Welder SMAW - L5
Level 4	Fabricator		Plasma Cutter	Construction Welder MIG - L4	Construction Welder TIG - L4	Construction Welder SMAW - L4
Level 3	Multiskill Technician - Fabrication	Construction Fitter			Tack Welder	
Level 2		Assistant Construction Fitter	Grinder - Construction	Gas Cutter - Construction		
Level 1	Helper Fabrication					