



Model Curriculum

QP Name: Excavator-Pipeline

QP Code: HYC/Q6304

QP Version: 2.0

NSQF Level: 2

Model Curriculum Version: 2.0

Hydrocarbon Sector Skill Council
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Training Parameters

Sector	Hydrocarbon
Sub-Sector	Midstream, Construction & Services
Occupation	Operations-Oil & Gas pipeline
Country	India
NSQF Level	2
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8342.9900
Minimum Educational Qualification and Experience	Ability to read and write with 1 year of relevant experience required
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- **Undertake job requirement and related process:** Prepare for excavation work for laying oil and gas pipeline
- **Perform excavation work for laying pipeline:** Perform excavation in accordance with safe working practice
- **Work effectively in a team:** Improve work effectiveness with colleagues, superiors, members of own work group, people in other work groups within or outside the organization
- **Follow health, safety and security procedures:** Undertake jobs while following health, safety and security procedures

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration	Total Duration
Bridge Module	03:00	Nil	00:00	03:00
Module 1: Introduction to Hydrocarbon sector and the job role of Excavator - Pipeline	03:00	Nil	00:00	03:00
HYC/N6307: Perform excavation work for laying pipeline NOS Version No. – 3.0 NSQF Level – 2	30:00	60:00	15:00	105:00
Module 2: Perform excavation work for laying pipeline	30:00	60:00	15:00	105:00
HYC/N9302: Health, Safety and Security procedures NOS Version No. – 3.0 NSQF Level – 2	15:00	30:00	15:00	60:00
Module 3: Health, Safety and Security Procedures	15:00	30:00	15:00	60:00
HYC/N9301: Effective working in a team NOS Version No. – 3.0 NSQF Level – 4	12:00	30:00	00:00	42:00
Module 4: Effective working in a team	12:00	30:00	00:00	42:00
DGT/VSQ/N0102 - Employability Skills NOS Version No. – 1.0	-	-	-	30:00
Total Duration	60:00	120:00	30:00	240:00

Module Details

Module 1: Introduction to Hydrocarbon sector and the job role of Excavator - Pipeline

Bridge Module

Terminal Outcomes:

- Discuss the Hydrocarbon Sector
- Discuss the job of a Pipeline Excavator

Duration: 03:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe oil and gas sector and its subsector • List the three major segments in the hydrocarbon sector • State the functions of midstream and downstream segment • List the roles and responsibilities of a pipeline excavator 	
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
NA	

Module 2: Perform excavation work for laying pipeline

Mapped to HYC/N6307 v 3.0

Terminal Outcomes:

- This unit is about working with various equipment required to excavate for laying oil and gas pipeline systematically in accordance with safe working practices.

Duration: 30:00	Duration: 60:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Explain to check working status of equipment Describe to check location/site of excavation before starting work carryout excavation work for pipeline laying with recommended method Describe to excavate the trench as per required depth and bedding for laying of pipeline Explain to maintain quality work during excavation process Explain carrying out the rigging of pipes, manhole barrels, etc. for laying of pipeline. Describe to carryout trench refilling to restore the land to its original state after completion of required pipeline checks by the concerned team Explain to perform routine maintenance of equipment used in excavation work to ensure smooth operation Describe to identify the risks in handling various hand tools and equipment used for excavation work Explain to use proper PPEs during excavation operation Describe to check movement of vehicles near excavated area and place barricades Explain to follow safe work procedures during rigging of materials into the excavated area Describe to prevent unauthorized access into the excavated area Explain to follow safety procedures to prevent cave-ins & loose rock/soil from rolling into the excavated area Describe to place the required safety boards on display before and during excavation work at site 	<ul style="list-style-type: none"> Demonstrate to check working status of equipment Perform to check location/site of excavation before starting work Person excavation work for pipeline laying with recommended method Execute to excavate the trench as per required depth and bedding for laying of pipeline Demonstrate to maintain quality work during excavation process Perform carrying out the rigging of pipes, manhole barrels, etc. for laying of pipeline. Demonstrate to carryout trench refilling to restore the land to its original state after completion of required pipeline checks by the concerned team Execute to perform routine maintenance of equipment used in excavation work to ensure smooth operation Perform to identify the risks in handling various hand tools and equipment used for excavation work Demonstrate to use proper PPEs during excavation operation Execute to check movement of vehicles near excavated area and place barricades Perform to follow safe work procedures during rigging of materials into the excavated area Perform to prevent unauthorized access into the excavated area Execute to follow safety procedures to prevent cave-ins & loose rock/soil from rolling into the excavated area Perform to place the required safety boards on display before and during excavation work at site

<ul style="list-style-type: none"> Describe to use proper safety methods while handling electrical equipment during excavation 	<ul style="list-style-type: none"> Demonstrate to use proper safety methods while handling electrical equipment during excavation
<p>Classroom Aids:</p>	
<ul style="list-style-type: none"> White / Black board and Projector Digital Presentation Computer/Laptop Public Addressing System 	
<p>Tools, Equipment and Other Requirements</p>	
<ul style="list-style-type: none"> Digital Multimeter Phase sequence meter Clamp meter Earth tester Techno meter Vibration tester Frequency meter Thermos meter Pressure meter 	

Module 3: Health, Safety and Security Procedures

Mapped to HYC/N9302 v 3.0

Terminal Outcomes:

- Knowledge and practice Health and safety
- Fire safety
- Safety systems
- Emergencies, rescue and first-aid
- procedures

Duration: 15:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain importance of using PPE like face mask, hand gloves, goggle, protective clothing/equipment, etc. at workplace. • Explain how to monitor the health and safety of self and other team members. • Explain the hazard and risk associated with mishandling various tools and equipment. • Discuss safe work practices as per the company’s guidelines and procedures. • Explain the good housekeeping practices to prevent any hazard. • Explain how to record and report all incidents, damages or injury. • Explain importance of personal and workplace hygiene. 	<ul style="list-style-type: none"> • Demonstrate how to appropriately wear and discard PPE kit. • Demonstrate how to respond promptly and appropriately to an accident. • Demonstrate how to administer first aid. • Demonstrate various rescue techniques. • Demonstrate how to use fire extinguishers. • Show the correct way to lift heavy objects.
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> • Safety regulation manual 	

Module 4: Effective working in a team

Mapped to HYC/N9301v 3.0

Terminal Outcomes:

- Describe how to interact with others effectively and appropriately.
- Demonstrate how to deal with colleagues at workplace

Duration: 12:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe methods to communicate clearly with the supervisor and reporting authorities. • Explain how to share information in line with organisational requirements. • Explain the organisation’s policies and procedures. • Explain how to identify causes of interpersonal conflict at workplace. • Describe ways/methods to resolve interpersonal conflict. • Explain the importance of gender equality. • Explain the importance of supporting and respecting colleagues and other members of the organisation without any bias based on gender, culture, disability etc. • Explain the importance of gender neutral behaviour while interacting with others. 	<ul style="list-style-type: none"> • Demonstrate ways to handle interpersonal conflict at the workplace. • Demonstrate the ways of developing suitable rapport with other team members. • Demonstrate how to respond during emergencies. • Demonstrate how to communicate in a manner that is respectful of gender, culture and disability.
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> • Dummy team 	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI Passed (two years after class 8 th)	-	3	In relevant field	1	-	Experience in relevant field

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: “Excavator-Pipeline” mapped to QP: “HYC/Q6304”. Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q2601”. Minimum accepted score is 80%.

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI Passed (two years after class 8 th)	-	3	In relevant field	1	-	Experience in relevant field

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Excavator-Pipeline" mapped to QP: "HYC/Q6304". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score is 80%.

The assessment of candidates/trainees will be on the basis on assessment outcome/assessment criteria of the Qualification. In the assessment criteria for each NOS marks have been defined for theoretical and practical skills, on which the candidate will be assessed. The emphasis is on 'learning-by-doing' and performance criteria is based on the practical demonstration of skills and knowledge.

Theory/Knowledge test- This section will test the trainee on his/her knowledge on the subject/trade. The test will be carried out online/offline with a set of random Question paper. that include multiple choice questions in multilingual, True/False Statement, audio-video question etc.

The Question Bank will be developed by Subject Matter Experts (SME) of the hydrocarbon sector and these questions again be vetted by the Industry Experts, each performance criteria have its marks for theory based on the level of question i.e., easy, medium and difficult.

Practical/Demonstration Test- This stage involves the face-to-face interaction between Assessor and each trainee. The practical knowledge will be tested through trade test which demonstrates the skill required for the job, by which assessor would be able to evaluate the trainee for his/her practical knowledge on respective Qualification.

To ensure the maximum possible consistency in the assessment by different assessors at different locations, orientation of the assessors is also required about the stages involved in the assessment and the assessor role in the assessment process. The assessor must have knowledge of the following concepts before assessment:

- Qualification Pack Structure
- Guidance for the assessor to conduct theory and practical assessments
- Guidance for trainees to be given by assessor before the start of the assessments.
- Guidance on assessments process, practical brief with steps of operations practical observation checklist
- Practical/Demonstration Test guidance for uniformity and consistency.
- Guidance on assessment evidence collection (signed attendance copy, verification of the authenticity of the candidate by checking the photo ID card, Photographs-while assessment undergoing etc.)

The empanelled assessment agencies will be instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments. The assessment agencies are instructed to ideally have assessor with sufficient amount of relevant industry experience related to Qualification. The assessors will also have scrutinized and have to undergo orientation of assessment framework, competency-based assessments etc.

Recognition of Prior Learning (RPL)

Under the Recognition of Prior Learning (RPL), the candidates enrolled and the assessment will be carried out as per the assessment criteria and assessment outcome of the full Qualification and the process of assessment will be carry out by the body/bodies empanelled by Hydrocarbon Sector Skill Council

In RPL, the candidate already has the skills and knowledge while working on the job from long, the learners only requires to undergo a brief orientation training and the subsequent assessment process and certification is awarded to those candidates who successfully clears the assessment. The tentative process of RPL would include the flowing stages:

- 1 Cluster Mapping and Mobilization of the candidates
- 2 Counselling & Pre-Screening
- 4 Candidate registration, batch creation and enrolment
- 5 conduction of an orientation program for candidates before assessment
- 7 Assessment by HSSC
- 8 Evaluation of Assessment Result
- 9 Issuance of the Certificate to successful candidates

Assessment Strategy:

- For each Qualification Pack assessment criteria has been developed, which describe the weightage for each NOS/Performance criteria (PC) and assigned marks based on each NOS separately for theoretical and practical skills
- The question bank will be developed by the subject matter experts to assess the theoretical and practical knowledge.
- The accredited assessment agency will carry out the assessment process on the date proposed after completion of the training. The assessment will be carried out on the basis of the two parameters i.e. Theoretical test and Practical test.
- The result of the assessment will be shared by assessment body to the HSSC for review and compliance, after that result will be processed and certificates will be generated
- Assessments shall be conducted in the regional languages in case of any specific requirement from the concerned Training Provider.
- For ensuring the impartial assessment it will be ensured that the Assessment Bodies (AB) are not involved in any type of training delivery with respect to this project.

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Recommended Pass % aggregate for QP: 70%

Glossary

Term	Description
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 organization.
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 that together specify the technical, generic, professional and organizational specific knowledge that an individual need in order to perform to the required standard.
Organizational Context	Organizational context includes the way the organization 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.

Term	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
OS	Occupational Standard(s)
QP	Qualifications Pack
KU	Knowledge and understanding
GS	Generic Skills
FAQ	Frequently Asked Questions
BP	Business Partner
KYC	Know Your Consumer
FAB	Feature Advantage Benefit