

L3 EPA Engineering Construction Pipefitter



EPA Specification Section 7 – Supporting documents

- Gateway Eligibility Report
- Cohort Registration Form
- Practice Knowledge Assessment, with Answer Scheme
- MOET Portfolio Checklist and Portfolio Index

Contacts

This specification has been designed to provide all the advice and guidance you need to prepare yourself and your apprentices for endpoint assessment. However, if you have any further questions please contact the EUIAS Help Desk using one of the following:

**Help Desk email: enquiries@euias.co.uk
Help Desk telephone: 0121 713 8310**

EUIAS End-point Assessment for Engineering Construction Pipefitter Gateway Eligibility Report

(Standard Version: ST0162 version 1.1; Assessment Plan Version: ST0162/AP02)

Apprentice's details

Apprentice's name:	Apprentice's job title:
Name of Employer:	Name of Training provider:
Employer representatives present:	Training provider representatives present:
Apprenticeship start date:	Apprenticeship on-programme end date:
Gateway meeting date:	
Has the apprentice taken any part of the end-point assessment for this apprenticeship standard with any other End Point Assessment Organisation?	Y / N
If "Yes" please give details:	

Eligibility requirements:

The apprentice must confirm their achievement of the following:

Eligibility requirement	Achieved by the apprentice? Y/N	Evidence (scans of certificates MUST be included)
Achieved Level 3 Diploma in Installing Engineering Construction Plant and Systems - pipefitting		
Achieved English Level 2		
Achieved Maths Level 2		

Gateway Eligibility Declaration

The apprentice, the employer and the training provider must sign this form to confirm that they understand and agree to the following:

1. The apprentice has completed the required on-programme elements of the apprenticeship and is ready for end-point assessment with EUIAS
2. The apprentice will only submit their own work as part of end-point assessment
3. All parties agree that end-point assessment evidence may be recorded and stored by EUIAS for quality assurance purposes
4. The apprentice has been on-programme for a minimum duration of 365 days
5. The apprentice has achieved the 'Level 3 Diploma in Installing Engineering Construction Plant and Systems'.
6. The apprentice has achieved the mathematics and English requirements as detailed in this document
7. The apprentice, if successful, gives permission for EUIAS to request the apprenticeship certificate from the ESFA who issue the certificate on behalf of the Secretary of State
8. The apprentice has been directed to the EUIAS Appeals Policy and Complaints Policy
9. The employer/training provider has given the EUIAS at least three months' notice of requesting this EPA for this apprentice
10. If the Gateway Eligibility Report is not completed in full, meeting all requirements, and submitted to EUIAS, the end-point assessment cannot take place

Signed on behalf of the employer (print name):	Signature:	Date:
Signed on behalf of the training provider (print name):	Signature:	Date:
Apprentice's name (print):	Signature:	Date:
EUIAS use only:		
EUIAS Sign off:		
Comments/actions:		

Engineering Construction Pipefitter - Sample Knowledge Test

Please write clearly in block capitals below	
Company name	
First name (s)	
Last name (s)	
Date of birth	
Apprentice number	
Apprentice signature	
Date of knowledge test	

Standard: Engineering Construction Pipefitter
Duration: 90 minutes

Materials

For this paper you must have:

- Pens
- Calculators and reference documents are not required

Instructions

- Use black or blue ink or black ball-point pen
- Fill in the boxes at the top of this page
- Answer **all** questions
- There are questions, possible answers as well as a column for you to mark your answer
- Mark your answer with an ☐ against the possible answer you think is correct- if you wish to change your answer please put a line through ☒ and re-select with another ☐
- Only one answer per question allowed. Answers which do not follow the rules of selection will be disallowed. This may impact on the grade awarded
- Do all rough work in this answer book, spare paper is provided in this answer booklet and can be used but **MUST NOT** be removed
- Additional spare paper will not be provided
- All questions are closed book

Sample:

London is the capital of....

Example Question		
London is the capital of...		
Possible answers		Answer
a)	Wales	<input checked="" type="checkbox"/>
b)	Scotland	<input type="checkbox"/>
c)	Northern Ireland	<input type="checkbox"/>
d)	England	<input checked="" type="checkbox"/>

Advice

- You are not allowed to leave the examination room for the duration of the assessment
- Do not spend too long on one question
- Read all questions thoroughly before starting your examination
- Mobile phones and watches must not be taken into the examination room. The examination must be conducted under examination conditions i.e. you may not speak to other candidates, if you have a problem raise your hand and the invigilator will attend
- Cheating: you will be asked to leave the examination room and will be classified an automatic fail and referred to your employer

Do not turn over the page or begin the knowledge test until the invigilator instructs you to

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Question 1

Hand-arm vibration syndrome (HAVS) can be caused by operating hand-held grinders.

Which of the following symptoms could indicate that a person is suffering with HAVS?

Possible answers		Answer
a)	Decreased grip strength	
b)	Persistent discomfort in the eye	
c)	Swollen legs	
d)	Ringing in the ears	


Question 2

Identify ONE reason for taking a hydro pressure test up in increments.

Possible answers		Answer
a)	To allow for the pipe to expand gradually.	
b)	To check for leaks at lower pressures	
c)	To ensure pump reservoir is kept topped up.	
d)	To reduce the likelihood of a test failure	

Question 3

What does this COSHH (Control of Substances Hazardous to Health) symbol mean?

Possible answers		Answer	
a)	The substance is an irritant		
b)	The substance is harmful		
c)	The substance is toxic		
d)	The substance is corrosive		

Question 4

What is the legislation that covers the handling of bolt lubricants?

Possible answers		Answer
a)	RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations)	
b)	LOLER (Lifting Operations and Lifting Equipment Regulations)	
c)	PUWER (Provision and Use of Work Equipment Regulations)	
d)	COSHH (Control of Substances Hazardous to Health)	

Question 5

Which piece of legislation covers the maintenance of pressure testing equipment?

Possible answers		Answer
a)	PUWER	
b)	RIDDOR	
c)	COSHH	
d)	LOLER	

Question 6		
Which one of the following cards is NOT a recognised site safety passport scheme?		
Possible answers		Answer
a)	CCNSG	
b)	CSCS	
c)	EQUITY	
d)	EMMS	

Question 7		
A toxic alert siren is heard on a petrochemical site.		
What action should be taken?		
Possible answers		Answer
a)	Monitor the work area until the emergency services arrive	
b)	Make the job safe and go to the nearest toxic refuge. Ensure all windows and doors are securely shut	
c)	Go straight to the designated muster point, making sure you are accounted for	
d)	Await instructions from the supervisor	

Question 8		
What does it mean when a risk is reduced to ALARP?		
Possible answers		Answer
a)	There will be no accidents resulting from the risk	
b)	The risk controls in place are better than just good practice	
c)	The degree of risk has specified level	
d)	The risk controls have been considered alongside the measures needed to control the risk	

Question 9		
A disc is being changed on a portable grinder.		
What is the first safety precaution that should be taken?		
Possible answers		Answer
a)	Make sure the disc is the right speed for the grinder	
b)	Make sure the correct spanner is used for the task	
c)	Make sure the machine is isolated from the electricity supply	
d)	Make sure the guard is correctly connected	

Question 10		
Where should waste oil be disposed of?		
Possible answers		Answer
a)	In a special waste tank	
b)	Down the drain	
c)	With the general waste	
d)	In an incinerator	

Question 11		
In relation to pipe work, what does the term 'schedule' refer to?		
Possible answers		Answer
a)	Work plans	
b)	The drawing	
c)	Wall thickness of pipe	
d)	Time doing the task	

Question 12		
On an isometric drawing what do the initials FW refer to?		
Possible answers		Answer
a)	Field weld	
b)	Flange	
c)	Floorplan	
d)	Water supply	

Question 13		
What are the angles used in an isometric drawing?		
Possible answers		Answer
a)	15 degrees & 30 degrees	
b)	30 degrees & 60 degrees	
c)	45 degrees & 90 degrees	
d)	180 degrees & 360 degrees	

Question 14		
What is the difference of elevation on a length of pipe on a drawing known as?		
Possible answers		Answer
a)	A drop	
b)	A gradient	
c)	A height	
d)	A fall	





Question 15

Where would the information to determine the specified material for fabrication of a pipe spool be found?

Possible answers		Answer
a)	General Arrangement	
b)	Rams	
c)	Toolbox Talk	
d)	Isometric drawing	

Question 16

Which of the following P&ID symbols represents a hydraulic line?

Possible answers		Answer
a)		
b)		
c)		
d)		

Question 17

Calculate the area of a right-angled triangle with sides of 3m, 4m and 5m.

Possible answers		Answer
a)	3m ²	
b)	6m ²	
c)	12m ²	
d)	15m ²	

Question 18

What information is needed to calculate the PCD (Pitch Circle Diameter) for a flange?

Possible answers		Answer
a)	Number of holes, diameter of holes and distance between adjacent holes	
b)	Bolt diameter, coefficient of friction and bolt stress	
c)	Flange outside diameter, bolt size and pipe Nominal Bore	
d)	Raised face diameter, flange diameter and flange thickness	

Question 19

What is the circumference to the nearest mm for 100mm Nominal Bore pipe?

Possible answers		Answer
a)	314mm	
b)	414mm	
c)	514mm	
d)	614mm	


Question 20

What is the formula used to determine the measurement from the centre of a 90 degree long radius elbow to the edge of prep?

Possible answers		Answer
a)	1 x the Nominal Bore (NB)	
b)	2 x the NB	
c)	1 ½ x the NB	
d)	1 ¼ x the NB	

Question 21

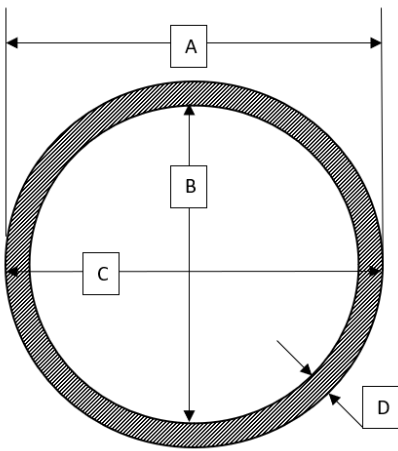
What is the marking out tool shown below?

Possible answers		Answer	
a)	Vernier height gauge		
b)	Surface gauge		
c)	Vernier calliper		
d)	Thread gauge		

Question 22

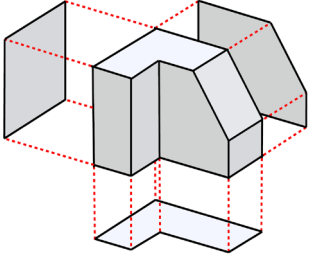
Refer to the diagram below.

Which measurement is the Nominal Bore?

Possible answers		Answer	
a)	A		
b)	B		
c)	C		
d)	D		

Question 23

What type of drawing is shown below?

Possible answers		Answer	
a)	Isometric		
b)	Orthographic		
c)	P&ID (Piping and Instrumentation Diagram)		
d)	GA (General Arrangement)		

Question 24

A bend is marked out. The height is 300mm and the length is 400mm.

What is the travel?

Possible answers		Answer
a)	300mm	
b)	400mm	
c)	500mm	
d)	600mm	

Question 25

What is the appropriate tool for cutting and shaping sch80 stainless steel pipe?

Possible answers		Answer
a)	Handheld angle grinder	
b)	Plasma cutter	
c)	Air arc cutter	
d)	Pipe prep machine	

Question 26

What is the largest sized nominal bore pipe that can be safely bent using a manual hydraulic bender?

Possible answers		Answer
a)	1"	
b)	2"	
c)	3"	
d)	4"	

Question 27

What is the most appropriate tool for assembling a barrel nipple?

Possible answers		Answer
a)	Combination spanner	
b)	Adjustable spanner	
c)	Torque wrench	
d)	Pipe wrench	

Question 28

What is the purpose of a check valve?

Possible answers		Answer
a)	Prevent the back flow of the product	
b)	Control the flow of the product	
c)	Relieves pressure of the product	
d)	Change the direction of the product	

Question 29		
What is the torque value of flange bolts measured in?		
Possible answers		Answer
a)	Newton-metres	
b)	Kilojoules	
c)	Lumens	
d)	Decibels	

Question 30		
What is used to prevent creasing when bending 15mm copper?		
Possible answers		Answer
a)	Spring	
b)	Sand	
c)	Blow torch	
d)	Hydraulic oil	

Question 31		
A vessel is being tested with water.		
What is the purpose of having one gauge at the top and one at the bottom?		
Possible answers		Answer
a)	The pressure will be greater at the bottom than the top	
b)	It will ensure entire vessel is pressurised to the correct test pressure	
c)	It will ensure that the vessel will fill with water quicker	
d)	It will ensure the test will pressurise faster	

Question 32

Which of the following is the most appropriate test medium for stainless steel pipe work?

Possible answers		Answer
a)	Potted water	
b)	De-mineralised water	
c)	Hydraulic oil	
d)	Nitrogen	

Question 33

What is the name for an alloy of copper, nickel and iron?

Possible answers		Answer
a)	Chrome Molybdenum	
b)	Cunifer	
c)	Duplex	
d)	Super Duplex	

Question 34

What is an elbolet?

Possible answers		Answer
a)	A small elbow	
b)	A branch from the back of an elbow.	
c)	A 45-degree elbow	
d)	A 180-degree elbow	

Question 35

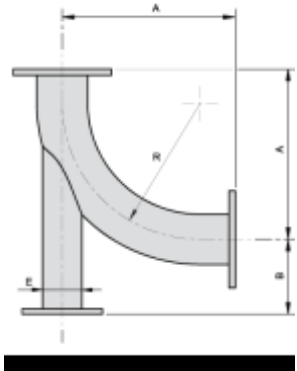
What is the most important reason for segregating stainless steel pipe from carbon pipe?

Possible answers		Answer
a)	Keep the pipes in a safe area	
b)	Pipes may get mixed up	
c)	Cross contamination	
d)	Makes them easier to identify	

Question 36

What is the support in this drawing commonly known as?

Possible answers		Answer
a)	Crow foot support	
b)	Swan foot support	
c)	Duck foot support	
d)	Hens foot support	

**Question 37**

What material is pipe made from if the grade number is 316L?

Possible answers		Answer
a)	Chrome Molybdenum	
b)	Carbon steel	
c)	Copper	
d)	Stainless steel	

Question 38		
What type of component does SORF refer to?		
Possible answers		Answer
a)	Flange	
b)	Gasket	
c)	Weldolet	
d)	Orifice plate	

Question 39		
Which one of the following is NOT a form of metal protection?		
Possible answers		Answer
a)	Sacrificial anode	
b)	Galvanisation	
c)	Paint	
d)	Dye penetration	

Question 40		
Which ONE of the following materials is most resistant to corrosion/rust?		
Possible answers		Answer
a)	Copper	
b)	Iron	
c)	Carbon steel	
d)	Plastic	

Question 41

What is good practice when breaking a flanged joint?

Possible answers		Answer
a)	Checking what the medium is	
b)	Checking the line is isolated and drained	
c)	Completing checklists and records as required	
d)	Checking all components are to specification	

Question 42


What is the method normally used to detect external pipe wall laminations in stainless steel pipe work?

Possible answers		Answer
a)	MPI (Magnetic Particle Inspection)	
b)	Ultrasonic	
c)	Dye pen	
d)	Pressure test	

Question 43

What is the name of the component shown below?

Possible answers		Answer
a)	Bellows	
b)	Spring flange	
c)	Coiled flange	
d)	Spiralled support	



Question 44

What is the result of tightening a bolt to its yield point?

Possible answers		Answer
a)	The bolt breaks in two	
b)	The bolt is tightened correctly	
c)	The bolt won't return to its original length	
d)	The bolt heats up under pressure	

Question 45

What medium is used for pressure testing high-pressure gas lines?

Possible answers		Answer
a)	Nitrogen helium	
b)	Hydraulic oil	
c)	De-mineralised water	
d)	Potted water	

Question 46

What is the hydrostatic test pressure of a system in relation to its design pressure?

Possible answers		Answer
a)	1 x the safe working pressure	
b)	1 ¼ x the safe working pressure	
c)	1 ½ x the safe working pressure	
d)	2 x the safe working pressure	

Question 47

A leak is discovered on an under-pressure flanged pipe spool.

What is the next step?

Possible answers		Answer
a)	Wipe up the water and tighten up the bolts whilst the spool is under pressure	
b)	Drop the pressure 50% and then retighten the bolts	
c)	Drop the pressure to zero then investigate the leak	
d)	Drop the pressure to 25% then fix the leak retighten the bolts	

Question 48

When determining materials required for a pipe installation, what does the term spiral wound refer to?

Possible answers		Answer
a)	Elbow	
b)	Gasket	
c)	Flange	
d)	Pipe support	

Question 49

The ASME/ANSI A13.1 Standard helps identify the type of hazardous materials in a piping system.

Which colour is used to indicate that compressed air is being transported in a piping system?

Possible answers		Answer
a)	Blue	
b)	Green	
c)	Brown	
d)	Orange	

Question 50

What does British Standard Pipe (BSP) set the standards for?

Possible answers		Answer
a)	Screw threads	
b)	Buttwelding ends	
c)	Wall thicknesses for different pressure uses	
d)	Pipe flanges	

End of Knowledge Test

Practice Knowledge Test

Answer scheme

Question	Answer
1	A
2	B
3	D
4	D
5	A
6	C
7	B
8	D
9	C
10	A
11	C
12	A
13	B
14	D
15	D
16	B
17	B
18	A
19	A
20	C
21	B
22	B
23	B
24	C
25	A

Question	Answer
26	C
27	D
28	A
29	A
30	A
31	B
32	B
33	B
34	B
35	C
36	C
37	D
38	A
39	D
40	D
41	B
42	C
43	A
44	C
45	A
46	C
47	C
48	B
49	A
50	A

ECP Sample Brief and Supporting Documentation for Practical Assessment

Instructions

The practical observed assessment will be delivered in a strictly controlled environment. The assessment will be invigilated by an Independent Assessor from EUIAS. During the test the Independent Assessor will question the apprentice to ascertain the breadth and depth of their underpinning knowledge. The Independent Assessor will record the answers given.

This assessment has a 55% weighting towards the overall score and grading.

Apprentices have maximum 8 hours to complete the task. The exact duration is like the time expected for a competent pipefitter to complete a similar task.

The test will take the form of one holistic pipefitting task where the apprentice must work to the tolerances and specifications stated in an engineering drawing to fabricate, assemble, install, test and then dismantle a piping assembly.

Health and safety and potential risks are an essential part of this assessment. Safety requirements and codes of practice associated with fabrication engineering must be understood and implemented by the apprentice. In order to pass this assessment all aspects of safety must be demonstrated. **Failure to do so will result in the assessment being halted.**

You must not modify the requirements of the engineering drawing provided to make it more relevant to local needs.

You must use one of the engineering drawings provided by EUIAS. The drawing should be printed on A3 paper.

You will also require

- The dimensions tolerances sheet
- A rig to fit the piping assembly to. EUIAS will provide the rig for the period of the assessment.

During the assessment the apprentice pipefitter should demonstrate the following skills:

- Engineering practices and principles including reading engineering drawings and marking out techniques,
- Mathematical techniques and formula related to the fabrication, development and installation of pipework systems,
- Correct selection and safe use of hand tools, mechanical tools and equipment in for the fabrication, repair, installation and decommissioning of a pipework system
- Application of knowledge of common and specialist pipe materials such as ferrous, non-ferrous and non-metallic including fittings associated with the pipework components and systems
- Pipework preparation, fabrication, installation, testing and decommissioning techniques commonly used throughout the Engineering Construction industry
- Application of appropriate codes, practices and industry standards to ensure quality requirements are met.

During the assessment the apprentice pipefitter should demonstrate the following behaviours:

- Solving problems by applying technical skills and knowledge to define, identify, evaluate and select alternative solutions if required
- Take responsibility as an individual for the quality of the work
- Work safely in accordance with health, safety and environmental legislation, regulations and company-specific requirements
- Maintain a safe, clean and tidy work area
- Check for and identify potential hazards in the workplace and take responsibility to maintain a safe working environment.

Resources used to complete the tasks

Apprentices will need access to the following resources

- A workshop with a range of hand tools, mechanical tools and equipment for the fabrication, installation and decommissioning of a pipework system
- Health and safety equipment
- The raw materials and sundries required to produce the fabricated parts
- The rig to bolt their completed assembly onto. This is provided by EUIAS.

Guidance for apprentices

You have responsibility to read the assignment carefully and to understand what you need to do. You may seek clarification from the Independent Assessor if you are unsure of requirements.

Health and safety and potential risks are an essential part of this assessment. In order to pass this assessment all aspects of safety must be demonstrated. **Failure to follow safety procedures will result in the assessment being halted.**

Task overview

The assessment will involve the fabrication of a pipe spool containing diverse ways of assembling pipework.

The assembled spool will be pressure tested before installation.

The three parts of the spool will be assembled as a joint operation.

The completed fabrication should be lifted into place onto the rig and bolted into position.

After installation the spool will be safely dismantled to its individual component pieces.

Resources

- A workshop with a range of hand tools, mechanical tools and equipment for the fabrication, repair, installation and decommissioning of a pipework system
- Health and safety equipment
- The raw materials and sundries required to produce the fabricated parts
- A rig to bolt their completed assembly onto
- The engineering drawing, provided by EUIAS
- Pressure testing template, provided by EUIAS
- Access to appropriate supporting documentation such as risk assessments, dimension tolerances.

Conditions

- Duration: maximum 8 hours
- Conditions: Controlled and invigilated by an Independent Assessor
- Materials: as stated in the engineering drawing.

Task detail

Identify health and safety aspects associated with pipework fabrication

- a. Extract information from current specifications to indicate legal and site requirements.
- b. Determine the actions required to prepare the work area for the fabrication of the pipe spool
- c. Determine the arrangements that may need to be made to achieve safe access when installing the spool
- d. Complete a personal risk assessment.

Interpret information and marking out pipe work materials

- a. Apply safe working practices
- b. Interpret the drawing of the spool.

Preparation, joining and erection of pipe work assemblies

- a. Apply safe practices
- b. Cut the appropriate pipe sizes after producing a cutting list
- c. Prepare and clean pipe and fittings for fabrication-
- d. Bend pipework safely using hydraulic bender to measurements within specified tolerances specified on the drawing
- e. Safely thread pipework ready for the fitting
- f. Fabricate spool using the most economic methods ready for installation.

Installation and testing of pipe work systems

- a. Apply safe practices
- b. Prior to installation the spool is to be pressure tested using the hydrostatic testing method stated. The spool will then be depressurised and drained safely.
- c. Using the correct lifting equipment and methods safely lift spool to correct position.
- d. Using the correct tightening sequence safely bolt spool into position.

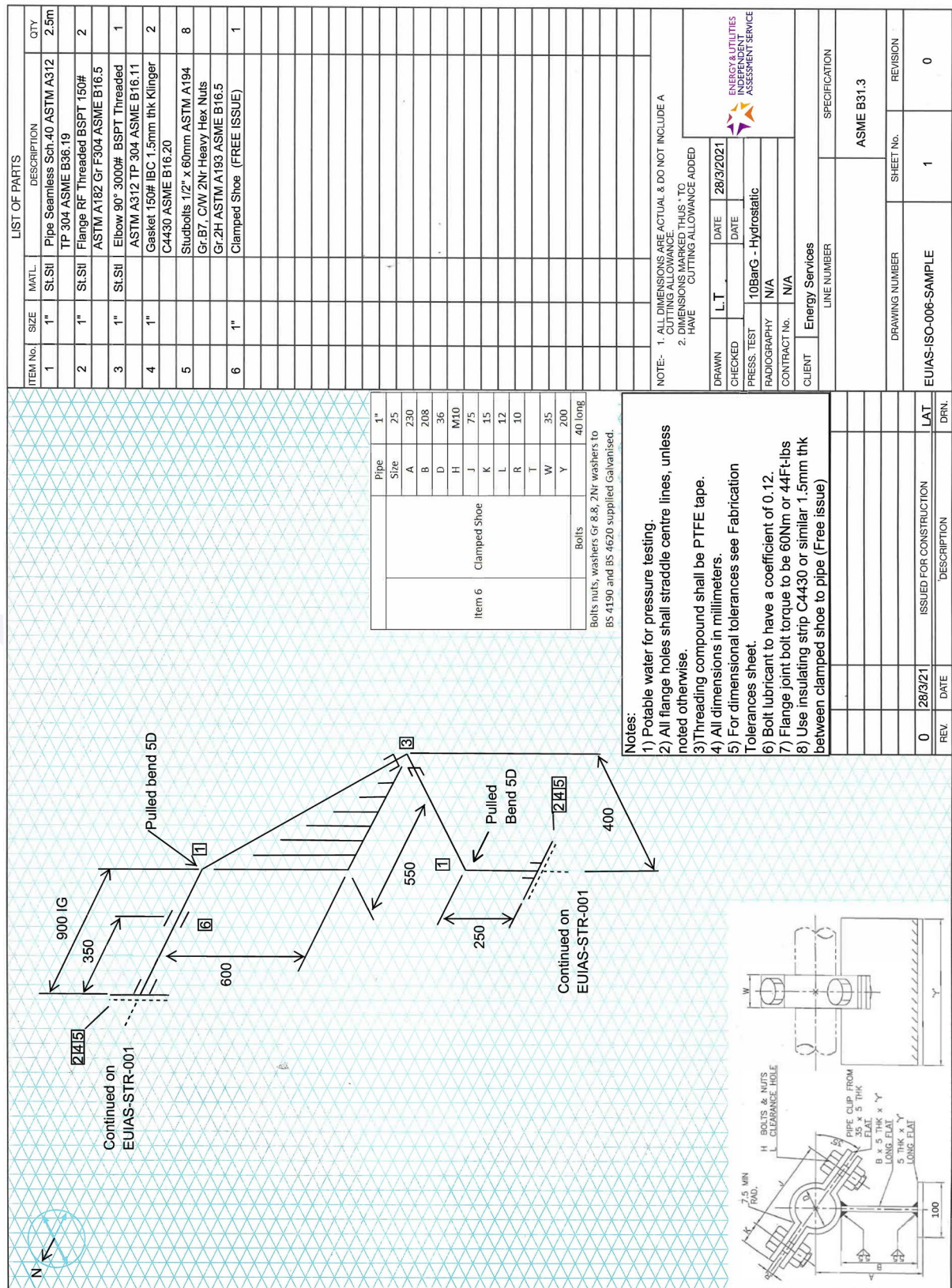
Recover tools, area and equipment

- a. Apply safe practices
- b. Make all isolations and disconnections in line with approved procedures
- c. Remove the required components using the correct techniques and tools
- d. Correctly record and store components for reuse
- e. Dispose of any waste in line with procedures and regulations.

Sample Engineering Drawing

A copy of the drawing can be downloaded from EUIAS website

[EPA Resources - End Point Assessment \(euias.co.uk\)](http://euias.co.uk)



Safety Pressure Test Report

General Information			
Report no.		Test location	
Test Date		Piping Assembly Reference	
Type of Test	<input type="checkbox"/> Hydrostatic <input type="checkbox"/> Pneumatic		
Required Test Pressure		Test Duration	
Test Medium		Test Material	

Testing			
Start Time		End Time	
Test Pressure at Start		Test Pressure at End	
Actual Test Fluid Temperature		Actual Holding Time	
Environmental Controls			
Test Area Controls (e.g. signage, barricades)			

Test Equipment Used (e.g. Gauge, Pressure Recorder, Temperature Recorder)				
Type	Description / Serial Number	Pressure Range	Calibration date	Certificate Number

Test Result					
Results					
Pressure Test	<input type="checkbox"/> Satisfactory	<input type="checkbox"/> Unsatisfactory (explain)			
Remarks / Additional Information					
This is to certify that the above item has been tested satisfactorily using the parameters specified					
Apprentice performing test		Signature		Date	
Witnessed by IA Inspecting Test		Signature		Date	

ECP Evidence Report for Structured Professional Review

Full Name of Apprentice	
Employer	

Demonstrating your competence

You will need to demonstrate your competence to carry out tasks correctly, safely, effectively and consistently. To achieve this requires the right level of knowledge, understanding, skills and behaviours.

Your evidence will need to demonstrate how you:

- apply proven technical techniques and procedures to the solution of practical engineering problems.
- have the ability to carry out supervisory or technical responsibility.
- contribute to the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services.
- manage and apply safe systems of working.
- show evidence of interpersonal skills in communicating technical matters, and commitment to professional engineering values.

The questions in this form is your chance to set out the experience you have from **three different** jobs, projects or tasks that demonstrate these competences.

- Keep the evidence personal. Use terms such as 'I built, made, tested...'
- Avoid unnecessary or unexplained abbreviations

Please save this form and supporting evidence as one pdf document before submitting it.

The form must be signed and authenticated by you and your supervisor

Declaration

Apprentice's declaration

I certify the information contained in this report and any accompanying documentation is correct.

Signature: _____ Date: _____

Supervisor's declaration

I confirm I have known the apprentice for a minimum of one year. To the best of my knowledge, all the information contained in this report is correct.

Name: _____

Signature: _____ Date: _____

SECTION ONE

Pipefitting experience

Describe your roles and responsibilities carefully and concisely.

This is intended to give the panel members an **overview** of your particular working environment.



SECTION TWO

In this section you need to provide evidence that shows you

- Understand the required standards of workplace performance and behaviours
- Can identify how your performance meets the standard
- Have reflected on your learning
- Have met the content of the UK Spec for EngTech.

You should describe your role and contribution to specific projects, activities or tasks, so that you can clearly show how you have become more competent.

Give an example of a project or task where you solved a technical problem, explaining your role and how you selected the appropriate techniques, procedures and methods used.

Include details about any scientific, technical or engineering principles you used

[450-500 words]

Reference to ECP Standard (ST0162/AP02)

S2 Correctly select and safely use tools and equipment for the fabrication, assembly, installation and decommissioning of pipework components and systems

S3 Plan, organise and undertake the fabrication, assembly, installation, maintenance and decommissioning of pipework components and systems

S4 Read, interpret and apply engineering drawing information

S5 Shape pipework components using hand and power tools to cut, drill, shape and finish components to the required tolerance, specification and standard

S6 Assemble and install pipework using the appropriate methods, techniques and equipment in accordance with the specification including welded, threaded, bolted and clamped jointing solutions.

S7 Ensure the integrity of joints in accordance with specifications, in line with specified quality procedures and to precise tolerances

S8 Undertake the testing and inspection of the fabricated and/or installed pipework using the appropriate techniques

S10 Apply techniques for the temporary or permanent removal of an engineering construction piping related system or component

B2 Solve problems within their area of responsibility by applying technical skills and knowledge to define, identify, evaluate and select alternative solutions if required

B6 Work safely in accordance with health, safety and environmental legislation, regulations and company-specific requirements

EngTech (UK Spec) Reference

A Use engineering knowledge and understanding to apply technical and practical skills

Give an example of how you have identified, planned, and organised the resources needed to effectively complete a project or task, explaining how you took into consideration cost, quality, safety and any environmental impact.

Remember to think about what equipment was used, and/or how data was gathered and analysed to produce the desired outcome.

[450-500 words]

Reference to ECP Standard (ST0162/AP02)

S1 Comply with appropriate health and safety, risk and quality requirements

S2 Correctly select and safely use tools and equipment for the fabrication, assembly, installation and decommissioning of pipework components and systems

S3 Plan, organise and undertake the fabrication, assembly, installation, maintenance and decommissioning of pipework components and systems

S11 Communicate by keeping others informed about work plans or activities which may affect them and seek assistance from others without causing undue disruption to normal work activities

B2 Solve problems within their area of responsibility by applying technical skills and knowledge to define, identify, evaluate and select alternative solutions if required

B3 Take responsibility as an individual and team member for the quality of the work

B6 Work safely in accordance with health, safety and environmental legislation, regulations and company-specific requirements

B7 Maintain a safe, clean and tidy work area,

B8 Check for and identify potential hazards in the workplace and take collective responsibility to maintain a safe working environment

EngTech (UK Spec) Reference

B Contribute to the design, development, manufacture, construction, commissioning, operation or maintenance of products, equipment, processes, systems or services

Give an example of how you have identified and taken responsibility for completing a task or activity that demonstrates your skills, including working to agreed procedures and codes, managing resources and assigning tasks to others.

[450-500 words]



Reference to ECP Standard (ST0162/AP02)

S1 Comply with appropriate health and safety, risk and quality requirements

S3 Plan, organise and undertake the fabrication, assembly, installation, maintenance and decommissioning of pipework components and systems

S9 Work with others and contribute to effective working relationships within an Engineering Construction environment

B2 Solve problems within their area of responsibility by applying technical skills and knowledge to define, identify, evaluate and select alternative solutions if required

B3 Take responsibility as an individual and team member for the quality of the work

B6 Work safely in accordance with health, safety and environmental legislation, regulations and company-specific requirements

B8 Check for and identify potential hazards in the workplace and take collective responsibility to maintain a safe working environment

EngTech (UK Spec) Reference

C Accept and exercise personal responsibility

Give examples of how you have contributed to discussions, meetings, presentations or reports, communicated and worked effectively with colleagues and others, showing your awareness of the importance of issues such as diversity and equality.

[450-500 words]



Reference to ECP Standard (ST0162/AP02)

S9 Work with others and contribute to effective working relationships within an Engineering Construction environment

S11 Communicate by keeping others informed about work plans or activities which may affect them and seek assistance from others without causing undue disruption to normal work activities

EngTech (UK Spec) Reference

D Use effective communication and interpersonal skills

Give an example of how you have:

- **Complied with your company's Code of Conduct**
- **Taken personal responsibility for your safety and the safety of others**
- **Contributed to sustainable development including environmental, social and economic aspects**
- **Kept in touch with developments in your technical area and continued to develop your knowledge and skills.**

[450-500 words]



Reference to ECP Standard (ST0162/AP02)

S1 Comply with appropriate health and safety, risk and quality requirements

B3 Take responsibility as an individual and team member for the quality of the work

B7 Maintain a safe, clean and tidy work area

EngTech (UK Spec) Reference

E Make a personal commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment

Annex 1: Checklist of appropriate codes, practices and industry standards (K9)

Piping design codes	
ASME B31 - American Society of Mechanical Engineers (ASME) code for pressure piping	ASME B31.1 - Power piping ASME B31.2 - Fuel Gas piping ASME B31.3 - Process piping ASME B31.4 - Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids ASME B31.5 - Refrigeration Piping and Heat Transfer Components ASME B31.8 - Gas Transmission and Distribution Piping Systems. ASME B31.8S - Managing System Integrity of Gas Pipelines. ASME B31.9 - Building Services Piping. ASME B31.11 - Slurry Transportation Piping Systems. ASME B31.12 - Hydrogen Piping and Pipelines. ASME B31G - Manual for Determining Remaining Strength of Corroded Pipelines.
ISO EN 13480 – European metallic industrial piping	ISO EN 13480-1 – General ISO EN 13480-2 – Materials ISO EN 13480-3 – Design & Calculation ISO EN 13480-4 – Fabrication & installation ISO EN 13480-5 – Inspection & testing ISO EN 13480-6 – Additional requirements for buried piping ISO EN 13480-7 - Metallic industrial piping Guidance on the use of conformity assessment procedures ISO EN 13480-8 - Additional requirements for aluminium and aluminium alloy piping
ASME Dimensional Standards	
	B1.20.1 - Pipe Threads, General Purpose (Inch) B16.1 - Cast Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250 B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300 B16.5 - Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard B16.9 - Factory-Made Wrought Buttwelding Fittings B16.10 - Face-to-Face and End-to-End Dimensions of Valves B16.11 - Forged Fittings, Socket-Welding and Threaded B16.20 - Metallic Gaskets for Pipe Flanges: Ring-Joint, Spiral-Wound, and Jacketed B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges B16.25 - Buttwelding Ends

	<p>B16.28 - Wrought Steel Buttwelding Short Radius Elbows and Returns</p> <p>B16.34 - Valves: Flanged, Threaded, and Welding End</p> <p>B16.36 - Orifice Flanges</p> <p>B16.39 - Malleable Iron Threaded Pipe Unions</p> <p>B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300</p> <p>B16.47 - Large Diameter Steel Flanges (NPS 26 Through NPS 60)</p> <p>B16.48 - Steel Line Blanks</p> <p>B36.10 - Welded and Seamless Wrought Steel Pipe</p> <p>B36.19 - Stainless Steel Pipe</p>
Flange joint integrity	<p>ASME PCC-1 - Guidelines for Pressure Boundary Bolted Flange Joint Assembly</p> <p>BS EN 1591-4 - Flanges and their joints. Qualification of personnel competency in the assembly of the bolted connections of critical service pressurized systems</p> <p>Energy Institute (EI) - Guidelines for the Management of the Integrity of Bolted Joints in Pressurised Systems</p>
The Manufactures Standardisation Society (MSS)	
	<p>MSS-SP-6 - Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings</p> <p>MSS-SP-9 - Spot Facing for Bronze, Iron and Steel Flanges</p> <p>MSS-SP-25 - Standard Marking Systems for Valves, Fittings, Flanges, and Unions</p> <p>MSS-SP-42 - Class 150 (PN 20) Corrosion Resistant Gate, Globe, Angle and Check Valves With Flanged and Butt Weld Ends</p> <p>MSS-SP-43 - Wrought Stainless Steel Butt-Welding Fittings Including Reference to Other Corrosion Resistant Materials</p> <p>MSS-SP-44 - Steel Pipe Line Flanges</p> <p>MSS-SP-45 - Bypass and Drain Connections</p> <p>MSS-SP-51 - Class 150LW Corrosion Resistant Flanges and Cast Flanged Fittings</p> <p>MSS-SP-58 - Pipe Hangers and Supports</p> <p>MSS-SP-65 - High Pressure Chemical Industry Flanges and Threaded Stubs for Use with Lens Gaskets</p> <p>MSS-SP-69 - Pipe Hangers and Supports</p> <p>MSS-SP-70 - Cast Iron Gate Valves, Flanged and Threaded Ends</p> <p>MSS-SP-71 - Gray Iron Swing Check Valves, Flanged and Threaded Ends</p> <p>MSS-SP-72 - Ball Valves With Flanged or Buttwelding Ends for General Service</p> <p>MSS-SP-75 - Specifications for High Test Wrought Buttwelding Fittings</p>

	MSS-SP-79 - Socket-Welding Reducer Inserts MSS-SP-81 - Stainless Steel, Bonnetless, Flanged, Knife Gate Valves MSS-SP-83 - Class 3000 Steel Pipe Unions, Socket-Welding and Threaded MSS-SP-85 - Gray Iron Globe and Angle Valves, Flanged and Threaded Ends MSS-SP-88 - Diaphragm Type Valves MSS-SP-95 - Swage(d) Nipples and Bull Plugs MSS-SP-97 - Integrally Reinforced Forged Branch Outlet Fittings
ASTM International – American Society for Testing and Materials	
ASTM Materials for steel pipes	A-53 - Welded and Seamless Steel Pipe A-106 - Seamless Carbon Steel Pipe for High-Temperature Service A-120 - Pipe, steel, black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses A-134 - Electric Fusion (Arc)-Welded Steel Plate Pipe (Sizes 16 in. and Over) A-135 - Electric-Resistance-Welded Steel Pipe A-139 - Electric-Fusion (Arc)-Welded Steel Plate Pipe (Sizes 4 in. and Over) A-155 - Electric-Fusion-Welded Steel Pipe for High-Pressure Service A-211 - Spiral-Welded Steel or Iron Pipe A-312 - Seamless and Welded Austenitic Stainless Steel Pipe A-333 - Seamless and Welded Steel Pipe for Low Temperature Service A-335 - Seamless Ferritic Alloy Steel Pipe for High-Temperature Service A-358 - Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High Temperature Service A-369 - Carbon and Ferritic Alloy Steel Forged and 80red Pipe for High Temperature Service A-376 - Seamless Austenitic Steel Pipe for High-Temperature Central-Station Service A-381 - Metal-Arc-Welded Steel Pipe for High-Pressure Transmission Systems A-405 - Seamless Ferritic Alloy Steel Pipe Specially Heat Treated for High Temperature Service A-523 - Plain End Seamless and Electric-Resistance-Welded Steel Pipe for High Pressure Pipe-Type Cable Circuits A-524 - Seamless Carbon Steel Pipe for Process Piping A-530 - General Requirements for Specialized Carbon and Alloy Steel Pipe API-5L - Line Pipe API-5LX - High-Test Line Pipe API-5LS - Spiral Weld Line Pipe

ASTM Materials for butt welding fittings	A234 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service. A420 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service. A403 - Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings.
ASTM Materials for forgings	A105 - Standard Specification for Carbon Steel Forgings for Piping Applications. A181 - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping. A182 - Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service. A350 - Standard Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components.
ISO 9001 – Implementation of quality management systems	
ISO 14001 – Environmental management systems	
ISO 45001 – Occupational health and safety management systems	
Company quality assurance and quality control procedures	