T Level Technical Qualification in Maintenance, Installation and Repair for Engineering and Manufacturing (8730-12)

8730-033 Employer-Set Project Exemplar – A Grade

Summer 2024

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Introduction

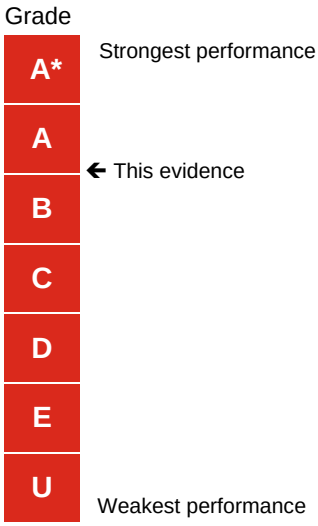
Summer 2024 Results

This document is aimed at providers and learners to help understand the standard that was required in the summer 2024 assessment series to achieve an A grade for the 8730-033 Maintenance, Installation and Repair for Engineering and Manufacturing Employer-Set Project (ESP).

Providers and learners may wish to use it to benchmark the performance in formative assessment against this to help understand a potential grade that may be achieved if a learner was to attempt the next summative assessment series.

The Employer-Set Project is graded A* to E and Unclassified.

The exemplar evidence provided for the A grade displays the holistic standard required across the tasks to achieve the A grade boundary for the summer 2024 series.



The Employer-Set Project brief and tasks can be downloaded from here.

Important things to note:

- We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (grading-arrangements-for-vtqsand-technical-qualifications-within-t-levels-in-the-academic-year-2023-to-2024) whilst also recognising the standards required for these qualifications.

- The exemplar evidence presented, as a whole, was sufficient to achieve the A grade. However, performance across the tasks may vary (i.e. some tasks completed to a higher/lower standard than an A grade).

Marking of this Employer-Set Project is by task and Assessment Objective, below is a summary of these along with the mark achieved by the evidence presented and the maximum mark available for each aspect.

Task	Assessment Objectives	Mark achieved	Max mark available
Task 1 Research	- AO1 Plan their approach to meeting the project brief - AO2a Apply core knowledge - AO3 Select relevant techniques and resources to meet the brief	7	9
	- AO2b Application of core skills	4	6
Task 2 Report	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	5	6
	- AO2a Apply core knowledge	4	6
	- AO2b Application of core skills	4	6
	- AO5a Realise a project outcome – was the right outcome achieved - AO5b Review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief	3	6
Task 3 Plan	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	4	6
	- AO2a Apply core knowledge	4	6
	- AO2b Application of core skills	3	6
Task 4 Present	- AO1 Plan their approach to meeting the project brief - AO3 Select relevant techniques and resources to meet the brief	5	6

	- AO2a Apply core knowledge	4	6
	- AO2b Application of core skills	4	6
	- AO5a Realise a project outcome – was the right outcome achieved - AO5b Review how well the outcome meets the brief, how well the brief was met, the quality of the outcome in relation to the brief	4	6
Maths	- AO4a Use of Math skills	2	3
English	- AO4b Use of English skills	2	3
Digital skills	- AO4c Use of digital skills	3	3

What evidence was being assessed for the maths, English and digital skills:

Maths:

- Research Notes - calculations relating to costings (and consideration of estimations) (Task 1)
- Tolerances and dimensions on diagrams (Task 2)
- Calculations of estimated cost of replacement and maintenance (Task 2)
- Calculation of cost, timescales and critical path within the planning chart (Task 3)
- Any calculations within the supporting statement (Task 3)

English:

- Research Notes (Task 1)
- Report (Task 2)
- Supporting statement for the plan of work (Task 3)
- Presentation delivery (orally) and materials to support presentation (e.g. slides etc) (Task 4)

Digital:

- Types of sources used for Research (Task 1)
- Report and drawing (Task 2)
- Presentation of the planning chart (Task 3)
- Presentation materials (slides, handouts, notes etc) (Task 4)

Task 1 Research

Assessment number (eg 1234-033)	8730-033
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	1
Evidence title / description	**Evidence expected for marking:** Research notes List of sources/references **Evidence submitted for marking:** Research notes List of sources/references
Date submitted by candidate	DD/MM/YY

introduction

the company up-down escalator services have reached out to me regarding maintenance for an escalator at a train station the budget provided for this project is £10,000 the issue with the escalator is that its nosey during operation due to it having a loose handrail the company up-down has requested that this been carried out at the same time as the planned maintenance.

The thing the budget needs to include is:

- Time to complete the planned maintenance.
- Replacement of both handrails so that the handrails match and ones not older than the other
- Tools and equipment required to replace the handrails and perform the planned the maintenance, this will include the PPE (personal protective equipment) and any machinery or handheld tools required.
- Another thing that the company wants is feedback and recommendations in how to take care of the escalator better and the ways to prevent it from happening again.

The health and safety regulations

the health and safety regulations that are required for the maintenance and the fitting of the new handrail is the health and safety at work act 1974 this is the regulation also known as HSWA sets out the duties of the employer and the employees. The employer must have and UpToDate risk assessment of the workplace as this prevents risk of injures.

The PPE regulation updated 6 April 2022 and introduced in 1992 is a regulation state that if the workers on the site are given sufficient information about the job and personal protective equipment, all workers must be trained with the PPE to ensure that it is not broken.

PPE must be stored correctly and inspected before after day is over to check for broken PPE and remove it all breathing apparatus must be stored in a safe place away from chemicals such as chlorine as this will cause the apparatus to be unusable as it is considered unsafe.

Employers must conduct suitability assessments and provide PPE if a risk assessment requires them worker to wear PPE provided and inspected before use by the employer. Employers are also responsible for the storage and maintenance of all PPE.

If personal protective equipment is found to be defective/broken or lost, employees must report the incident to the employer.

Hierarchy of controls:

All PPE must be regarded as the last resort to protect against risks to health and safety.

The most effective of hazard being elimination and the least effective being PPE as it does not remove all hazards to health.

- Elimination-this is physically removing the hazard this being the most effective.
- Substitution- replace the hazard being the second most effective.
- Engineering controls-isolate people from the hazard third most effective.
- Administrative controls-change the way people work fourth most effective.
- PPE- protect employees by providing them with PPE least effective.

Electricity at work act regulation 1989 is a regulation that is helpful for maintenance of electrical systems, and this is an essential regulation required for performing the maintenance on the escalator, purpose of the regulation is a precaution against any risk of death caused or personal injury caused by electricity in the workplace.

PUWER also know as provision and use of work equipment regulation 1998 is a regulation that places people and companies that own, operate, and have control of the work equipment.

PUWER regulation requires that equipment provide by a company must be suitable for the intended maintenance. It also requires that all equipment must be maintained and inspected as to ensure that it is correctly installed and will not deteriorate during use.

All equipment must be used by works who have received training and instruction on how to use the equipment to avoid injures and lawsuits as an unqualified worker was put on the equipment and gets injured.

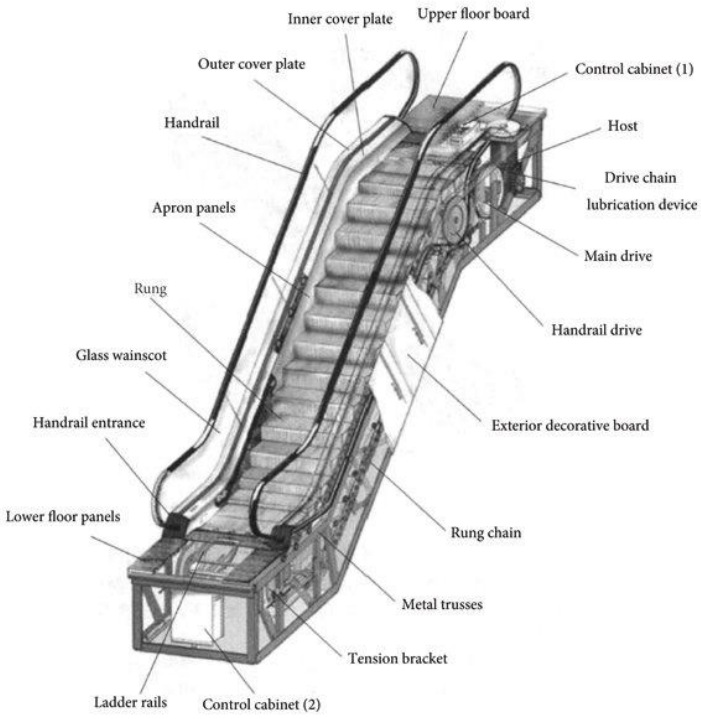
Specification

The specification and technology requirements

System elements	Specification requirements
The dimensions of the existing handrails	Mouth width:39mm Inner width:62mm Total width:80mm Inner height:80mm Top thickness:9.5mm Total height:28.5mm Total length:26m
Installation checks (planned maintenance)	• Conduct checks on oil, grease, power supply. • Rotational checks of bearing/ roller and drive system. • System is earthed correctly to prevent any electrical shocks (electricity at work act 1989) • Electrical connections are sound and fit to purpose. • Ensure that the mechanical connections have been set at the correct torque and not set to heigh. • Ensure locking features are fastened and are secure.

Time scale for instillation maximum is 15 hours can take place within the working day or at night if provided with prior arrangement as this will cause not affect to transportation services operation or disruption to the service.

Diagram of Escalator:



A diagram of the escalator structure. | download scientific diagram. Available at: https://www.researchgate.net/figure/A-diagram-of-the-escalator-structure_fig1_357196336 (Accessed: 04 March 2024)

PPE:

hard hat: protect from falling objects.

safety goggles: protect the eyes of the worker from sparks, dust, and sharp objects.

electrical gloves: electrical glove to insulate the hand to prevent shocks and ground the worker so if electricity passes through, he does not get shocked.

Risk assessment

Risk to health	Prevention
Electrical shock to the workers performing maintenance on the power supply this could come from power supply or damaged cords, exposed wires.	Make sure that there is now power leaving the power supply before touching the power supply.
Slipping or tripping can be caused by oil and loose cables becoming slipping hazards and tripping hazards.	Make sure that all wires are pushed out of the way and not in the way and clean any oil found on the floor to prevent any other workers getting injured.
Cutting due to sharp edges on the board on the sides of the escalator	Make sure sharp corners are noted for all workers to see.

Maintenance

Maintenance that I would have checked is the power supply to check to see if it is producing enough, to little or not enough torque to move the belt to see if it is causing it to be noisy during operation. Check oil and grease has been put on it, this would allow me to do a rotational check of the bearing/ roller to check if they need to be replaced.

Possible causes of the noise is a loose handrail tis would be replaced by cutting the old on free and feeding it out, the new belt would be fitted by hooking the outside lip of the handrail onto the guide, insert the tool under handrail lip and feed the belt through while doing this I will apply pressure to the belt this will cause it to move through the guide tool and onto the escalator continue to feed the belt through the tool continuing to apply pressure to the belt making sure that it is fitted along the grove of the runway till fitted. This will be repeated on the other side as this allows it to be prevented from being noisy.

More maintenance included in the planned maintenance is the mechanical checks this includes checking the temperature of the escalator while running, absence of

excessive noise if noise is till there after replacing belt check runway and bearings. Do emergency shutdown checks as apart of safety checks.

After planned maintenance performed feedback information about how they need to meet the requirements or recommend any work need for it to meet the current standard.

Potential cause of noise during operation

One cause of the noise could be that the runways are not properly lubricated causing the noisy operation and the replacement of old handrails that overtime have caused them to loosen and stretch as a result of this the handrail loosens causing it to become noisy during operation. Action for this would be to replace the old handrails with new ones on both sides as request by the employer.

Costs:

- Budget £10,000
- Two handrails
- Tools to remove old handrail.
- Workers (labour cost)
- Equipment for maintenance
- Oil, lubricate and power supply.
- Potential new wires.

References

(No date a) A diagram of the escalator structure. | download scientific diagram. Available at: https://www.researchgate.net/figure/A-diagram-of-the-escalator-structure_fig1_357196336 (Accessed: 04 March 2024).

(No date b) The Electricity at Work Regulations 1989. Available at: https://techniserve.co.uk/assets/pdf/Electricity-at-Work-Regulations.pdf (Accessed: 04 March 2024).

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ElectricalSafetyPub (2021) glove diagram, Electrical Safety in the Workplace. Available at: https://www.electricalsafetypub.com/features/how-to-choose-the-right-electrical-gloves-for-the-task-at-hand/ (Accessed: 04 March 2024).

Monro, J. (2023) Stannah Lifts. Available at: https://blog.stannahlifts.co.uk/escalator-ownership-responsibilities-and-regulations (Accessed: 04 March 2024).

PUWER regulation (no date) Provision and use of Work Equipment Regulations 1998 (PUWER). Available at: https://www.hse.gov.uk/work-equipment-machinery/puwer.htm (Accessed: 04 March 2024).

Task 2 Report

Assessment number (eg 1234-033)	8730-033
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	2
Evidence title / description	**Evidence expected for marking:** Written report (typically 2000 words) Engineering Drawing(s) (typically one side of A3) **Evidence submitted for marking:** Written report (typically 2000 words) Engineering Drawing(s) (typically one side of A3)
Date submitted by candidate	DD/MM/YY

Introduction

The maintenance that will be performed on the escalator for the company up-down escalator service this task is a report on my findings from task 1, the information on this task will consist of how I would perform maintenance and run risk assessment on the work site to reduce the hazard to health.

The escalator is located in a train station as the train station will be busy then any planned maintenance will need to be consulted with trainlines to prevent any risks to delays.

The budget given for this project is £10,000 in this budget the price of labour, replacement handrails (two), the tools required for the job:

- Equipment for the planned maintenance.
- Oil, lubricate and power supply if need to be replaced.
- Potential replacement wires if stripped wires are found while performing planned maintenance.

Modifications

The modifications that I would make to the escalator during the planned maintenance would be to replace the power supply as this could be the cause of the noise as the power supply is not producing enough torque to move the handrail around the drive train.

Another modification that would be performed on the escalator would be to replace the drive train and inspect the runway for any leakages as this would make sure that when the new handrail is fitted to the runway that the sealant is tight allowing the handrail to move slowly and while making no noise.

Potential problems

Potential problems that could be found while running planned maintenance on the escalator is that the brake on the handrail isn’t going off when activated this could also be caused by a wire not being connected this would cause any emergency stop function not work resulting in the escalator not being up to code.

Another potential problem could be that the fluid wires are trapped or cut and could cause the handrail to squeak as it moves, this could potentially be the problem being the source of the noise during operation to find out during planned maintenance check that the fluid levels are stable and look for leakages in the seal under the runway and in machine space as this could locate all problems with stairs not moving.

Another area that would need to be checked is power source as this is responsible for all moving parts in an escalator and if the torque produced by it isn't enough to move the handrail and stairs then this would need to be replaced as it will cause the escalator during inspection to fail.

Health and safety

During the replacement of the handrail the workers must wear PPE such as overalls and rubber cloves as this would best protect them from sharp objects and shocks.

Under the health and safety at work regulation introduced in 1974 is states the responsibilities of the employer and the employees and what the duties they have as of the employer the most important duties they have is to have UpToDate risk assessment on the workplace this will also include having all fire escapes marked and made aware of and that all emergency shutdown works this will be checked by running check when escalator is turned on to check if it works.

PPE regulation since updated on the 6th April 2022 and introduced in 1992 is a regulation that states the responsibilities of the employer and the employees when personal protective equipment is required. As stated by HSE the employer must provide all personal protective equipment for workers if stated by a risk assessment requires workers to wear PPE, the employer must also provide proper storage and document any faulty PPE during inspection as to prevent broken or faulty PPE being used.

Employees are responsible for informing the employer of if any equipment if found to be defective/broken or lost as its required for the employer to document all defective/broken and lost equipment.

Hierarchy of control

During the planned maintenance there are many ways of preventing risk of injury these being the Hierarchy of control the least effective on protecting workers in PPE as it doesn't prevent injury, but dose protect them.

- Elimination- elimination is the most effective form of protection as if a risk as been noted down then this would show all remove the chance of this being a risk to the workers and prevent any injury.
- Substitution- is not elimination of the hazard to health but it does replace the hazard to be one of less likelihood of injury.
- Engineering controls- this a form of isolation as it isolates the workers from the hazard by having emergency stop buttons this also found on an escalator and must be checked before maintained is performed.

- Administrative controls- can change the ay that the workers work to protect them from any hazards.
- PPE- provided by the employer to protect the workers from any injury not the most effective as it doesn't reduce the likelihood of injury, but it doesn't protect them against injury.

Electricity at work regulation 1989 is a regulation introduced to help maintenance engineers working on electrical systems to take precaution against the risk of injury or death caused by electricity in the workplace.

PUWER is states that any equipment provided by a company must be suitable for use or intended maintenance, the regulation introduced I 1989 states that the people and companies that own, operate and have control of the work equipment are responsible for all maintenance checks on the equipment and the equipment must be maintained and inspected as to ensure that the equipment is correctly installed and will not deteriorate during use.

PUWER states that the workers must be trained on the equipment to prevent risk of injury and also given instruction

Specification

System elements	Specification requirements
The dimensions of the existing handrails	Mouth width:39mm Inner width:62mm Total width:80mm Inner height:80mm Top thickness:9.5mm Total height:28.5mm Total length:26m
Installation checks performed during planned maintenance	• Conduct checks on oil, grease, power supply.

	• Rotational checks of bearing/ roller and drive system. • System is earthed correctly to prevent any electrical shocks (electricity at work act 1989) • Electrical connections are sound and fit to purpose. • Ensure that the mechanical connections have been set at the correct torque and not set to heigh. • Ensure locking features are fastened and are secure.

Risk assessment

Risk to health	Prevention
Electrical shocks could occur during the planned maintenance causing serious injury if the workers are not protected	To prevent this from occurring make sure that the power supply to the escalator has been turned off and that there is no current flowing still before performing maintenance, check for any exposed wires that could cause an electrical shock and replace them.
A potential risk of injury during the planned maintenance could be that the lubricate or oil on the escalator has leaked causing areas of the floor to be slippery	Check for any leaks in the escalator and remove broken or punched tubes and replace make sure that leaks are cleaned up and removed to prevent slipping and objects on the floor such as wires are moved out of the way.
Cutting due to sharp edges on the board on the sides of the escalator	Make sure sharp corners are noted for all workers to see.

Replacement handrails

The handrail will be replaced by cutting the old on of and removing it of the runway, once the old one is removed wipe runway clean and get the new belt ready to be fitted, this is done by using a guide tool that guides the new belt on the runway. The guide tool is inserted under the handrail and slowly feed the belt through the tool on to the runway as its feeding through the guide tool make sure that you are applying pressure allowing the new belt to form around the runway of the escalator and once all the belt has been fitted check that the belt fits along the grove of the escalator on around the bearings and is not loose in any space once done repeated the process on the other side of the escalator removing the old and fitting the new belt once fitted turn power supply on and check that the noise has gone wipe the new handrail down.

Once all planned maintenance is performed make sure give feedback to the employer about what the problems where and how to protect the handrail and prevent it from aging quickly, this will help to prevent any more noise coming from the belt during operation.

The costs

- Budget for the project and planned maintenance is £10,000
- Included in the budget is two new handrails (£9 per m)
- Labour costs (how much the workers' pay takes of the price of the £10,000 budget)
- All equipment that is required to fit new handrail and any equipment needed for planned maintenance.
- Oil, lubricate for the belt and power supply if fault found in power supply torque
- And stubes and wires to replace old wires to prevent any more problems.

PPE:

The PPE required for this job are hard hat, overalls, safety goggle and electrical gloves also included in this would be safety boots to protect the workers.

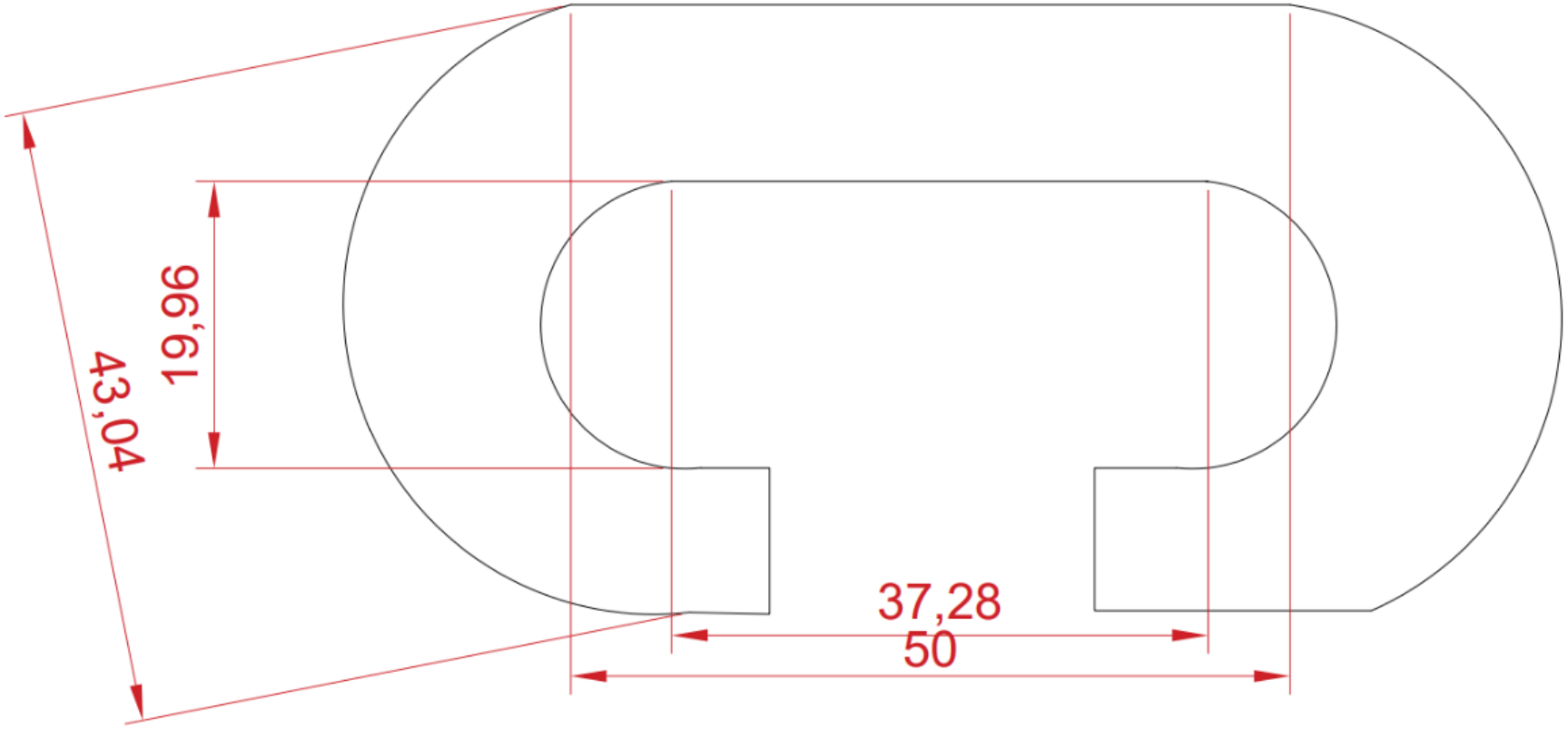
Proposed maintenance time:

The best time to performed the planned maintenance would be to do it during the week at later time as trains will not being going at a late time as this would reduce downtime and have no impact on the trainlines.

Schematic of escalator layout

Ladled diagram of the escalator layout and all parts attached to the handrail ladled along with all moving components.

This diagram shows that the handle is connected to more that just the runway and is pulled by the host and feed back down in a circular motion to going down and up at the same time as it moves as the drive train moves.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Task 3 Plan

Assessment number (eg 1234-033)	8730-033
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	3
Evidence title / description	**Evidence expected for marking:** Planning chart (typically one side of A3) Support statement (typically 1000 words) **Evidence submitted for marking:** Planning chart (typically one side of A3) Support statement (typically 1000 words)
Date submitted by candidate	DD/MM/YY

15 hours maximum

			time range	week 1				week 2					Week 3				
engineering responbible	Task	order	1 hour	2 hour	3 hour	4 hour	5 hour	1 hour	2 hour	3 hour	4 hour	5 hour	1 hour	2 hour	3 hour	4 hour	5 hour
electrical enginneers and management	planned matintance	10															
finical engineers	purchasing of equipment	5															
maintenance engineers	instalation of new components	9															
maintenance engineers	testing and calibration	12															
health and saftey manager	risk assement	1															
finical engineers	PPE sourced for work	2															
finical engineers	purchase of handrail	4															
delivery companies	delivery of equipment	6															
maintenance engineers	removal of old handrails	7															
maintenance engineers	fitting of new handrails	8															
manegment	recruitment of workers	3															
maintenance engineers	feedback and recommendations	13															
employer and maintence engineers	planned preventative maintance (PPM)	11															

16 hours maximum

engineering responbible	Task	order	Week 1 1 hour	2 hour	3 hour	4 hour	5 hour	Week 2 1 hour	2 hour	3 hour	4 hour	5 hour	Week 3 1 hour	2 hour	3 hour	4 hour	5 hour	6 hour
electrical enginneers and management	planned matintance	10																
finical engineers	purchasing of equipment	5																
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finical engineers	purchase of handrail	4																
delivery companies	delivery of equipment	6																
maintenance engineers	removal of old handrails	7																
maintenance engineers	fitting of new handrails	8																
manegment	recruitment of workers	3																
maintenance engineers	feedback and recommendations	13																
employer and maintence engineers	planned preventative maintance (PPM)	11																

Statement

As shown in my Gantt chart I have allocated the 15 hours for the maximum hours for installation and fitment of new handrails to both sides in the Gantt chart I have indicated to the employer with two examples one with the maximum hours set by the employer and the other with the maximum amount of hours that I believe will be enough to complete the project with no delay this will also include the planned maintenance asked by the employer Up-Down escalators.

I have also included how long it would take for the new handrails to arrive after purchase, before I have also included the source of equipment for the planned maintenance the equipment being screw drivers and for the fitting of the new handrail a guidance tool designed to help feed the new handrail through the runway allowing for a easy transition on to the escalators runway along with this a risk assessment will be undertaken to prevent any risk of injury during the planned maintenance, this will also include a COSHH due to the escalator having oil this will be noted as it can be flammable and is a slip hazard these will be noted down on the COSHH and risk assessment.

As I believe that the maximum hours provided will not be enough to perform the planned maintenance as well as the fitting of the new handles will request to the employer for extension on the maximum hours as I believe this will help reduce the need to rush fitting of the new handrails and planned maintenance this will also make sure that no injury is caused to the workers due to the rush to hit deadline. This is because judging by the Gantt chart produced will be rushed.

The job roles and responsibilities

The main jobs roles on the work site will consist of workers being part of the electrical and workers being responsible for Risk Management as this part of the health and safety at work act this will allow for a safe environment for the workers.

health and safety manager- make sure that personal protective equipment is worn on site by the workers and performing risk assessment and making sure that they are up to date.

electrical engineer- making sure that all emergencies stop functions are working and performing reactive maintenance on the escalator.

finical engineer- responsible for managing the budget and making sure that we don’t overspend in any sections, the main role of the finical engineer is to manage and

maintain the budget given by the employer, they are also responsible for source of equipment required for the job, the components and handrails at a good price.

Maintenance engineers- the responsibility that they have is to make sure that all components are working on the escalator and reduce need for new components

Cost and consideration

During the search for the price of the escalator handle it was found that the handle is £6 per Meter as this would be the best to work with as it would arrive quickly and could easily be fitted one consideration that I made was that the equipment required to fit the new handrails would arrive after the new handles this would delay the fitting of the handles and slow it down, to fix this problem I would order double the amount of guidance tools require required to complete the job as this would mean that both handles could be fitted at the same time decreasing downtime and increasing productivity.

Environmental factors

One of the major environmental factors that thought about was that the old handrails would need to be disposed of at an official government despisal plant as the handles being made of rubber are harmful to the environment if not disposed of in the correct manner, another major impact that would be cause by the project is the sourcing of new handrails, PPE and equipment all of these require to be delivered by truck this cause emissions to increase therefore a solution for this would be to have equipment, components and PPE delivered by environmentally friendly delivery companies to cut emissions.

Health and Safety factors

under the PPE regulation it states that responsibility of the employer and the employees as when personal protective equipment is involved then it must be maintained by the owner of the PPE this being the employer and have routine checks to see if its up to code the employees are responsible for making sure that the PPE if lost is reported to management this being the employer and documented.

One main health and safety regulation required is the electricity at work regulation as this regulation was introduced in 1989 to help maintenance engineers working on electrical systems from being injured this regulation is important as the it establishes the risks and how to prevent injuries this regulation is important as it relates to working on escalators.

Another consideration is PUWER regulation as it is the regulation that states that equipment provided by the company or employer must be suitable for use or

intended maintenance, the regulation introduced in 1989 states that the person and companies that own, operate or control of work equipment are responsible for maintaining and performing monthly maintenance on the equipment to make sure that its up to code and will not cause any injuries, they area also responsible for the storage of the equipment and ensure that the equipment is correctly installed and will not deteriorate during use to reduce risk of injuries.

Hierarchy of control

During planned maintenance there are ways of preventing risk of injury these being the Hierarchy of control that state the ways of protecting workers in the workplace form hazards to health and ensures safety.

- Elimination is the most effective Hierarchy control as it eliminates all risks to health in the workplace as this would be the most effective of the methods and would make sure there is no risk to workers during maintenance work on the escalator.
- Substitution- could also be a possible form of protection that could be used during the planned maintenance.
- Engineering controls are one of the main controls found in the workplace as it isolates the workers from the hazard by having emergency stop buttons on machinery.
- Administrative controls can change the way workers work making sure that they avoid all hazards.

PPE is will be affective and will be used as its requested in the Risk assessment that it must be worn and that workers must be provided with the equipment.

Task 4 Present

Assessment number (eg 1234-033)	8730-033
Assessment title	Employer-Set Project

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234

Provider name	<provider name>
City & Guilds provider No.	999999a

Task(s)	4
Evidence title / description	**Evidence expected for marking:** Presentation materials **Evidence submitted for marking:** Presentation materials
Date submitted by candidate	DD/MM/YY

Planned maintenance for escalator

Introduction

- The company Up-Down escalators have brought me a project to perform maintenance on an escalator in the train station, the company has also requested that planned preventative maintenance (PPM) to be in place on the escalator.
- This project also comes with a budget of £10,000 this is responsible for any equipment, labour, time to complete the maintenance and replacement of both handrails on the escalator, the company has brought to light that the escalator is noisy during operation due to loose handrails the company has given a maximum of 15 hours for the installation.
- This PowerPoint is going to describe the maintenance that will be performed on the escalator, all PPM that will be arranged to granite that the escalator is operating and will not have any future problems in the future.

- The company that I'm performing reactive and planned maintenance for on your escalator is the company Up-Down escalators, this company plans services for escalator to fit the need of different customers and different types of customer.
- Up-Down escalators services provide escalator maintenance for all its customers by providing a budget and performing routine checks on all the escalators this including checking emergency stop functions are working are up to code the company is responsible for the service of all escalators include the one in your train station.

Company

Safety regulations

- Some of the safety regulations that I have considered while performing the planned maintenance this means performing a risk assessment for all the workers on site this will allows all workers to be aware of the risk of injury.
- An important regulation I have considered is the PUWER regulation this regulation states that all equipment provided by the company must be suitable for use and that they're up to code and have had routine maintenance performed and be stored this regulation introduced in 1989 is put in place to reduce the chance of faulty equipment being used onsite.
- PPE regulation this regulation updated on the 6 th April 2022 and introduced in 1992 is a regulation that states that all PPE (personal protective equipment must be provided by the employer if stated in a Risk assessment is performed and noted that PPE is required.
- Hierarchy of control this is ways of controlling hazards that are dangerous to workers and have a chance of causing injuries the most effective of these are elimination this is the removal of the hazard and not subsisting it for another risk, the most common is PPE which is protective equipment needed for workers to prevent serious injurie.
- The last regulation I have considered is electricity at work regulation as this regulation when introduced was designed to help maintenance engineers from getting any injuries caused by electricity.

Modifications

Modifications that I will be performing during the planned maintenance will be shown to replace the wires on the escalator to make sure that current is flowing through the circuit and is not losing power in an places this will allow for a smoother escalator as there will be no power drop and the emergency stop will be instant.

In the fitting of the handle, I will have two workers on both sides, and I have opted for a handle will better tolerance than the old this will result in less aging over time as it will be able to withstand more this will increase the life of the handrail.

Tubes will be replaced to reduce any chance of leakage of oil as this is a slipping hazard and with new tubes decrease how long it will take before the next replacement.

Risk assessment

- Before performing the planned maintenance, I performed a risk assessment of the worksite and notes the main risks to health. As this will best protect the workers while working on the escalator.

Risks to health	prevention
Electrical shock may occur if wires are exposed, or power is not shut off this is noted in the electricity at work act 1989	To prevent this from occurring make sure that workers are made aware of any exposed wires as this is a risk and that all power is shut off as the will reduce chances of shocks
Oil spills and objects in the way these are risks to health as oil can cause areas of the floor to be slippery and this can cause injuries and objects in the way can cause workers to trip.	To prevent this, make sure that workers are informed of COSHH when working on the escalator and that the oil is cleaned up as soon as possible

Specification:

The company Up-Down escalator service have given us a specification of the handrails currently fitted and installation checks required.

The specification shows that existing handles and how they are not able to have a high enough tolerance

System elements	Specification requirements
The dimensions of the existing handrails	Mouth width:39mm Inner width:62mm Total width:80mm Inner height:80mm Top thickness:9.5mm Total height:28.5mm Total length:26m
Installation checks performed during planned maintenance	•Conduct checks on oil, grease, power supply. •Rotational checks of bearing/ roller and drive system. •System is earthed correctly to prevent any electrical shocks (electricity at work act 1989) •Electrical connections are sound and fit to purpose. •Ensure that the mechanical connections have been set at the correct torque and not set to heigh. •Ensure locking features are fastened and are secure. Installation checks performed during planned maintenance •Conduct checks on oil, grease, power supply. •Rotational checks of bearing/ roller and drive system. •System is earthed correctly to prevent any electrical shocks (electricity at work act 1989) •Electrical connections are sound and fit to purpose. •Ensure that the mechanical connections have been set at the correct torque and not set to heigh. •Ensure locking features are fastened and are secure.

Gantt chart

as shown in the Gantt chart above it shows that 15 hours maximum that the company has provided and below is 16 hours the planned maintenance will be performed over the space of 3 weeks splitting the hours evenly and reducing stress on workers

engineering responbible	Task	order	Week 1 1 hour	2 hour	3 hour	4 hour	5 hour	Week 2 1 hour	2 hour	3 hour	4 hour	5 hour	Week 3 1 hour	2 hour	3 hour	4 hour	5 hour	6 hour
electrical enginneers and management	planned matintance	10																
finical engineers	purchasing of equipment	5																
maintenance engineers	instalation of new components	9																
maintenance engineers	testing and calibration	12																
health and saftey manager	risk assement	1																
finical engineers	PPE sourced for work	2																
finical engineers	purchase of handrail	4																
delivery companies	delivery of equipment	6																
maintenance engineers	removal of old handrails	7																
maintenance engineers	fitting of new handrails	8																
management	recruitment of workers	3																
maintenance engineers	feedback and recommendations	13																
employer and maintence engineers	planned preventative maintance (PPM)	11																

Changes

- Changes I would make if performing this project again would be to have more time to perform the maintenance as this allows more accurate work and less stress on workers.

Any questions?

Employer-Set Project – Presentation Q & A Record (Task 4)

8730-12 T Level Technical Qualification in Maintenance, Installation and Repair for Engineering and Manufacturing

8730-033 Employer-Set Project (Summer 2024)

Candidate name	<first name> <surname>
City & Guilds candidate No.	ABC1234
Date	DD/MM/YY

Provider name	<provider name>
City & Guilds Provider No.	999999a

Record observation notes below to inform external marking. **Notes must be detailed, accurate and differentiating.**

Tutor questions to candidate	Candidate responses
What additional info would have been useful if provided in project brief?	Power that escalator uses. Knowing closing times of the station.
How efficient is the proposed maintenance schedule?	Quite efficient, financial engineers???, maintenance engineers
What are the risks to planning chart not being followed?	Delay and Emergency from providers, suppliers, delivering the material and tools.

Any other comments

Tutor signature	Date
X _____	DD/MM/YY

If completing electronically, double click next to the 'X' to add an electronic signature once the record is **finalised**.

Get in touch

The City & Guilds Quality team are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

Monday - Friday | 08:30 - 17:00 GMT

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