Construction and the Built Environment – Unit 3

3.2 and 3.3 Planning and organising work & Identifying resource requirements (1 of 2)

eduqas Part of WJEC

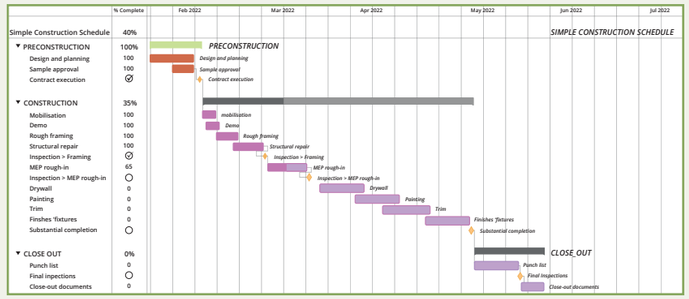
HOW WORK IS SEQUENCED AND PLANNED TO MEET DEADLINES

Construction projects must be planned carefully if they are to be completed safely and successfully. Different trades, occupations and suppliers need to be coordinated if they are to work together effectively. By creating a plan that organises work activities into a realistic and achievable order, a productive and profitable outcome is far more likely to be achieved. This is known as **sequencing**, which follows on from the specification, design brief and the drawings. A well-designed sequence will create a logical and efficient flow of work and consider several important factors, including:

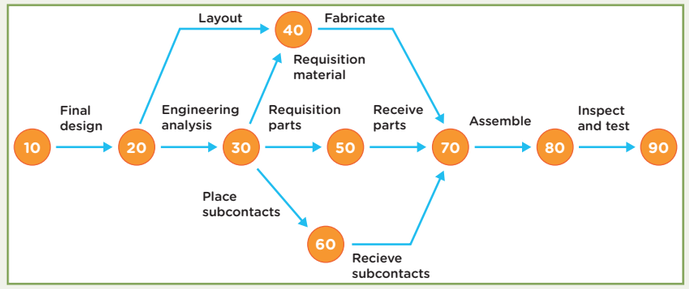
- the **time** taken to complete specific tasks
- the necessary **tools and equipment**
- the **health and safety** of all those involved
- ensuring that **building regulations** are met
- the correct **materials** to complete the activity
- an awareness of possible construction **contingencies**, which involve an allowance for the unknown risks or changing requirements that may occur during a project
- **milestones**, which are important points in the construction phase.

Several planning tools are available to assist the design team in sequencing projects efficiently. These include:

Gantt charts



Work schedules



Critical path analysis (CPA)

Two-week construction schedule

For the week beginning Monday, 22/3/22 to Monday, 5/4/22

ACTIVITY	LOCATION	M	T	W	T	F	S	S	M	T	W	T	F	S	S
Abutment Construction	Abutment A NBR and Wingwall B	✓	✓	✓	✓		✓		✓	✓	✓	✓			
MSE Wall Construction	MSE Walls A & B				✓				✓	✓	✓	✓			
MSE Wall Construction	MSE Walls C & D	✓	✓	✓											
Moment Slab	MSE Walls A and/or B								✓						
Embankment	SR7, North and South of St Mary St.	✓	✓	✓	✓					✓	✓	✓			
Curb Installation	Ramp B	✓	✓	✓	✓				✓						
Storm Drainage Structures	Various Locations	✓	✓							✓	✓	✓			
BCBC/Type B Hotmix Paving	WB St Mary St., Church. Pl. to West End	?	?	?					?	?	?	?			
Lighting Cable, Standards and Load Centres	Various Locations	✓	✓	✓	✓										
Type B Hotmix Paving	WB St Mary St. In front of Abutment B														
Guardrail installation	WB St Mary St. from Abutment B to 12+085	✓	✓	✓	✓										
PCC Barrier Relocation	WB St Mary St.		✓												
Loop Detector Installation	WB St Mary St.														
Shift Traffic into Stage III/Ph. 2 Configuration	WB St Mary St., Tech Rd. to West end			✓	✓										
Shift Traffic into Stage III/Ph. 2 Configuration	EB St Mary St., SR7 to Tech Rd.		✓												
Excavation/GABC	EB St Mary St., Tech Road to East End	✓		✓	✓				✓	✓	✓	✓			
Curb Installation	EB St Mary St., Tech Road to East End								✓	✓	✓	✓			
Excavation/GABC	EB St Mary St., SR7 to Tech Road		✓	✓	✓				✓	✓	✓	✓			
Sign Structure Foundation Construction	OH-1 Rt., C-2, C-5, and C-6	✓			✓				✓	✓	✓	✓			

Notes/legend:

1) All work is weather permitting and highly dependent upon grade conditions.

Hotmix Activities | Nightwork | Concrete Pour

TOOLS AND EQUIPMENT

A list of all the tools and equipment required should be completed before working on a construction task, to ensure that every stage of the task can be undertaken as efficiently and effectively as possible.

The list should cover all stages of the construction task, including the preparation and finishing of materials, how and why each tool is used, and the safety considerations for each item.

The following list is an example of the basic tools and equipment needed when working on a construction task for the carpenter trade option:

CARPENTER	
Panel saw	Cutting away large amounts of materials quickly
Tenon saw	Cutting tenons and joints accurately
Claw hammer	Hammering nails and removing bent nails from wood
Tape measure	General measuring and marking out
Carpenter's pencil	Marking out on the wood surface
Set square	Marking out 90° angles
Bevel gauge	Setting and transferring any angle
Chisel set	Shaping and shaving away wood and general jointing
Jack plane	Removing layers of wood to give a smooth, flat finish
Sanding block	Smoothing wood and levelling out uneven surfaces
Screwdriver set	Driving screws into wood
Spirit level	Checking for vertical and horizontal alignment
Marking gauge	Marking lines parallel to a straight edge

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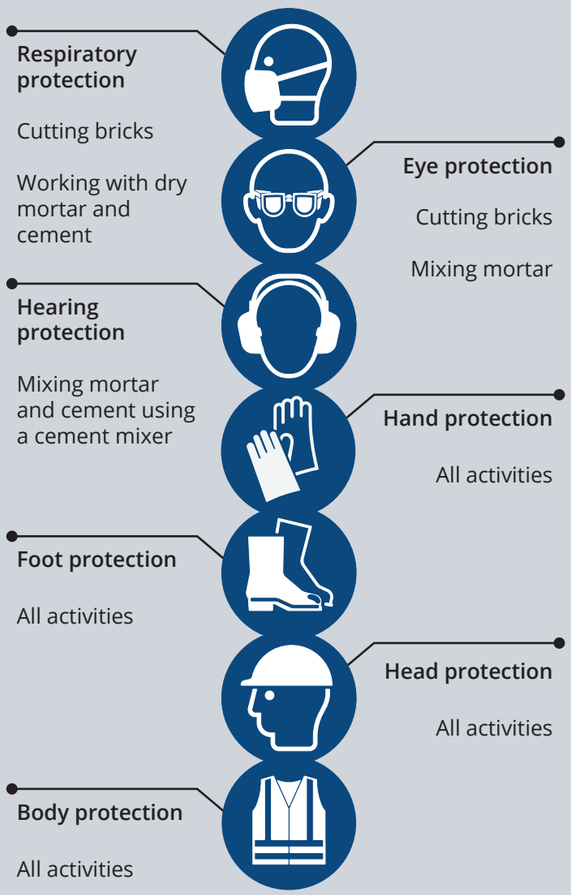
PPE (Personal protective equipment)

The selection and correct use of appropriate personal protective equipment is vital when carrying out any construction task. Depending on the task being undertaken and the materials and processes being used, personal protective equipment may be required for:

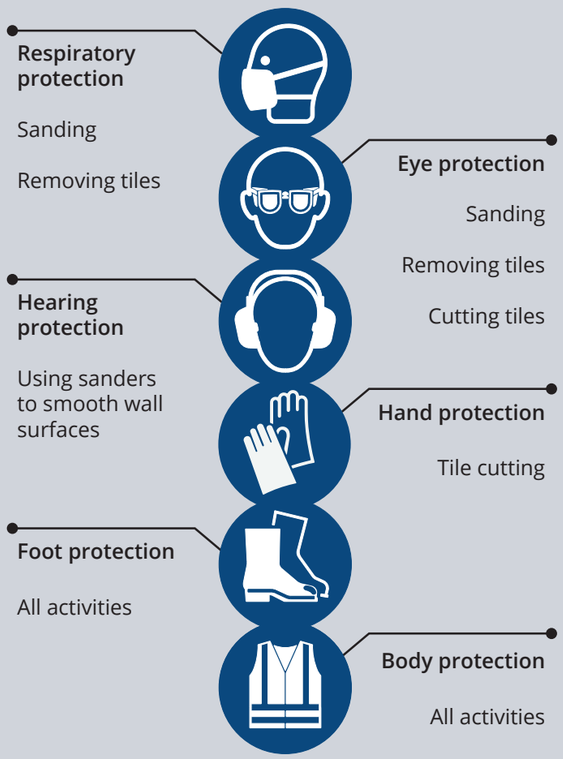
- **respiratory (breathing) protection**
- **eye protection**
- **hearing protection**
- **hand protection**
- **head protection**
- **fall-arresting (falls from height).**

The following diagrams show examples of the appropriate PPE to be used when working in two common trade areas:

Brick



Tiles



MATERIALS

The ability to select the most suitable materials, including their characteristics and qualities, for a task is crucial in whatever trade areas you choose to work in.

A knowledge of the most common materials that are likely to be used will enable you to work effectively and safely.

Characteristics

- **Physical properties** – durability, weight and weather resistance
- **Mechanical properties** – strength, hardness, toughness and flexibility
- **Thermal properties** – conductivity, insulation and fire resistance

Sustainability

Is the material:

- recyclable?
- reusable?
- long lasting?
- sustainably sourced?

Limitations

Is the material:

- hazardous?
- weak?
- heavy?
- brittle?
- expensive?
- difficult to work?
- liable to corrosion?
- environmentally damaging?