Archbishop Beck Catholic College Medium Term Plan for **Construction**

Year 10

Autumn Half Term 1	Half Term 2	Key Vocabulary/Reading Opportunities
Topic Areas to be covered: **Unit 1** construction Technology - Exam Preparation **Unit 5**: Exploring Carpentry and Joinery Principles and Techniques: **A**: understand tools, materials and equipment used in carpentry and joinery tasks	**Topic Areas to be covered:** **Unit 1** construction Technology - Exam Preparation **Unit 5**: Exploring Carpentry and Joinery Principles and Techniques: **A**: understand tools, materials and equipment used in carpentry and joinery tasks	For key Vocabulary please see the sheets at the end of this document
Spring Half Term 3	**Half Term 4**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered: **Unit 1** construction Technology - Exam Preparation **Unit 5**: Exploring Carpentry and Joinery Principles and Techniques: **A**: understand tools, materials and equipment used in carpentry and joinery tasks **B**: develop practical skills using safe techniques to produce a timber frame.	Topic Areas to be covered: **Unit 1** construction Technology - Exam Preparation **Unit 5**: Exploring Carpentry and Joinery Principles and Techniques: **B**: develop practical skills using safe techniques to produce a timber frame.	For key Vocabulary please see the sheets at the end of this document

Summer Half Term 5	Half Term 6	
Topic Areas to be covered: **Unit 1** construction Technology - Exam Preparation **Unit 5**: Exploring Carpentry and Joinery Principles and Techniques : **B**: develop practical skills using safe techniques to produce a timber frame.	Topic Areas to be covered: **Unit 5**: Exploring Carpentry and Joinery Principles and Techniques: **B**: develop practical skills using safe techniques to produce a timber frame.	For key Vocabulary please see the sheets at the end of this document

Year 10

Wider learning experiences to support this subject.	Learning Characteristics instilled in the curriculum	Career Opportunities
- Visits to building/ construction sites. - Visits to architects offices. - Visits from professionals connected to various areas of the construction industry such as architects, surveyors, civil engineers etc. - Visits to universities offering courses in specific areas of the construction industry.	**Confidence** Developing knowledge in a range of new areas and construction techniques. Students will develop an understanding of the construction industry and feel they could move into that sector. **Positive** Making positive links with careers and techniques within the construction industry. The learning curve will expand knowledge and a positive, creative outlook within the subject. **Respectful** Understand and respect all areas of the	All jobs within the construction industry ranging from desk based work to site based work.

	construction industry and all members of the workforce, realising that all members of the industry interlink and would not be able to function without each other irrespective of pay or job title.	

Metacognition Methods applied in Teaching
• Activate prior knowledge at the beginning of every lesson. • Modelling writing and responses to demonstrate the thinking processes behind the ideas and implementation. • Demonstrating independence in learning tasks.

Archbishop Beck Catholic College Medium Term Plan for **Construction**

Year 11

Autumn Half Term 1	**Half Term 2**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered: **Unit 3**: Construction and Design: **A**: understand the work of the construction industry	Topic Areas to be covered: **Unit 3**: Construction and Design: **A**: understand the work of the construction industry	For key Vocabulary please see the sheets at the end of this document
Spring Half Term 3	**Half Term 4**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered:	Topic Areas to be covered:	

Unit 3: Construction and Design: **B**: Understand a client's needs to develop a design brief for a low-rise building **C**: Produce a range of initial sketch ideas to meet the requirements of a client brief for a low-rise building.	**Unit 3**: Construction and Design: **B**: Understand a client's needs to develop a design brief for a low-rise building **C**: Produce a range of initial sketch ideas to meet the requirements of a client brief for a low-rise building.) **Unit 2**: Scientific and Mathematical Applications for Construction: **A**: understand the effects of forces and temperature changes on materials used in construction.	For key Vocabulary please see the sheets at the end of this document
Summer Half Term 5	**Half Term 6**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered: **Unit 3**: Construction and Design: **B**: understand a client's needs to develop a design brief for a low-rise building. **C**: produce a range of initial sketch ideas to meet the requirements of a client brief for a low-rise building. **Unit 2**: Scientific and Mathematical Applications for Construction : **A**: understand the effects of forces and temperature changes on materials used in	Topic Areas to be covered: **Unit 2**: Scientific and Mathematical Applications for Construction: **A**: understand the effects of forces and temperature changes on materials used in construction. **B**: use mathematical techniques to solve construction problems.)	For key Vocabulary please see the sheets at the end of this document

construction **B**: use mathematical techniques to solve construction problems.		

Year 11

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A:

Adjacent – next to or touching something. For example, the houses either side of a terraced house are adjacent to it.

Aesthetics – the appreciation of beauty or the appearance of something.

Affordable housing – low-cost properties that are built within a development that buyers (particularly first-time buyers) can afford to purchase or rent.

Aggregates – an aggregate is a mixture of pieces of crushed stone and gravel. They are used in making concrete as well as more generally in construction activities.

Air entraining – a chemical product that forms thousands of bubbles. These trap air in the block, which makes it a very good insulator.

Amp – the measure of the amount of current flowing within an electrical circuit.

Attenuation – slowing down the flow of water.

B:

Biodiversity – this is made up of two words: biological and diversity. It means the variety of living organisms on the planet.

Bitumen – a black sticky by-product from oil refining. Boat level – a small short level used for awkward areas where a large level is not practical.

Bond – an arrangement of bricks and blocks. The term is also used to describe how various courses of brick or block work are joined together.

Brownfield – a site that has already been built on.

Bucket handle – a joint that is rounded, forming a concave shape to the mortar joint in the brick wall. It is the most common joint.

Building line – this is an imaginary line along a street that all building fronts must keep behind. It is set by the local authority.

Building services – the services of water, gas, electricity and communications that have to be designed for a building.

Built environment – the buildings and other structures constructed by humans.

Bunded or bund wall – a structure that is built to hold any spillages.

Burr – rough-sawn edges.

Buy-to-let – when someone buys a property to rent out rather than to live in themselves.

C:

Capillary action – the absorption of liquid into the pores in a porous material.

Carbon footprint – the amount of carbon dioxide released into the atmosphere as a result of human activity, such as the construction of a building.

Ceiling rose – the unit used in lighting that fixes directly to the ceiling.

Cladding – a covering or coating on the outside of a structure.

Condensation – the most common form of dampness in a house. It happens when warm moist air comes into contact with cooler air or a cold surface.

Conductors – materials (for example, copper) that allow electricity to flow through them.

Coniferous – these are trees that have cones, such as pine, larch and fir. Timber used from these trees is also called softwood.

Constraints – limiting factors.

Construction programme – a chart with all the construction activities plotted against time. It is used to plan, monitor and review progress.

Consumer unit – the unit where the meter and isolation fuse feed into the domestic circuit. It has all of the fuses, residual circuit devices (RCDs) or miniature circuit breakers (MCBs).

Continuity – the completion of a circuit without any breaks in the conduction of electricity.

COSHH – the Control of Substances Hazardous to Health Regulations 2002.

Cross-lining – hanging lining paper horizontally.

Cross-sectional – in a cross-section view. This means imagining that you can see through the object, as though it has been cut in half.

Current – the amount of flow of electrical charge, which is measured in amps.

Cutting in – painting a neat line between surfaces that touch each other – for example, the line between the wall and ceiling or where the skirting board meets the wall.

Cutting wheel – a hardened steel wheel that is gently rotated and tightened against the copper pipe and slowly cuts through it.

D:

Deciduous – these are trees whose leaves fall during the year. Examples include oak, beech, ash and walnut. Timber used from these trees is also called hardwood.

Deflection – the distance a structure moves or changes position under stress.

Degradation – when a material is exposed to sunlight, water and wind, it starts losing its strength, shape or appearance.

Delamination – when the two layers of wallpaper separate. This can be caused by over-soaking the paper or using a seam roller too much.

De-nib – removing any bits or plaster splashes from a surface.

Density – mass per unit volume, measured in kilograms per cubic metre (kg/m3).

Density of homes – the number of homes built over an area. The larger the number of homes, the higher the density.

Detention structures – used to slow down the flow of water.

Double glazing – this is a technology used to make windows less likely to lose heat. A double-glazed window is made of two panes of glass with a narrow gap in between them. The air is sucked out of this space to create a vacuum. It is difficult to transfer heat through a vacuum, so a double-glazed window loses less heat.

Dry lining – the edges of plasterboards are taped and filled over. The whole area is then painted. When using this technique, there is no need to skim the surface with plaster.

E:

Eco-tourism – responsible tourism to a natural environment. It does not damage the natural environment and the wellbeing of the local community.

Elasticity – the ability of a material to recover its shape and size completely when the deforming force is removed. Even steel is elastic.

Embodied energy – the energy needed to produce a material from extraction to its point of use. It is also known as embedded energy, as it is the energy contained by or embedded in each brick, tile or piece of timber.

End grain – this is the grain at the end of a piece of timber when the timber has been cut.

Evaluation – bringing together all the relevant information and using it to form a conclusion about something.

Excavation – digging up the ground to reach the right level below ground to lay the foundations.

F:

Fabrication – another word for manufacturing.

Facing bricks – bricks with a decorative face to provide an attractive wall.

Feasibility – the possibility of being able to do something.

Ferrous – containing or made of iron.

Ferrule – a metal band that secures the filling (bristles) of a paint brush to the handle.

Fixing – the method used to secure a copper conductor into its terminal block using a screw.

Flange – a projecting flat rim for strengthening, guidance or attaching to something else.

Flash flood – sudden flood in a local area due to heavy rainfall.

Flexible – changes shape easily.

Flux – this helps the soldering process by stopping the cleaned copper from oxidising and stopping the solder from bonding to the copper.

Fly tipping – dumping waste illegally (usually done to avoid paying to dispose of the waste).

Former – this is the radius part of the pipe bender, which holds the correct diameter pipe in position as it is bent around the former. This gives the correct radius for the pipe that is being bent. Normal-sized formers are 15 mm and 22 mm.

Fossil fuels – non-renewable fuels such as coal, oil, gas or peat.

Foul water – the used water that comes from toilets, sinks and showers.

Fungi – (singular: fungus) these are micro-organisms such as moulds.

Fungicide – added to paste to prevent mould growth. It is especially important when hanging vinyl papers because these are non-porous and can take a long time to dry out.

G:

Gauge – in screws, this is the diameter of the screw's body, or shank.

Gauge – the depth of a brick or block plus one bed joint. For example, a brick is 65 mm depth + 10 mm = 75 mm gauge.

GDP – this is the value of the total amount of goods and services produced by a nation in one year.

Grades – the grade depends on the size and quantity of abrasive particles on the abrasive paper.

Gradient – the slope.

Greenfield – a site where no construction has taken place before.

Grey water – waste water from bathing, dishwashing or using washing machines. It can be recycled to be reused in other areas of the house, but is not used for drinking.

Grommet – in electrics, a rubber ring that fits within the steel back box where the inlet has been formed and protects the cable from any sharp edges that could cut the cable insulation as the cable is pulled through.

H:

Habitable – suitable to be lived in or occupied.

Hardcore – materials such as broken bricks, stone or concrete, which are hard and do not readily absorb water or deteriorate.

Hazards – things that have the potential to cause harm, such as a naked flame.

Heat capacity – the heat needed to raise the temperature of an object by 1°C.

Hemp and flax – widely grown plants that have excellent insulation properties. Hemp can be mixed with lime to produce insulation products. Flax can be used as an insulation material and as strips for sealing joints around doors and windows.

Hierarchy – a ranking system according to the importance of each item listed in relation to the other items.

Hot work – work that will need equipment that generates a lot of heat.

I:

Iconic – very famous or popular. In construction, this is usually used to refer to a building that is instantly recognised for its design and location, like the Sydney Opera House.

Identification – in this context, this means looking at and accounting for all the people who may be affected by a hazard.

Impedance – the opposition of a circuit to the passage of electricity.

Imperfections – when a surface is not totally flat and smooth – for example, with dents, chips or scratches.

Impervious – not allowing water to pass through.

Incineration – a method of waste treatment where waste is burned and is converted into ash and gases.

Industrial action – protest action taken by the employees of a company or organisation, such as striking.

Infrastructure – the basic structures needed for the operation of a society, including roads, buildings and power supply.

Insulation – the plastic covering that surrounds the copper conductors in an electric cable.

Integrated – to become a part of something.

Intercept – where one thing interrupts or cuts off something else. In the equation for a straight-line graph, it is where the line cuts the y-axis.

Intumescent paint – paint that is intumescent swells when heated. This makes it fire resistant, as when it is heated up by fire; it expands and becomes a thicker layer on top of the painted material. This slows down the transfer of heat to the painted material.

Inverse operation – doing something (e.g. an equation) the other way around.

J:

Joint box – used to connect two or more electric cables together safely.

K:

Kelvin – this is an alternative measure of temperature used in scientific study. Zero Kelvin is equal to a temperature of –273 °C and is the coldest temperature possible. Its symbol is K.

Key – this is what allows a previously painted surface to bond with the next coat of paint.

Knotting – a preparation liquid substance or solution of shellac and methylated spirit. It is applied to knots in timber to stop the resin leaking out and damaging the paint film.

L:

Latent heat – the energy needed to change the state of the material.

Lateral restraint – when sideways movement of building elements is stopped.

Leaf – the part of a door or window that is hinged. A double leaf door features two hinged doors.

LED – light emitting diode. LEDs are a different way of giving light. They do not get hot as they do not use a filament within a bulb, so they last a lot longer than an ordinary bulb.

Limit of proportionality – the greatest stress a material can sustain without deviating from Hooke's law.

Load – the weight pressing down on one element of the building or structure, such as a load-bearing wall or a floor.

Local plan – this is a legal document that every local authority in the UK uses to set out their local planning policies in the area under their authority. It defines where residential and industrial developments can be built, and any planning application is checked against the plan.

Louvre – a set of angled slats fixed over a door or window. They allow air and light through.

M:

Make good – prepare a surface to be painted.

Malleable – able to have its shape changed by flattening, bending or denting out of shape.

Manually – by hand.

Mass – the amount of matter in a body, measured in kilograms (kg).

Mitre – a piece of wood that has been cut at an angle.

Mortar – a mixture of cement, sand, lime and water. It is used to join bricks and blocks together.

Mortise – a square or rectangular hole in timber.

Musculoskeletal injuries – injuries affecting our muscles and bones. Musculoskeletal – to do with the human frame and muscles that function to give movement.

N:

Noise – this is any unwanted sound. Noise should be avoided wherever possible.

Non-combustible – does not burn.

O:

Olive – a metal ring or fitting tightened under a threaded nut to form a seal.

Opacity – a paint's ability to hide a surface underneath.

Open coated – when the abrasive particles are spread out and less concentrated.

Operating pressure – the pressure of the water within the pipe that normally would be produced when in use. Your tutor will set the operating pressure that the test rig's starting pressure will be set from.

Orange peel – this occurs when a long pile roller sleeve is used on a smooth surface. It leaves the surface slightly textured, like an orange.

Orientation – the direction that a building faces.

Outlet – this could be a fused outlet where the cable from the appliance is directly wired into the ring main.

Outline planning permission – this is provisional planning permission for a development that outlines details such as how many houses can be built and what size they can be. The outline must be converted into full planning permission in order to proceed with any building project.

Oxidisation – the interaction between oxygen molecules and all the different substances they may come into contact with – for example, copper. Oxidisation can be destructive, and when copper oxidises it turns green and then black. This oxidisation has to be removed in order to allow the pipe work to be joined using a soldered joint.

P:

Paint system – all the coats of paint on a surface.

Parallel – parallel lines run alongside each other and are always the same distance apart. They will never cross.

Performance – how well a building provides a comfortable, safe environment for its occupants.

Permeable – a material that allows water to pass through.

Perpendicular – the pipe is cut at 90° to its length, or cut 'square' across its length.

Photovoltaic (PV) – photo means light and voltaic means electrical potential. Photovoltaic materials are able to produce electricity when they are exposed to light.

Pile length – the length of the material used for the roller sleeve. Long pile sleeves are used for heavily textured or rough surfaces. Short pile sleeves give the best finish on smooth surfaces.

Pi (p) – approximately 3.14159.

Pipe rig – a small-scale assembly of pipes and fittings in a framework to test your skills at bending, jointing and cutting accurately.

Plant – machinery used in the construction process, such as bulldozers and excavators.

Pointing – filling the joints in brickwork with mortar to improve appearance and weather proofing.

Polarity – the direction of a magnetic or electric field.

Porosity – a surface's ability to absorb moisture.

Porous – a porous material has a lot of pores or air pockets. These allow air or liquid to pass through the material.

Prefabricated – 'pre' means 'before' and 'fabricated' means 'made'. The term describes the parts of the building made in a factory and brought to site for assembly only.

PVC – a type of plastic. PVC is short for polyvinyl chloride.

Q:

Quantities – the amounts of materials needed from suppliers.

R:

Ratio – the proportion of one thing to another. For example, if a ratio of water : cement is 1 : 2, there is twice as much cement as water.

Render – a type of plaster finish used on external as well as internal walls. It can improve a building's insulation.

Respirator – a PPE device that fits over the nose and mouth. It filters air entering the lungs to get rid of impurities.

Retention – holding the water before passing it on.

Risk assessment – a process of identifying the hazards, the people who might be harmed, a risk rating and the control measures that must be used when doing the work.

Risks – these result from hazards, such as someone burning themselves with the naked flame.

Roofing battens – strips of wood fixed to rafters, used to attach roof tiles to a roof.

Roofing felt – a protective layer between the actual roof structure and the building. It is made up of waterproof materials.

Runs – a length of pipe in a run from one point to another.

S:

Screed – this is made from cement and sand to provide a level surface before a floor is laid.

Seasoning – treating natural timber so it is not affected by changes in moisture.

Sedum – a small hardy plant that is good at resisting extreme weather conditions.

Sensible heat – the heat that can be measured by a thermometer.

Setting out rod – a 1:1 drawing of the frame you are going to make.

Shingles – a roofing material, generally made of cedar wood.

Size – a coating applied to a surface to make it less absorbent. Thinned-down wallpaper paste can also be used for this job.

Sleeving – a separate sleeve that fits over the exposed earth conductor and covers up all of the copper conductor.

Soffits – the undersides of eaves. Solder – this is a metal that melts at the temperature of the blowtorch. It fills the gaps between two copper surfaces and bonds to them, forming a watertight joint.

Specification – the written details of all of the components and materials for the building that have been given by the architect or designer.

Specific heat – the amount of heat needed to change one unit of the mass of a substance by one unit of temperature.

Stable – when a structure can keep its balance without moving.

Statutory – something that has to be done by law.

Stretcher – the dimension of a brick along its length, normally 215 mm.

Stripping – removal of the outer layers of plastic insulation that surround the copper conductor.

Surface water – water that runs off roads, roofs and gardens.

Sustainability – preserving resources for future generations and minimising the impact of construction activities on the natural environment.

Sustainable Urban Drainage Systems (SUDS) – systems that make sure water is drained off in a sustainable manner.

T:

Tendering – making a formal offer (tender) to carry out work for a stated fixed price.

Tendering – the process of getting a competitive price for the client's proposed building project.

Tenon – a rectangular shaped part of timber that fits exactly into a mortise.

Termination – the final terminal that an electrical cable is connected to.

Thermal efficiency – how efficiently a building uses heat energy.

Thermal insulation – insulation against heat loss.

Thermal mass – the ability of a material to absorb, store and release heat in line with the heating and cooling cycle of a building.

Thermal resistance – this is measured as an R-value. This shows the ability of a material to reduce heat loss because it resists the movement of heat through it. Increasing the thickness of a material increases its R-value.

Tolerance – this is the amount of error that is acceptable in an object that is fit for purpose. If a joinery firm makes a lot of window frames that turn out to be the wrong size, the tolerances they have used are too broad.

Turbine – a machine like a wheel. It extracts energy from water, gas or air and converts it into another form, such as electricity.

U:

uPVC cladding – a covering made of uPVC (unplasticised polyvinyl chloride).

Useful life – the length of time that a building fulfils the needs of the people who live or work in it.

U-value – this measures the loss of heat from a building element such as walls, floors and roof. These are used to specify insulation standards in buildings.

V:

Variations – the alterations or changes that may have to be made during construction due to design changes, client's alterations or errors.

VDE – Verband der Elektrotechnik (the Association for Electrical, Electronic & Information Technologies) is one of the largest technical and scientific associations in Europe, and is a brand name for tested electrical tools.

Volume – the amount of three-dimensional space an object occupies.

W:

Wall tie – a component used to join the two halves or skins of a cavity wall.

Wet scrubber – a device that removes pollutants from gases.