Landscaping projects can sink or swim on the right or wrong cement. **Sean Butler** looks at the different types and when they should be used

HARD CHOICES

In the early 19th century Joseph Aspdin, born into a family of bricklayers, set out on his own to create the first Portland cement in his hometown of Leeds. He formed a plaster for a variety of building purposes, which was patented in 1824; he called it Portland cement because it resembled Portland stone, known as the best building material available in England at that time.

Fast forward almost 200 years and the types of cement used in the construction industry vary widely. It is always wise to choose your mortar carefully, i.e. make sure that you use the correct grade of cement for the soil conditions you are working with, and also take into account the time of year you will be working, in relation to the temperature and weather. When using cement, don't think that 'one type fits all' will work – this is a common approach, which can only lead to failure.

These days, cement is manufactured through a closely controlled chemical combination of calcium, silicon, aluminium, iron and other ingredients. The raw materials used to manufacture cement are essentially limestone or chalk, combined with shale or clay. The ingredients are put through a milling process, heated at high temperatures, and finally ground into the fine powder we know as cement.

TYPES OF CEMENT USED IN LANDSCAPING PROJECTS

- **Ordinary Portland Cement (OPC)** is manufactured by mixing limestone with shale and clay to form clinker, which is then finely crushed to form a grey-coloured cement. OPC is used in building works where special cement properties are not required.
- **White Ordinary Portland Cement (WOPC)** is just a white version of OPC and is used mainly for aesthetic purposes, such as rendering walls, as a base coat before painting, and to cover hairline cracks on concrete surfaces.
- To combat slow cement cure time during the winter months, you can use **Rapid Hardening Portland Cement (RHPC)**, which is useful where high strength is required quickly, i.e. for pavements and roadways (which cannot be out of use for long periods).
- **Sulphate Resisting Cement (SRC)** should be used on most landscape projects, particularly those involving soils with a high clay content. SRC can withstand sulphate attacks, which can lead to cracking of the mortar and structural failure. This type of cement is used where the concrete is in direct contact with soil, which has high sulphate content. Typical applications include pile foundations, strip foundations, rafts and coastal area works.
- **Low Heat Cement** is produced by lowering the amount of tricalcium aluminate and dicalcium silicate in the mixture. The larger the amount of cement used, the higher the temperature it reaches; this can then cause shrinkage when it is cooling, which may stress the concrete and possibly result in cracking. In landscaping projects, LHC is a good material to use when building retaining walls.
- **Quick Setting Cement** is manufactured by reducing the amount of gypsum in the mixture and adding small amount of aluminium sulphate; this accelerates the setting time. It is used in situations where the works need to be completed quickly, such as underwater construction, and is also suitable for general use by landscapers who are working in cold and rainy conditions.
- **Portland Pozzolana Cement (PPC)** is manufactured by adding pozzolanic materials, such as fly ash, shales and clays. It gains high compressive strength with age, and, unlike rapid hardening cement, it is cheap and affordable. This application is mainly used in construction where strength and waterproofing are required.
- **Hydrophobic Cement** is produced by using admixtures such as petrolatum and naphthalene soap, which form a layer and act as a water repellent. It is for situations when cement is stored for long durations in wet conditions, as it does not absorb water.

Get your cement right, and you will increase the quality of your work.

ABOUT SEAN BUTLER

Sean Butler is a landscape designer and director of Cube 1994. With a background in civil engineering, Sean has an in-depth understanding of the design, construction and maintenance of the physical and naturally built landscape.
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