Forecasting in construction

Weather impacts all stages of a construction project. During the planning phase, project managers need to understand what weather conditions they should expect on site as well as any ways in which the likely future weather and climate will influence building design or position.

Of particular significance to the success of a build are the impacts weather can have during this phase of a project.

Once a construction project is underway, managers need to anticipate how imminent weather events might impact on worker safety and comfort, equipment hire costs and project deadlines. Ultimately, forecast services are intended to provide the contractor with relevant information about how weather may impact the build, allowing them to make critical decisions and reschedule their onsite activities accordingly, resulting in both time and money savings. If weather effects can be estimated it makes it possible to mitigate the consequences. This will lead to efficiencies in the project, enabling the contractor to concentrate on the build itself.

**HEALTH AND SAFETY REGULATIONS**

Strict health and safety regulations have to be met on construction sites and acting on forecast alerts can help ensure the safety of on-site personnel. If weather conditions reach a critical threshold then operations can be forced to stop. This, of course, applies not only to worker comfort levels but also equipment operation thresholds. A bespoke warning service, using relevant contractor-supplied criteria, can provide timely critical information to a project manager to inform onsite activities.

The drive to complete construction projects as quickly as possible means that year-round working has become the industry norm. With work continuing into the autumn and winter, projects are inevitably exposed to more varied and challenging weather conditions. On most construction sites a significant danger comes from high winds, especially relevant to workers operating at height. Regular forecasts are vital.

Understanding on-site weather conditions is crucial to ensure health and safety regulations are met.
This article is part of a series of Met Office/NEC articles designed to highlight weather impacts on the construction industry and how contractors can take the impacts into account during projects.

**PROJECT PLANNING**

Tailored forecasts can help inform resource planning and task scheduling. The hire of expensive equipment such as tower cranes or extra staff can be timed to avoid expected adverse weather conditions such as high winds, gales or sub-zero temperatures. Advance knowledge of such weather conditions enables the right level of staff to be engaged or staff to be deployed in other areas. The Met Office offers a tower crane forecast specifically designed to help decisions on hiring in expensive plant.

In order to help contractors overcome these problems and reduce the burden of weather on a build, a task-based weather information tool has been developed. WeatherWindows is a tailored weather-based planning tool that enables users to plan tasks effectively and efficiently up to 15 days ahead.

It can help users identify windows of opportunity and timetable tasks with confidence. It can also help to reduce the cost of weather-related disruption to construction projects and keep work on schedule. Users can set the weather parameters and thresholds tailored to their specific build. For example a heavy lifting task may have sensitivities to wind.

Thresholds would be set for winds below 9 m/s (18 knots equivalent) with visibility greater than 50 m. The system then displays weather forecasts and the windows of opportunity users have over the next 14 days to carry out the defined tasks. The product uses a simple red, amber, green colour-coding system, so users can quickly and easily identify the optimum time to complete tasks. The system also provides users with an alert to ensure they remain up to date with the latest weather developments.

**TAILORED FORECASTS**

The various forecast services available, tailored to individual sites and projects; inform contractors to help achieve their project goals on time, with efficient use of resources.

A major factor in guaranteeing the success of a construction project is a proper understanding of the nature and changeability of the UK weather. Weather and climate data intelligence can help make the complicated task of running a construction site much simpler and safer.