



**PDMA**  
CONSULTING ENGINEERS

A case study in  
temporary works



(fig 1)

**Project:** Beulah Hill

**Client:** Charles Edward Limited

---

## Capping beam and propping design for sloping site

Charles Edward Limited, a new kind of construction firm, delivering turnkey fit out, refurbishment and new build projects across London, the South East and beyond, is redeveloping a sloping site at Beulah Hill in South London.

The proposed building will cut into the slope, which is particularly steep, so required a contiguous pile retaining wall on the two uphill sides to allow the site to be excavated safely. The piles have a capping beam at the top which required propping whilst in the temporary situation.

### Experience makes the appointment

PDMA Consulting Engineers, the temporary works specialist with a great deal of experience designing similar projects, was appointed by Charles Edward Limited (CEL) to design the propping system and to detail the reinforcement in the capping beam to suit.

The props are up to 35m long and it was possible to use only two props in the temporary situation to offer the least obstruction to the permanent works to be undertaken. However, the capping beam carries large bending moments and shear forces between the props, which required a change in the design.

PDMA re-detailed the reinforcement of the capping beam to suit these load effects, which in places required two layers of 8no H40 bars in each face. We also specified 10mm aggregate to help achieve full embedment of the bars in the concrete.

---

(fig 1)  
35m long prop



(fig 2)



(fig 3)



(fig 4)

## From a different angle

On this project PDMA specified props from RMD Kwikform's Tubeshor hybrid hydraulic tubular shoring system, ideally suited due to their unrivalled axial load capacity and high axial stiffness.

The angle between the prop and the capping beam is about 45° but varies both horizontally and vertically due to the geometry of the permanent works.

With the heavy reinforcement and high prop loads it would have been difficult to post-drill fixings for the props, so we specified reinforced concrete corbels to be cast at the same time as the capping beam. The angle and size of the faces were dimensioned to suit the exact angle of each prop.

However, experience dictates that nothing on a site will ever be exact, so the use of the RMD spherical bearings at the end of each prop, which offer 5 degrees of rotational freedom in any plane, provides additional assurance that the props will fit perfectly.

To further ensure a good fit, the inner section of each prop extends by up to 800mm and is threaded to enable mechanical lock-off using a screwed collar. This arrangement removes the need to rely on hydraulics only for the duration and increases the allowable working load for each prop to 4500kN.

*I worked with RMD Kwikform on the initial development of these props and had been looking for the right project on which to specify them. On this job our client was concerned about leaving the load for a long period on hydraulics, so the Tubeshor props with their mechanical lock-off, were the ideal solution to remove any concerns.*

(fig 2)  
Excavating around props

(fig 3)  
Detail of spherical bearing and  
RC corbel

(fig 4)  
Work on site made the most of  
the dry weather

## HIGHLIGHTS

---

- Propping system with only two temporary props to maximise working space
- RMD Kwikform Tubeshor props with mechanical locking collars used
- Reinforcement in capping beam re-detailed to suit specified props

0808 196 1460  
info@pdmace.com

To view more case studies, visit  
[www.pdmace.com](http://www.pdmace.com)

**Head Office**  
PDMA Consulting Engineers Limited,  
Concorde House,  
Union Drive,  
Sutton Coldfield,  
West Midlands, B73 5TE