



## Ropelink Article – Industrial Rope Access Techniques in the USA

### How rope access is helping preserve America's heritage.

(Title can be changed to reflect the interests of the target magazine).

Many of America's most significant and prestigious public buildings were constructed at the turn of the 20th century. These structures are often a source of immense civic pride and many are now recognised as National Historic Landmarks, a fine example being Milwaukee City Hall. All buildings require regular structural inspections and ongoing maintenance to ensure longevity, and this is particularly true for the nation's older building stock. Ironically, a relatively modern approach to inspection and maintenance – 'industrial rope access techniques' – is playing an ever greater role in preserving America's heritage.

Industrial rope access techniques – typically abbreviated to 'rope access' – first appeared in Europe in the late 1970s and are now recognised as a mainstream construction skill in many countries including France, Germany and the United Kingdom. For example, rope access was used by American company Birdair to install the world's largest tensile membrane roof on the Millennium Dome in London and is the preferred method for protective coating application on the Eiffel Tower in Paris.

The first rope access technicians were primarily cavers or climbers who applied the skills learnt at the rock face to access building facades. Over time, specific rope access techniques and protocols were developed, primarily in the form of enhanced safety procedures. All rope access technicians now have a primary rope which they use to ascend and descend, and a secondary safety rope: each rope has an independent anchorage point. Small hand tools are secured using lanyards attached to the technician's harness and larger equipment such as masonry drills is suspended on a separate rope. Due to stringent training and evaluation prior to qualification, rope access has a truly remarkable safety record. (It may be worth including some specific statistics here).

Despite their popularity in Europe, rope access techniques did not reach the United States until the mid-1990's when an Englishman, Rehan Siddiqui, established Ropelink Inc in New York. "I remember giving a presentation to American civil and structural engineering companies at the British Consulate General in New York in 1996", explains Siddiqui. "The reaction from the audience ranged from downright scepticism, through cautious interest, to enthusiastic acceptance from structural engineering consultants who could immediately see the benefits for inspection and maintenance activities."

Milwaukee City Hall was built between 1895-96 and in April 2005 was officially designated a National Historic Landmark. A tall, ornate, terracotta structure with a copper roof, Milwaukee City Hall is now in the throes of a comprehensive restoration program based on information obtained by Ropelink's rope access teams for the project's structural engineers. Whilst the restoration program was being detailed and

sent out to tender it was decided to undertake preventative stabilization works to protect the public from the potential danger of falling masonry caused by freeze-thaw action on the structure's façade. The installation of swing stages was ruled out due to constricted space at roof level which would have made moving the stages an extremely laborious process and so rope access was again used to remove and lower the most dangerous elements to the ground and to fix catch netting over other areas identified as being a hazard.

It is an easily-held misconception to believe that rope access is only used on skyscrapers. The Wadsworth Atheneum in Hartford, Connecticut is the oldest public art museum in the US and was established as far back as 1842. A building built on classical lines sitting proudly in ornate gardens with trees close by, the Wadsworth Atheneum is probably no more than 25m high. In this case rope access was the preferred solution for safety works involving the pinning of ornate external dentelles (couldn't find a clear definition on the web) using stainless steel dowels held in place by resin (is this correct?). According to Siddiqui, one of the beauties of rope access is that a teams' equipment is lightweight and hand-carried, and the team can therefore take full advantage of limited time windows." Because the Atheneum is such a striking focal point in Hartford the Museum's trustees wanted to keep the work as low key as possible. Unsurprisingly, with works by Dali, Monet and Jackson Pollock on display, security is a priority. I was able to allay the trustees concerns by explaining that we would be able to remove all equipment and materials from site at the end of each shift – something that's not easy to achieve with scaffolding!"

Rope access is often used inside buildings, for example the hoisting into position of lighting modules in the space-framed glass pavilion at the John F Kennedy Presidential Library and Museum in Boston. In the Luzerne County Courthouse at Wilkes-Barre in Pennsylvania water was leaking through a skylight in the dramatic dome, damaging plasterwork and the ornate stained glass window in the rotunda. Ropelink's teams, working at night, removed each segment of the window piece-by-piece, wrapped them in a protective covering, and lowered them 100ft to the marble floor below. A safety net was then fixed in position to catch any material that may fall whilst the skylight is being repaired. According to the local newspaper, Citizen's Voice, '...the county toyed with the idea of using scaffolding instead of Ropelink but the price level and danger escalated.'

A startling example of the savings which rope access can generate on the right project is provided by a tactile façade inspection undertaken by Ropelink on the New York State capitol building in Albany. Built in 1899, and inspired by the Hotel de Ville in Paris, traditional access costs alone were estimated at \$200,000. According to Siddiqui, Ropelink was able to both access the site and collect inspection data for the structural engineers for just over \$20,000! Siddiqui is quick to point out that Ropelink is not in competition with engineers: "Our job is to record and collate matters of fact potentially using non-destructive testing, coring, digital photographs or live video links. The role of the engineer is to use his or her knowledge and experience to deliver an opinion based on the information we provide. We've trained several engineers in rope access techniques and they love it because they can get close-up and hands-on rather than relying on binoculars. Ropelink has always been able to maintain strong relationships with engineers. I think this is because our Contracts Director, Hamid Voussoughi PE, is a Cornell-trained structural engineer who previously worked for consulting engineers, Simpson, Gumpertz and Heger (SGH) Inc."

Siddiqui believes that rope access in the US is finally coming of age. “The ASTM International E06 sub-committee on rope access is close to approving a ‘Standard Practice for Industrial Rope Access’. We’re being asked to work on an ever greater variety of structures including the MIT Haystacks Observatory in Massachusetts, the NASA-JPL radial telescope in the Mojave desert ,and the Brooklyn Tunnel ventilation shafts. It’s particularly satisfying to become more involved in major construction projects and building maintenance. It’s recognition, for example, that rope access can be used for coating application, electrical works, and concrete repairs. We’ve just finished installing snow guards on the roof of an NFL stadium on the Eastern Seaboard.”

And the coup de grace? The US Army has contracted Ropelink to train its Corps of Engineers in Philadelphia!