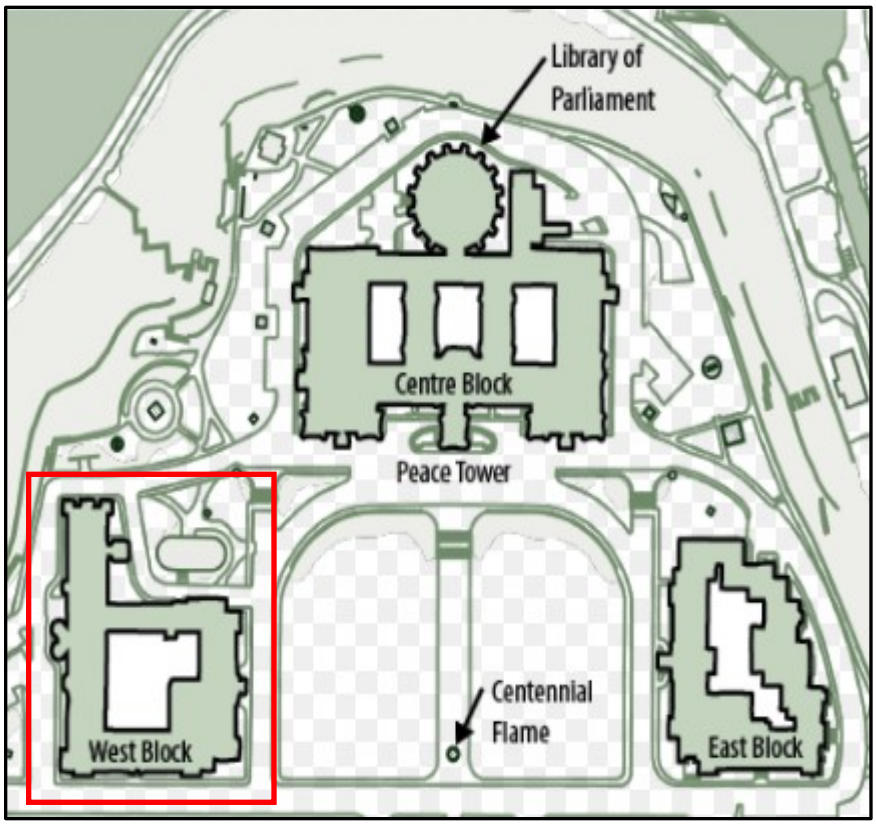
The Canadian Parliament

The Centre Block of the parliament buildings accommodates the House of Commons and the Senate. All Canadian law originates here. The original building was constructed between 1860 and 1865. After the fire of February 1916, which totally destroyed the building except for the library, the building was rebuilt of Nepean Sandstone.

The West Block, also constructed in 1860, was added to in 1878 and has also seen a major fire which in 1897 damaged the top stories. Today the building contains the offices of the members of Parliament and staff, together with the Confederation room which is used for some state occasions. Major repair and restoration work has been carried out to ensure that these historic buildings continue to serve Canadians for many years to come. CINTEC was involved in major repair to both these buildings. Walls of the Senate Tower were stabilized above the roof level using 5 metre-long fully socked 12mm and 16mm dia. threaded rod anchors. Gargoyles on the four corners were stabilized with anchors drilled from the inside of the tower into the back side of this prominent architectural element.

Pavilion walls on the south side of the building were secured to the floor diaphragms using 4 metres long anchors installed through three steel floor beams, and pairs of diagonal anchors. The anchors were modified on site to suit the condition of the floor structure. Chimneys on the south side of the Centre Block roof are being secured to the roof structure using long anchors through the chimney. The anchors either end in attic walls or expand around steel roof beams.

West Block- The Canadian Parliament Buildings - Ottawa, Canada



Cintec West Block Restoration The West Block was constructed between 1860 and 1865. In 1897 the building was damaged by fire. The West Block is one of the three buildings on Parliament Hill in Ottawa, Ontario that forms part of the Parliamentary precinct. The West Block after renovation now houses offices for Parliamentarians, a branch of the Library of Parliament, committee rooms, and some preserved pre-Confederation spaces, which are used for some state occasions. All Canadian laws now originate here.

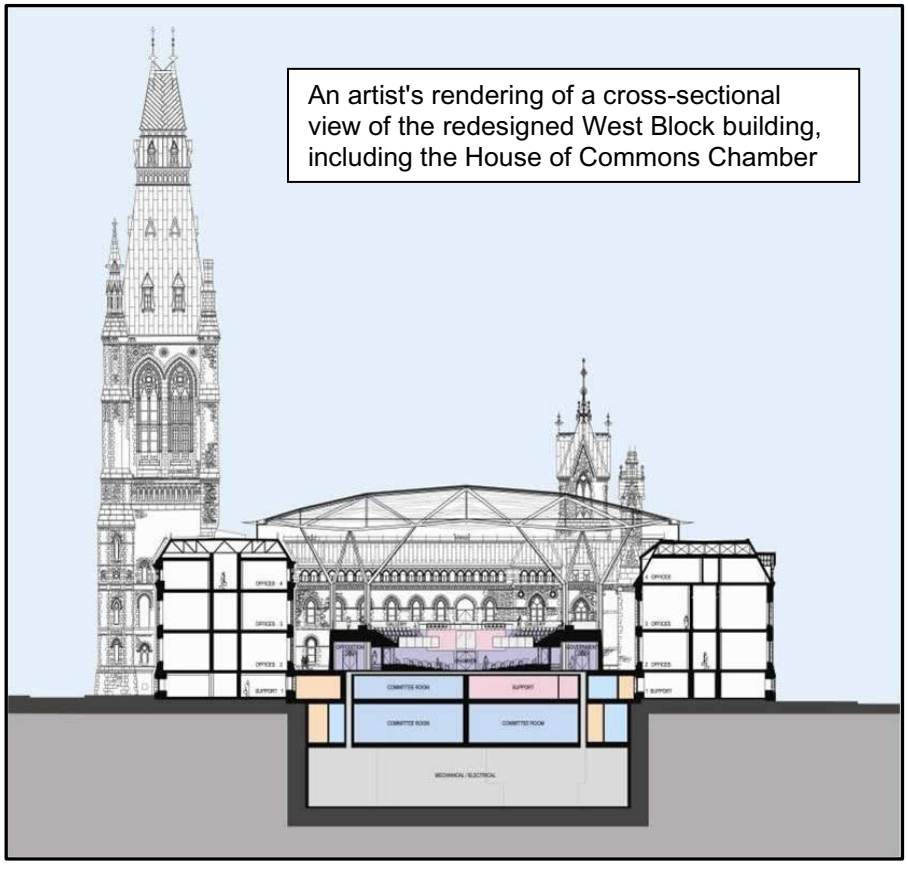
The world has changed radically since the Parliament Buildings were completed. The stone buildings, although repaired over the years, had begun to deteriorate.

Cintec first started work on the west block in 1994 when Cintec reinforcement anchors were installed in the south west tower by Public Works based at Plouffe Park Ottawa. Since then, the West Block has been fully restored and modernized. This is a write up of our involvement in the restoration of the West Block.

The massive $863-million West Block Restoration Project is just one of several projects — including Centre Block and the East Block — that will require the skills of stonemasons until 2030. The entire parliamentary precinct facelift is expected to cost in the range of $5 billion.

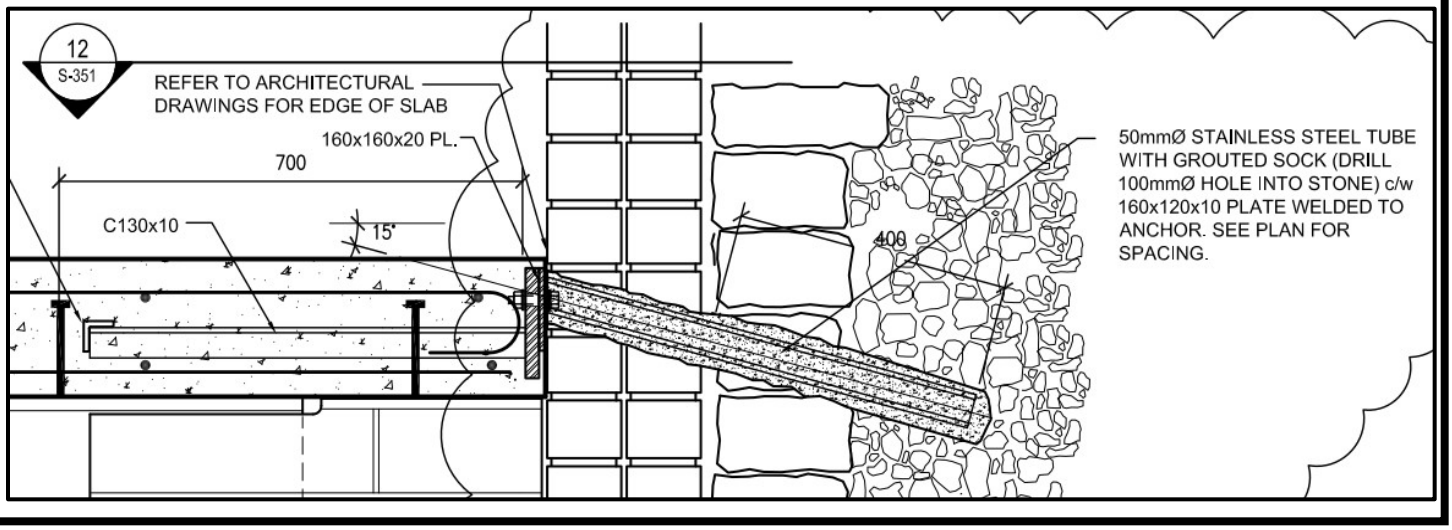
Major renovation of the West Block began in 2011, and the renovated building opened on 28 January 2019. Repair and restoration work has been carried out to ensure that these historic buildings continue to serve Canadians for many years to come.

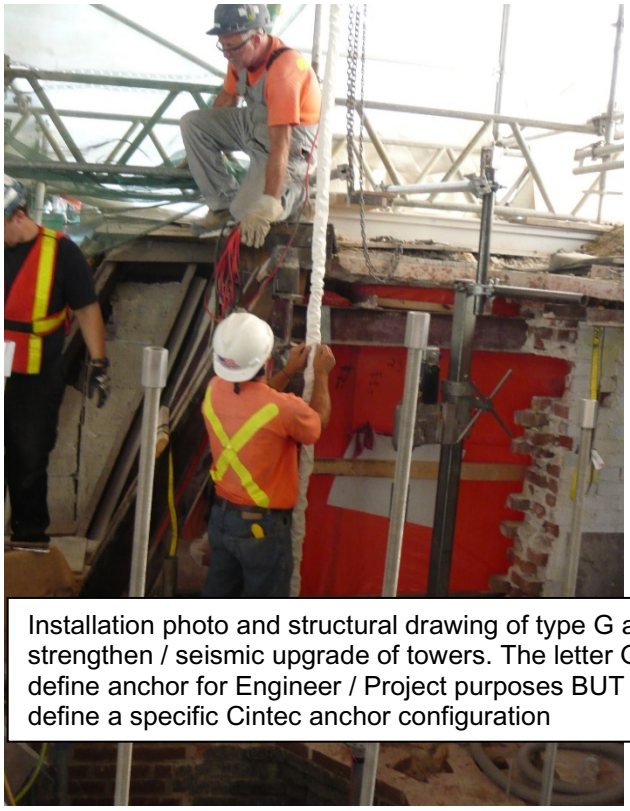
The restoration of the West Block of Parliament is one of the largest rehabilitation projects in North America. The 19th-century building was completely modernized with state-of-the-art facilities, while the heritage and character-defining elements were preserved with the utmost respect and sensitivity.



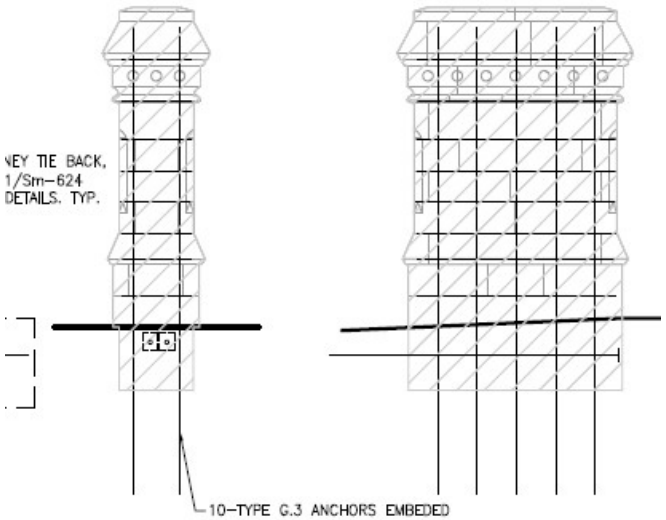
An artist's rendering of a cross-sectional view of the redesigned West Block building, including the House of Commons Chamber

Photo of actual anchor and Structural plan showing detail to attach existing structure to new slabs



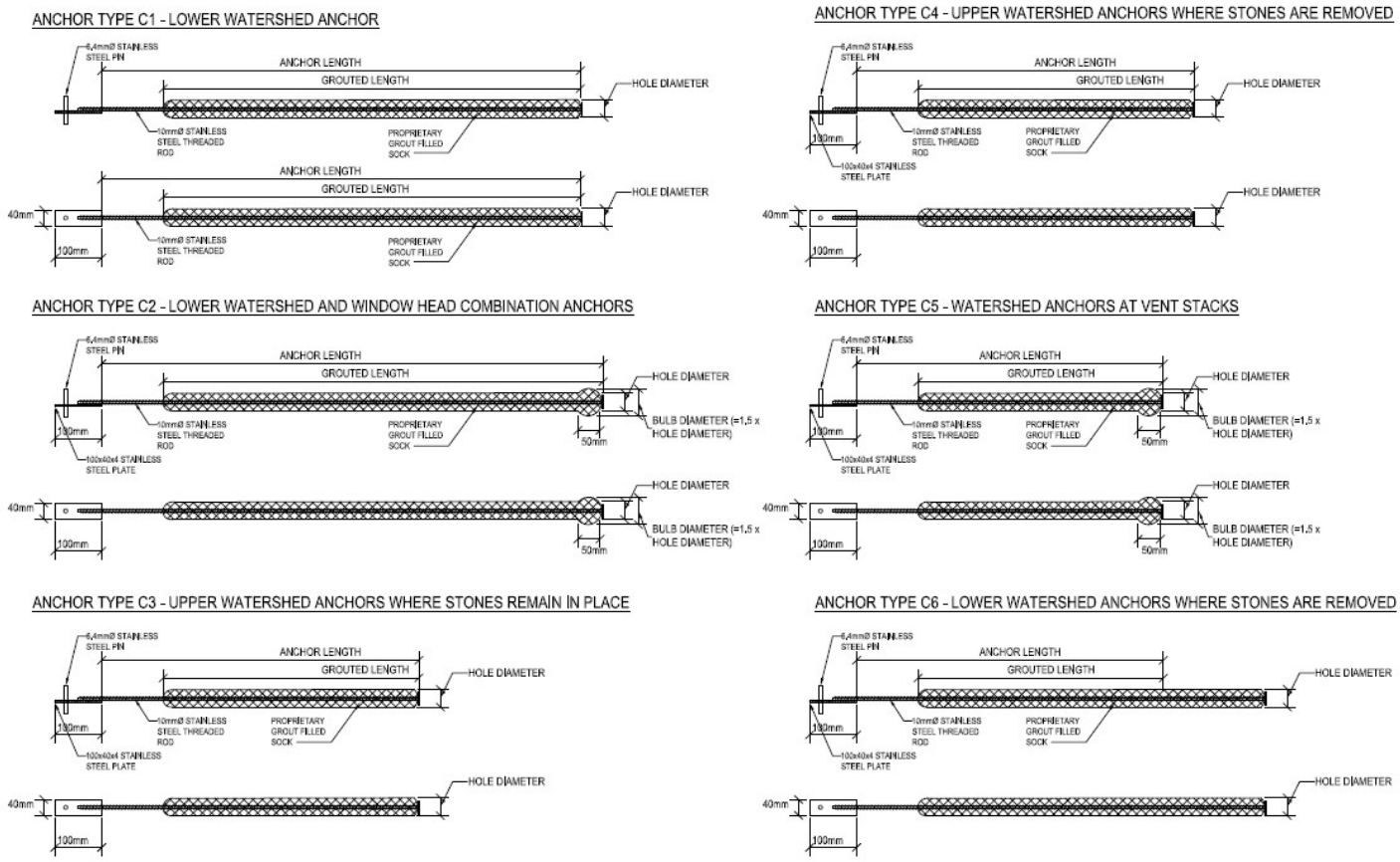


Installation photo and structural drawing of type G anchor used to strengthen / seismic upgrade of towers. The letter G was used to define anchor for Engineer / Project purposes BUT does not define a specific Cintec anchor configuration



13 Sm-540 CH14- WEST 1:50

14 Sm-540 CH14- SOUTH 1:50



Anchors in this panel (Type C, Engineer defined) were used throughout the Project for wall consolidation and attaching stone façade to brick substrate. Much larger and robust anchors were used to strengthen walls and improve seismic response.

The central courtyard of the West Block was transformed into a temporary chamber for the House of Commons (see anchors used above). The new chamber is surrounded by exterior stone walls and covered by a glass dome roof which lets in natural sunlight (see below). Multiple underground levels as well as planned tunnel connections to other Parliament Hill buildings were constructed out of dug-out bedrock under the West Block during the extensive renovations

An artist's rendering of the redesigned West Block building and courtyard infill glass dome roof.

CINTEC played a major part in the repair of the West Block with its anchors providing seismic and structural reinforcement of the building – almost 10,000 were used at West Block with many more slated for the East Block restoration work now underway (completion 2021), and the Centre Block, largest of the three buildings, which began renovation in 2019 and will continue to 2030. At its peak, more than 200 masons worked on the West Block building daily; the overall project is estimated to have created or sustained approximately 5,000 jobs. Now that the building has been repaired and cleaned, it shows off the stone the way it originally looked, before decades of deterioration. The current Canadian 5 dollar note that was introduced in 2013 now features a hologram of the Mackenzie Tower from the West Block.

The anchor or reinforcement consists of three components - steel, sock and grout. The first is the reinforcing bar which comes in a variety of forms such as solid, hollow, round or square. Steel configuration is determined by project requirements such as load and application. It is, in this case, stainless-steel Type 304 but we have also used Type 316 for greater corrosion resistance and Type 2205 where higher strengths are needed. Cintec manufactures to the specific requirements of the project and therefore may use other types of stainless steel as well.

The second is the sock. The sock is a woven polyester sleeve that can expand horizontally but not longitudinally. Redundant to the process once inflated and the grout has set, the sock is critical in the installation procedures to contain and retain the grout. Wetting the sock, prior to inflation, “conditions” it to allow the bonding grout milk to flow through yet traps the micro cement particles and prevents uncontrolled grout flow. This facilitates an even expansion along its entire length for bonding with substrate where contact is made and expansion of system into voids when possible. Manufactured by Cintec, to stringent standards, this proprietary sock is available in 1” to 12” diameter and unlimited length.
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The grout is the third component of the Cintec Reinforcement System and is a specially engineered Mineral Bound Injection Grout with no artificial additives. This cementitious grout consists of very fine particles (micro cement) that can be injected over considerable distances. It is non shrink, non expansive and impervious to absorption when set. The patented grout is manufactured in Germany to Cintec standards. Stringent mixing and injection procedures are provided as part of Cintec’s Quality Control program and must be implement by Cintec certified installers only. Use of any other grout, in the Cintec Reinforcement system - that has not been pre-approved by Cintec, is not allowed and voids any warranty.

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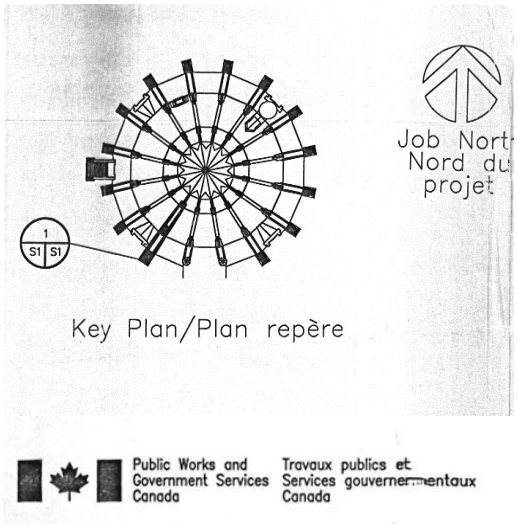
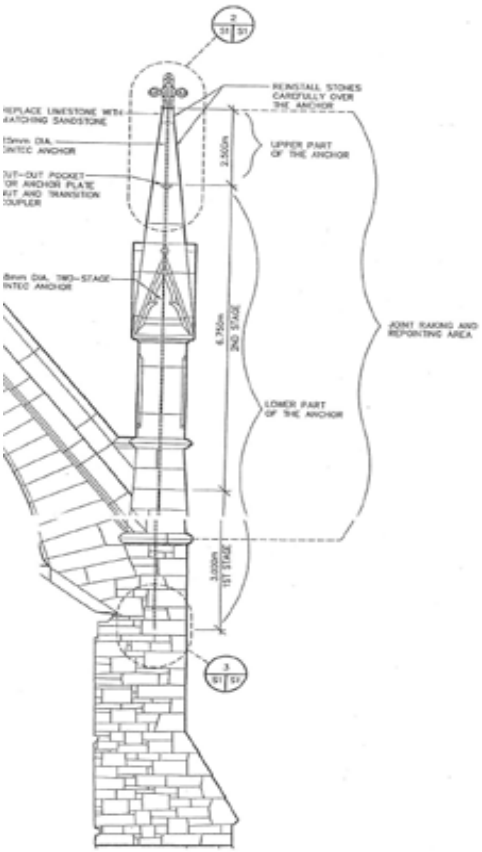
THE LIBRARY OF PARLIAMENT OTTAWA CANADA [THE ONLY PART TO SURVIVE THE FIRE OF Feb 3 1916 [

it is thanks in large part to the first Parliamentary Librarian, **Alpheus Todd**, that the Library was preserved from the fire that destroyed Canada's main parliament building on February 3, 1916. He suggested to the building's architects that a hallway and fireproof iron doors separate the Library from Centre Block.]

THE REINFORCEMENT & STABISATION OF THE BUTRESS & PINNACLES WITH 2 stage post tensioned Cintec Reinforcement Anchors up to 35.5 Ft [10.8m] long





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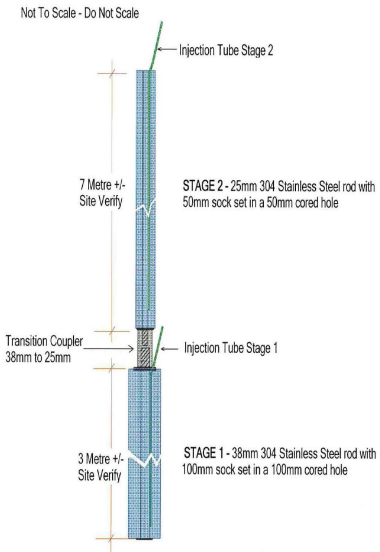

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