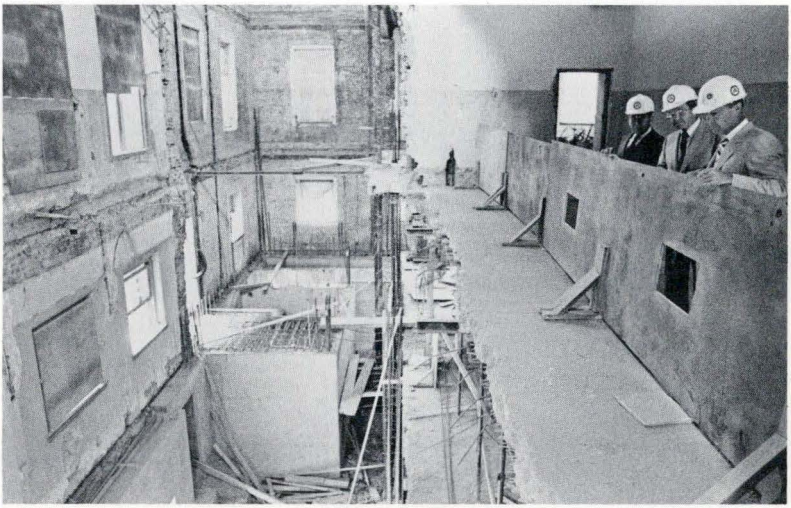
Other Technical Aspects

At the turn of the century, fireproofing was an issue. It is now a routine requirement in buildings in most categories and an absolute requirement in the construction of public spaces. The San Francisco earthquake of 1906 was the impetus that ultimately led to earthquake-proofing as a necessary structural requirement in new public and multi-storey buildings. Rattenbury, who was interested in engineering matters, had this response to the devastating tremor mentioned above:

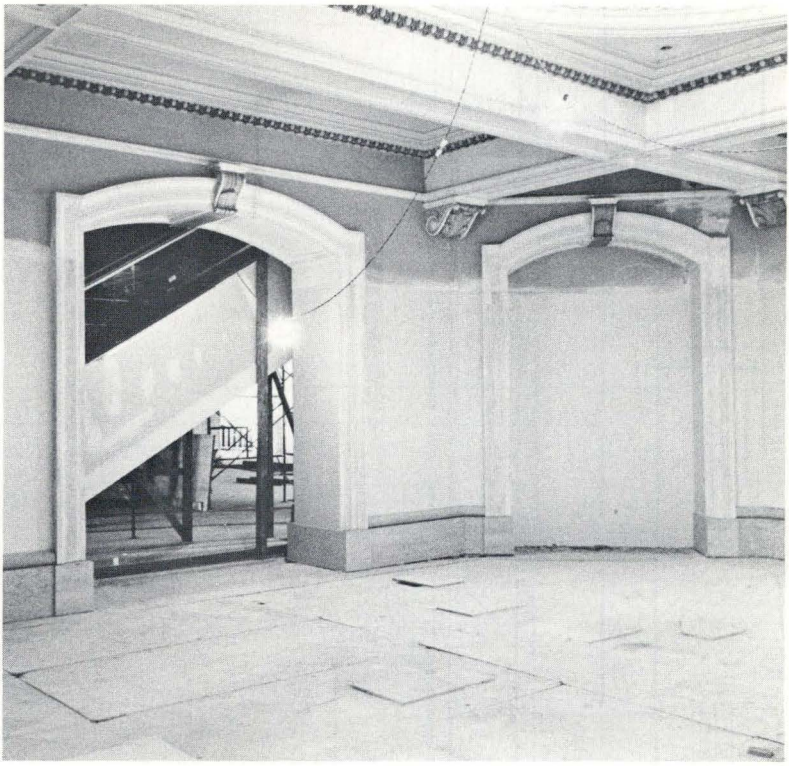
> ... I am looking forward anxiously for the morning papers.... they knew that they were living over the earthquake belt. They have often had tremblings, ... so that for years they built their costliest buildings of wood, buildings lined inside with ebony and marble. But recently they seem to have forgotten past experiences and have been building steel structures towering into the skies and now comes another earthquake and apparently down they have come.... (qtd. in Barret et al. 175-176)

He would be pleased that portions of the new buildings at Robson Square and sections of his Old Courthouse have been designed to withstand the effects of motion. Indeed, one of the most challenging technical aspects in the conversion of the Courthouse is the new structural system. This is reflected in the construction cost of 3,472,000 dollars in the main gallery alone. A description of the structural system prepared by Noel Best, Designer and Project Architect for the VAG renovation, is included below.

> Because of the program requirement for large free span spaces in the galleries, and the City requirement that this building now meet the current earthquake codes, the old masonry structure of the entire building had to be replaced. The new concrete structure is not, in itself, complicated. What was difficult was to develop a strategy for removing the old structure and inserting the new without the building falling down in the interim. To this end Bogue Babicki and Associates, the structural engineers, and Turnbull and Gale, the contractors, developed a procedure for building the new structure upside down, from the top to the bottom rather than from the ground up.

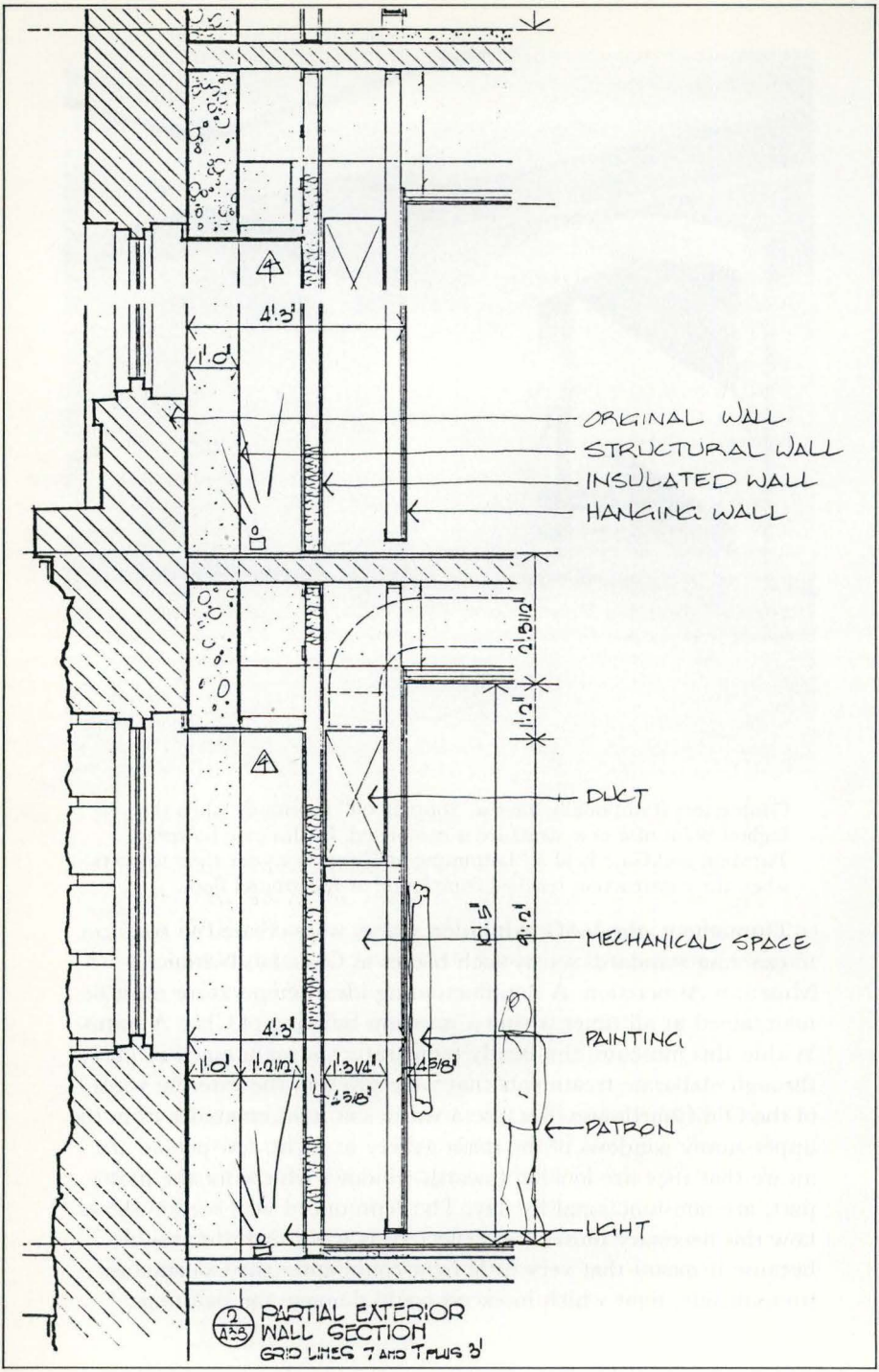


This procedure worked as follows. First, holes were punched through all five floors of the old structure where the vertical elements of the new concrete work would be placed. These elements include the new concrete shell around the perimeter, the elevator and stair cores and four new columns. These new concrete elements were then poured into place, one storey at a time from the foundations up to the roof. At this point, despite these violations to the original masonry structure, the building was still supported on the old system of walls and columns with the new concrete rising independently through the holes. Then starting at the top of the building, floor by floor the horizontal elements of the old structure, the beams and floor slabs, were removed, and the new concrete slabs and beams poured into connections with the new vertical elements. By this method the demolition and new structure proceeded down the building until completion at the ground floor. This description is a simplified version of what actually took place, many complicated side manoeuvres were required, but essentially this procedural concept was followed. This method provided the construction team with two major advantages. First, by proceeding from the top down the immense weight of the original masonry structure need never be supported by the new structure, the new only had to support the new; and second, the debris of the old slabs and masonry supporting walls could be thrown down and removed through the old structure, rather than jeopardizing new concrete. . . .



Contractors traditionally have a "topping off" ceremony when the highest point of a new structure is completed. In this case however, Turnbull and Gale held a "bottoming out" ceremony for their workers when the construction reached completion at the ground floor.

Throughout, the VAG exhibition spaces were created to conform to exacting standards set by such bodies as Canada's National Museums Association. A non-fluctuating ideal temperature must be maintained at all times within a museum building of Class A status. Within this museum, the steady temperature is maintained in part through elaborate treatments that were given to the external walls of the Old Courthouse. Because a warm soft light emanates from the upper storey windows of the main gallery at night, few people are aware that they are looking towards windows which, for the most part, are non-functional by day. The reproduced wall section shows how this necessary illusion was effected. It was worth the trouble because it meant that very little light could enter the Courthouse from outside, light which in excess could damage the paintings.


4'-3"
1'-0"
ORIGINAL WALL
STRUCTURAL WALL
INSULATED WALL
HANGING WALL
2'-5 1/2"
1'-2"
DUCT
10'-5"
9'-2"
MECHANICAL SPACE
4'-3"
1'-0"
1'-2 1/2"
1'-3 1/4"
4 5/8"
3 3/8"
PAINTING
PATRON
LIGHT
2
A2.3
PARTIAL EXTERIOR WALL SECTION
GRID LINES 7 AND 7 PLUS 3'

These words describe the diagram and cast more precise illumination on the measures taken:

> The exterior wall of Gallery building is now made up of four separate walls:
>
> The first is the original stone wall of the building, constructed of granite and sandstone facing fastened to the brick bearing wall. The original windows have been left intact.
>
> Immediately behind this is the new 12″ concrete wall which now provides the structure for the building. This is pinned to the original wall with 1″ steel dowels.
>
> There is then a space of 14″ before the third wall, the insulating wall, which is constructed of gypsum wallboard, steel studs and insulation. Between the second and third walls, there is a continuous strip of fluorescent lights running along the floor parallel to the windows.
>
> There is then a space of 15″ before the fourth wall, the hanging wall. This is a mechanical space bringing the supply and return air to and from the mechanical rooms out into the galleries. The wall itself is built of steel studs and gypsum wallboard with a ½″ plywood backing. This plywood provides firm support for hanging the works of art.
>
> Together these four walls perform a variety of functions. A number of these are explained below.
>
> One of the critical problems was to provide the long runs of uninterrupted wall space for hanging the works of art, without merely blocking off the windows and thereby giving the exterior of the building a dead appearance. By placing the insulated wall approximately four feet back from the glass, painting it a dark neutral colour and lighting this space from the floor, the visual impression from the exterior is that of a space of indeterminate depth. At night the windows give off a soft glow.

There are, of course, many other technical features that could be described as museum requirements. Many additional aesthetic considerations incorporated into the design make the VAG not simply a functioning art gallery, but also a museum in itself a work of art.

* * *

The information contained in all sections of this monograph is intended to describe only some aspects of the progress of three building schemes that were carried out in two major structures on the Robson Square site. What is recorded is sufficient to put to rest the often-voiced assumption that only traditional (pre-modern) architecture was built with care and a desire to create beauty. In the essay which follows, the reader will be taken visually and verbally on a walk through the square.