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Engineering Building
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Alternate Names
Farm Machinery Building
Agriculture Laboratory
Agriculture Engineering Building
Old Engineering Building

Architect(s)
David R. Brown and Hugh Vallance, Brown and Vallance Architects, Montreal
G.J.K. Verbeke, Saskatoon

Builders
Bennett and White Construction
W.C. Wells Construction

Construction Dates
1910-1912, additions in 1920, 1923, reconstruction 1925

Recognition
University of Saskatchewan ‘B’ Listed

1. Statement of Significance

The Engineering Building was originally built between 1910 and 1912 to house the Agricultural Engineering Department. It was built in the Collegiate Gothic style, similar to the rest of the campus, but in red brick rather than in ‘greystone.’ It was the first University of Saskatchewan building completed, and the structure was added to in 1913 and 1923 before fire devastated it on March 13, 1925. Figure 1 shows the extent of damage. The building was reconstructed in 1925, and has been added to many times since then. The age of the building, as well as the existence of some remaining original architectural elements and surviving portions of the reconstructed building give parts of the Engineering Building heritage value. In particular, the brick exterior elevations on the southern portion of the building, which date from 1925, are important heritage elements in excellent condition.
Following the fire, reconstruction began immediately. The bricks and foundation of the original building were recovered and used in the reconstruction. The Engineering Building had been built originally for $296,000, a sum for which the university found they had been underinsured. The burning of $57,000 worth of equipment intensified the problem. With insurance only providing $114,000, reconstruction required all of the university’s available resources at the time. The undertaking led to the postponement of many other projects such as the much anticipated Arts Building. The pressing need to rebuild is evidence of the importance of this building to the university at that time. Figure 2 shows the approximate location of the remaining portions of the 1925 reconstruction in relation to the current plan. The reconstructed building dating from 1925, including surviving elements of the original construction of 1910-12, is the focus of this report.

The Engineering Building’s floors are referred to as basement, ground floor, first floor etc.

### 2. Character - Defining Elements

#### 2.1 Materials

The oldest portions of the building have exterior walls of red-brown brick with Indiana limestone accents. From the outset, brick was used to denote service buildings at the University of Saskatchewan. For example, the Livestock Pavilion and the Power House were both built in brick. This material categorization defined the character of engineering at the time; it was viewed as a service discipline.
The exterior walls feature extensive glazing, consisting of single-glazed windows in rolled steel frames. The window frames are original to the 1925 reconstruction, and are in excellent condition. They have been covered on the interior by double-glazed aluminum-framed inserts, to improve their thermal performance (Figure 3). The exterior brick walls and steel-framed windows on the southern portion of the building are important heritage elements with excellent commemorative integrity.

Window sills, decorative string courses and crenellation are all built in Indiana limestone (Figure 4). (For further information on building stones used at the U of S, refer to ‘Appendix: Stone’.) The roofing materials - slate tile with copper flashings - are character-defining elements that link the Engineering Building to other campus buildings. Flat roofs, not visible from the exterior of the building, were originally roofed with tar and gravel, which has since been replaced with a membrane roofing system (Figure 5). Windows were framed in rolled steel with steel hardware. The threshold to the southwest entrance to the building is granite, another material characteristic of early University of Saskatchewan buildings.

The interior of the building now features virtually no material elements dating from 1925 or earlier. The 1912
building had wooden walls and floors. Interior photographs of the original building also show some walls of plaster with brick wainscoting. The restoration of the building following the fire saw the installation of ceramic tile walls and concrete floors. These materials were almost completely removed during a major expansion of the building between 1977 and 1983. All original interior doors and frames have been replaced by steel doors and frames.

The staircase shown in Figure 7 is one of the few character-defining elements dating from the reconstruction of 1925. This staircase features oak banisters and a balustrade of steel and iron. These materials are seen on staircases in numerous early university buildings and are important character-defining elements. The staircase itself is in a reasonably good state of commemorative integrity with few modifications. Treads, which were originally slate, have been replaced by terrazzo. However, the original stairwell is largely obscured by paint, coatings and replacement materials. Figure 8 shows the 1925 drawings of the staircase.

Notably, some of the materials of the original structure that was destroyed by fire in 1925 were preserved. Some of the brick that makes up the reconstructed portion of the building was salvaged from the fire. The concrete foundation of the original building was also re-used, with the newer building built directly on top of the original base. Even some old windows were reused.
2.2 Form

The form of the Engineering Building has been altered to a great degree by later additions. Elements of the 1925 form are still discernible. The southern facade is still visible and the reconstruction of the building in 1925 was similar in form and appearance to the 1912 original (Figure 9). The forms of the both the 1912 and 1925 buildings were 2-storey brick masses with a 3rd attic storey under a pitched slate roof. Figure 10 shows the form of the building, after reconstruction. The 3rd story skylights were added in 1925.

Since then, several additions have been made to the building. In 1939 the west wing of the new building was extended northward to house the Mechanical Engineering laboratories and the Welding Shop. Further additions were completed in 1941, 1946 and 1963. Between 1977 and 1983 the entire building was overhauled and redesigned. These changes encompassed the replacement of the original portion of the single storey west wing and the construction of additions and renovations in what remained of the original building.

Through all of these works, the scale has been limited to three floors; however, the original shape of the building has been subsumed by the additions. Figure 11 shows the current form of the Engineering building in plan. Aside from their effect on the original form, the additions are beyond the scope of this report.
2.3 Style

With its arched openings, slate tile roofing and crenellation, the Engineering Building can be classified as Collegiate Gothic in style. However, the building was designed in a simplified version of the style, and features fewer Collegiate Gothic elements than many of its main campus counterparts. The southern facade of the 1925 building is divided up into a number of structural bays separated by brick piers. Large steel-framed windows are a prominent feature of the elevations. Principle windows and entrances are accentuated by shallow brick arches (Figure 11).

Also visible on the façade are narrow decorative slots styled as archer windows. Crenellation along the roofline follows the rhythm of the structural bays. Drainage spouts are embellished in Indiana Limestone as shown in Figure 13. Limestone is also used to detail decorative string courses.

The interior of the surviving 1925 structure has virtually no original Collegiate Gothic elements. Arched exterior windows are visible from inside the stairwell; Figure 14 shows one such arched window. A staircase, seen in Figure 7, features a flower motif on its cast iron balustrade.

2.4 Location

Set outside the immediate grouping of buildings around "The Bowl", the Engineering Building differentiated itself as a brick building on the outskirts of the campus. This carefully considered location reveals the prevailing view of engineering at the time as a service profession. The Engineering Building was not depicted in the 1909 Campus Plan, but its location, shown in Figure 12, is original to the initial construction in 1912. Its location, outside, but near The Bowl, remains a character-defining element.

The main campus has grown to surround the Engineering Building with other academic buildings such as the Agriculture Building and the Veterinary Medicine College. These additions to the area have integrated the Engineering Building with the core of the university campus.
2.5 Spatial Configuration

The Engineering Building was originally designed to hold machinery and plant science exhibits for classes, among other functions. It was therefore characterized by a large, open floor plan with rooms substantial enough to hold the large equipment of the period. In 1913, a 72’ by 122’ addition was constructed, including a test lab for building materials, a civil engineering lecture room, a classroom, a farm mechanics workroom and a third floor for the study of farm machinery. In 1917 the building was again extended to house a tractor lab. Figure 15 shows the floor plan for this extension.

Today, the building houses laboratories more compactly than in the past. Hallways connect these labs which are still housed in relatively large rooms as the need for large equipment and machinery has prevailed.

Updates to the building have changed the experience of the visitor. For example, the orientation of the building has been reversed. Originally, the main entrance faced south towards the main campus. The new main entrance faces north towards Campus Drive. The original main entrance has become a secondary entrance opening into a corridor serving laboratories. As the building floor plate has deepened, spaces that were formerly primarily lit by daylight are now artificially lit.

2.6 Systems

The original Engineering Building was supported by a wooden post and beam structure. Figure 16 shows this structural system being erected. When the building was reconstructed in 1925, the wooden structure was replaced with a steel frame. Below grade a concrete foundation supported the building. The concrete footings survived the 1925 fire and were reused in the reconstruction. These surviving foundations are a character-defining element of heritage significance. Figure 17 illustrates an original concrete column located in the basement of the building. In both their 1912 and 1925 iterations, the exterior walls of the building were load bearing structural elements.
2.7 Uses

The building was originally built to house the Agricultural Engineering Department. With this in mind Brown and Vallance Architects designed the lower floor for blacksmithing, cement work, engine construction and heavy farm machinery. The second floor held a lecture room, woodworking, carpentry, pumps and farm equipment. The third floor was a drafting room with light farm equipment. In 1917, the second wing brought a test lab for building materials, a civil engineering lecture room, a classroom, a farm mechanics works room and a tractor lab. Civil and Hydraulic engineering were added in a 1921 addition. Figure 18 shows a classroom lecture in progress, and Figure 19 shows the blacksmith’s lab in which hands-on learning took place.

The Engineering Building held classes in field husbandry for many years and housed numerous plant exhibits. The fire in 1925 incinerated all of that year’s seed stock, and subsequently Field Husbandry was given its own building.

Figure 19. A workshop in the original Engineering Building with anvils and forges standing in rows. Photo A-398 retrieved from http://scaa.sk.ca/gallery/uofs_buildings/

Figure 20. The ‘old portion’ of the Engineering Building that survived the fire. Photo A-4914 retrieved from http://scaa.sk.ca/gallery/uofs_buildings/
A portion of the original building survived the fire due to its unusual construction. The ceramics lab was built to withstand the heat of the kilns. A fire-proof kiln door and walls lined with fire brick helped to stop this room from succumbing to the fire. The ceramics curriculum was discontinued in the 1950’s and the ceramics lab no longer exists. Figure 20 shows the parts of the building that survived the fire.

With the reconstruction of the old portion of the building some new uses were added such as a smoking lounge for students, a new library, reading room, Dean and Assistant Dean’s offices, about 15 staff offices, drafting rooms, several lecture rooms, laboratories and postgraduate student offices.

While the specific uses of individual rooms has changed significantly due to the evolving nature of education, the continuous use of the building by the Faculty of Engineering is historically significant.

### 2.8 Cultural & Chronological Associations

Within the city of Saskatoon, the Engineering Building can be associated with two other structures. During the Great Depression of the 1930’s, the first Dean of Engineering, Chalmers Jack McKenzie, took it upon himself to build these structures as ‘make work’ projects. McKenzie took an interest in city planning and sought to build a bridge between the downtown and Broadway Avenue to prevent the former from becoming a slum. So passionate was he about the project that he ran and was elected Chairman of the City Planning Board in 1928. After winning acceptance for his proposal from City Council, McKenzie took a leave of absence from his duties at the university to lead the project. The Federal Government accepted the project on the basis that it created jobs; all labour had to be hired from the local relief office and no work that could be done by hand was to be carried out by machine in order that employment be maximized (Macdonald, 1982).

McKenzie and four engineering graduates from the previous year made up the engineering staff overseeing the work. During construction of the bridge between December 1931 and November 1932, 1593 men were employed. An additional allowance was made for the concrete bridge to be scoured of all rough spots and remnants of its wooden formwork. “It was indeed a hand rubbed piece of community furniture – it added jobs too.” (Macdonald, 1982). Now known as the Broadway Bridge, in its early years it was called the ‘Engineers Bridge’. The bridge is shown in Figure 21. In 2012, a plaque was unveiled at the east end of the Broadway Bridge, honouring C.J. MacKenzie and his role in its construction.
Four years later the same team of engineers with some minor staffing adjustments built a second bridge. Perhaps the last substantial reinforced concrete bowstring arch bridge designed and built in Canada, the ‘Ceepee’ Bridge was another ‘make work’ project designed to create community jobs. Labour came from the surrounding communities of Borden, Langham and Saskatoon. Later known as the Borden Bridge, it opened in 1937. This Bridge has the longest arch span of any similar design in North America and is shown in Figure 22.

3. Associated Objects

Graduation photographs documenting classes dating as far back as 1914 adorn the walls of the Engineering Building. These photographs are shown in Figure 23. Another item of heritage value related to engineering is a surveyors’ instrument and texts displayed within the building (Figure 24).

A plaque in the vestibule of the eastern entrance on the south facade declares the Engineering Building as the first University of Saskatchewan structure completed on campus. The plaque is shown in Figure 25.
4. Supporting Documents


Facilities Management Division (2011). Asset Resource Database [Data File]. Retrieved from \usask\fmddfs\files\iis\IIS_Public\ARS.


5. **Summary of Character - Defining Elements**

**Materials**
- red-brown brick
- Indiana limestone decoration
- single glazed windows
- rolled steel
- slate roof tiles
- copper flashings
- granite
- oak banisters
- steel and iron balustrade
- concrete

**Form**
- scale of three stories
- south facade

**Style**
- structural bays separated by piers
- large windows
- arches
- archer slots
- crenellation
- ornamented drainage spouts (scuppers)
- string courses
- flower motif on balustrade
- slate tile roof

**Location**
- outside of The Bowl between academic and service spheres of the university

**Spatial Configuration**
- large, open plan rooms

**Systems**
- concrete footings which survived fire

**Use(s)**
- engineering (blacksmithing, cement work, engine construction, heavy farm machinery, lecture rooms, woodworking carpentrt, drafting, material testing, ceramics, etc)
- field husbandry

**Cultural & Chronological Associations**
- Broadway Bridge
- ‘CeePee’ or Borden Bridge