

# A Walk Through the City of Edmonton

## Integrated Infrastructure and Engineering Services, City of Edmonton

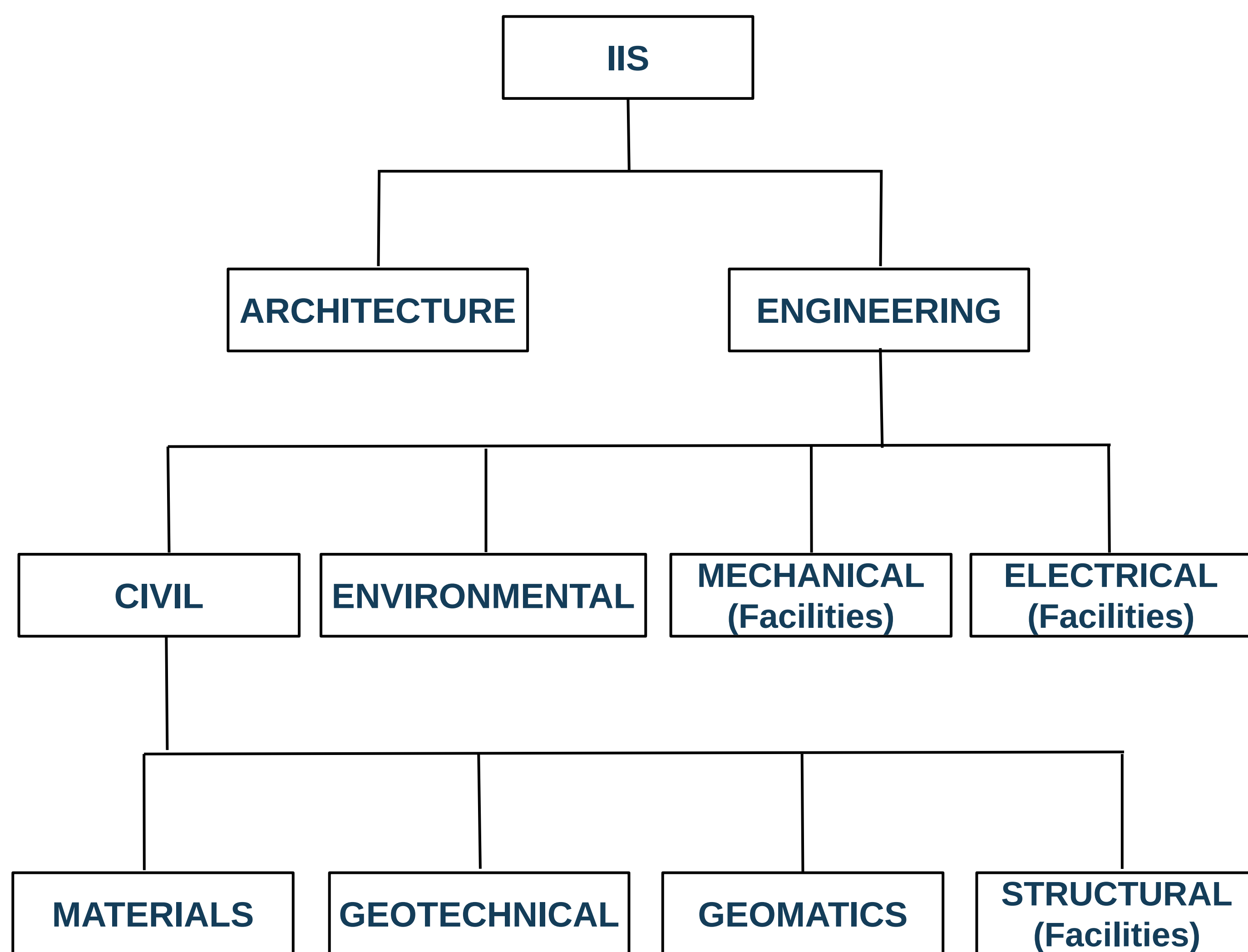
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### Integrated Infrastructure Services (IIS)



All branches collaborate together to carry out projects for the City of Edmonton (COE).

**Strategy:**

- A project proposal and business case is made.
- The land/property is purchased, and funding for the project is approved.

**Concept:**

- This stage is concerned with the project's feasibility, risks, budget and schedule.
- Environmental engineers may conduct an Environmental Impact Assessment (EIA), to evaluate environmental consequences that may result from the project.
- Geotechnical studies are conducted to evaluate the content and stability of the soil.
- Geomatics is involved through surveying, and determining land elevations.

**Design:**

- Architects and engineers work on drawings and specifications for the project.
- The structure needs to meet specific standards, and must comply to codes.

**Build:**

- Construction occurs, requiring procurement of materials, equipment and labour.
- Surveyors define boundary lines, and ensure foundations/surfaces are at proper elevations.
- Materials engineers do testing to check the quality of the materials being used.
- Environmental monitoring may also take place to check noise and vibration levels.

**Operate:**

- Operation and maintenance of the structure relies on all the different groups involved.



Figure 1.0 The general stages of a construction project.

### Materials Engineering



Figure 2.0 A technologist in the asphalt lab sieving and weighing aggregate.

- Quality assurance labs includes the density lab, binder lab, concrete lab and asphalt lab [see Fig. 2.0]. Testing at the labs ensure contractors are working with materials that meet standards.
- Research and development also take place to monitor the quality and performance of new materials and processes. This helps determine whether or not they should be used for projects.
- Engineers review designs done by consultants, for example mix designs, pavement designs, road designs, etc.

### Geotechnical Engineering

- Geotechnical engineers are concerned with soil mechanics, stability and quality.
- Prior to construction, geotechnical investigations are conducted to determine the composition of the soil. Lab testing is done on samples obtained through borehole drilling.
- Geotechnical engineers and technologists continuously monitor landslide and erosion sites using special instruments, such as a slope inclinometer [see Fig. 3.0]. Monitoring helps determine when repairs and rehabilitation are needed for slope stabilisation, erosion control, etc.
- Geotechnical engineers also review studies and repair designs done by consultants.



Figure 3.0 A technologist taking slope inclinometer (SI) measurements.

### Facilities Engineering

- Facilities engineering includes structural, mechanical, and electrical engineering.
- These engineers are involved in the design phase, and later maintenance of structures.
- This group ensures that structures are built properly to code, and that they are able to provide necessary utilities.
- They are concerned with the life safety and serviceability of structures.
- At the COE, larger projects require the work of consultants, and COE engineers review their work. Smaller projects can be done in-house.

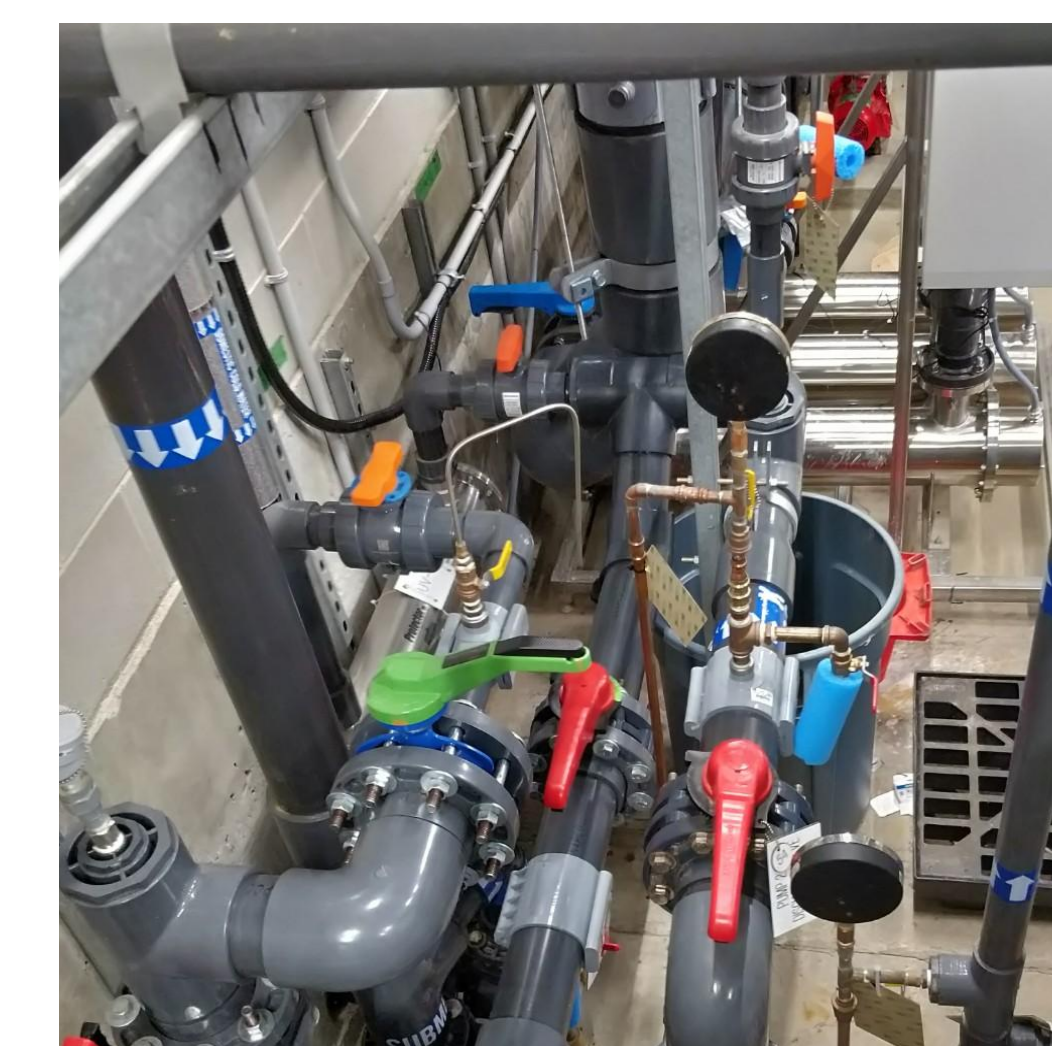


Figure 4.0 The mechanical room at the Borden Natural Swimming Pool.

### Environmental Engineering



Figure 5.0 A technologist monitoring vibrations near a construction site.

- Technologists perform noise and vibration monitoring near construction sites to ensure that levels adhere to bylaws [see Fig. 5.0]. Monitoring helps determine whether the COE is liable for damage or disruption in residential areas.
- Snowmelt monitoring is done to measure contaminants, ensuring amounts comply to bylaws.
- Engineers work to evaluate and develop strategies for land reclamation and remediation of Contaminated Sites.
- Environmental Site Assessments (ESAs) are done at contaminated/potentially contaminated sites, to determine whether remediation is required/what type of remediation is required.
- Environmental Impact Assessments (EIAs) are done prior to a project's construction, and analyse the consequences the project has on the environment.

### Geomatics Engineering

- Land surveyors work with many different instruments and technologies to help determine and mark the exact locations, boundaries, surface and subsurface features of construction sites.
- A major part of land surveying involves measuring land elevations, and mapping them out with computer programs for construction and design use.

### Architecture

- Architectural services is a branch under Facility Planning and Design.
- A lead architect hired for a specific project is referred to as the prime consultant, or "prime". The "prime" recruits engineering sub-consultants to work on the project.
- Architects work with engineers to ensure that structures are not only safe and functional, but also aesthetically pleasing.

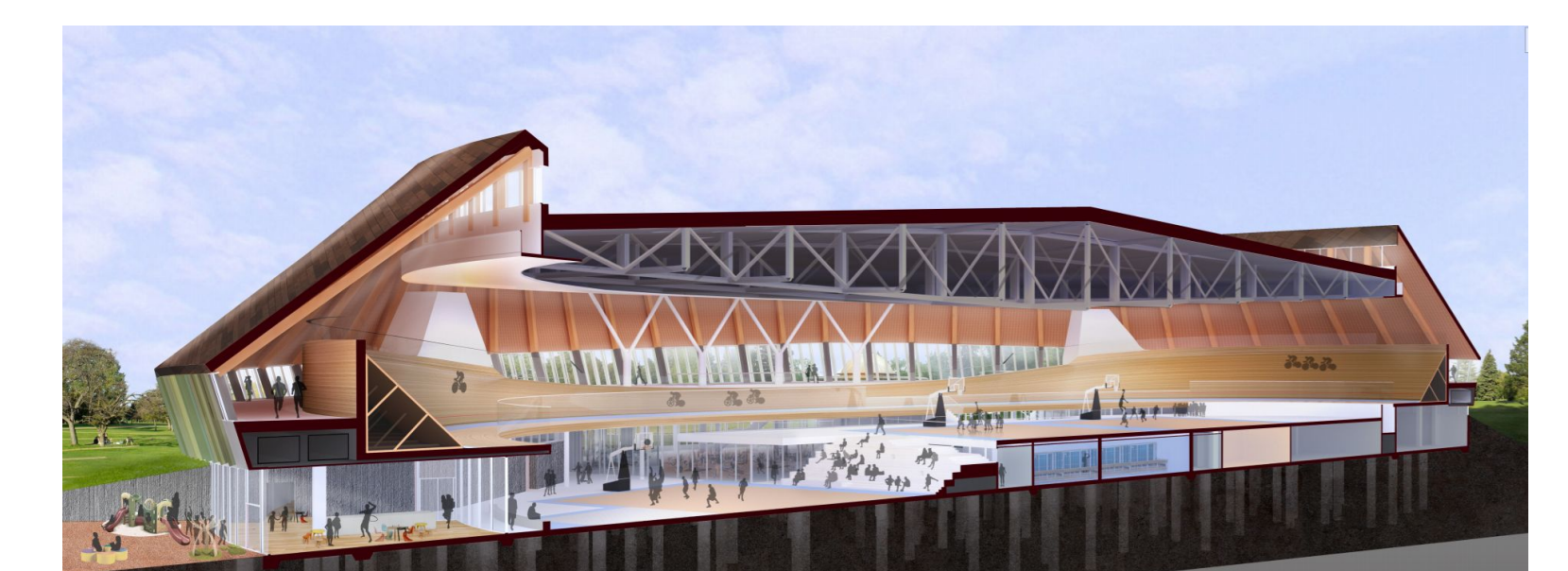


Figure 6.0 A computer generated rendering of the new Coronation Recreation Centre.

### Acknowledgements

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