

# National Research Council Nanofabrication Design Definitive

Edmonton, Alberta.

## Project Statistics

Description:	New Build
Project budget	\$6,000,000

## Responsibilities

Hired by NRC to provide process equipment and cleanroom design expertise to the newly formed Institute, as they implemented their new nanofabrication laboratory construction in Edmonton.

## Services Provided

- ▣ *Technical expertise in cleanroom design.*
- ▣ *Technical expertise in sub-micron semiconductor manufacturing processes.*
- ▣ *General technical advise and direction.*
- ▣ *Conceptual design and design definition.*
- ▣ *Review of the preliminary design documents of the consultant team.*

## Project Objectives

Review and develop the nanofabrication process equipment set, the process flow and the cleanroom layouts for best economy and efficiency.

Prepare a Design Definitive document to precisely specify the facility requirements of the client and describe them to the Edmonton design team.

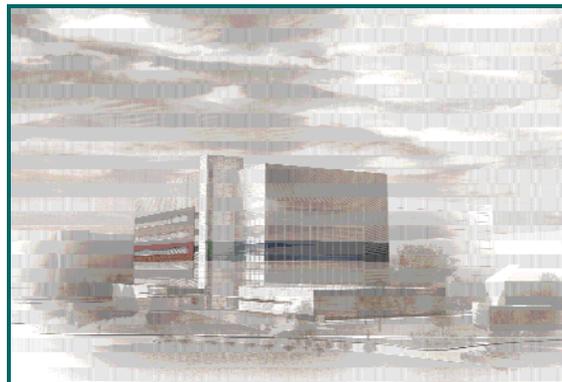
Describe the systems required and to explain their design, all in a detailed and technical manner to the Edmonton design team.

## Challenges

Being an entirely new institute, the facility was to be designed and constructed in the absence of a research program or staff, which made forecasting the requirements particularly difficult.

The Edmonton design team had little prior experience with clean room design and virtually no experience with the type of clean rooms, particular processes or complexities associated with research facilities working with geometries at the sub-micron level.

Working at distance from the client and consultant team located in Edmonton.



## Solutions and Successes

- ▣ Gained a thorough understanding of nanotechnology, its current and expected directions of research and the typical processes and methods employed.
- ▣ Reviewed the facilities of other organizations carrying out research in nanotechnology.
- ▣ Identified the technologies, processes, process tools and ancillary equipment. Prepared a detailed Process Equipment Spreadsheet that detailed the utilities requirements of each piece of process equipment and summed the consumptions for capacity calculations.
- ▣ Identified the very specialized systems required, their performance specifications and basic design principles and concepts to be employed.