

# CAPITAL HEALTH REGION

## DIAGNOSTIC & TREATMENT CENTRE

### EXECUTIVE SUMMARY



*A new rendering of the D&T Centre. The canopy on the left is for ambulance deliveries to Emergency, the canopy on the right is the walk-in entrance to Emergency Room and the canopy on the extreme right is over the main entrance.*

### The Overview

The construction of the new Diagnostic and Treatment Centre at the Royal Jubilee Hospital will replace outdated facilities and will help to ensure that as the health care needs of the Capital Health Region continue to change, Royal Jubilee Hospital will be able to meet those needs.

**The Diagnostic & Treatment Centre is a 34,700 m<sup>2</sup> (373,511 sq ft) facility which includes:**

- Surgical Suite
- Laboratory
- Morgue
- Emergency
- Surgical Day Care
- General Clinics
- Metabolic (Diabetic) Clinic
- Telecommunications Centre
- Laundry/Linen Supply
- Gift Shop
- Coronary Care Unit
- Intensive Care
- Links to existing hospital buildings and the Vancouver Island Cancer Centre
- Diagnostic Imaging
- Pharmacy
- Cardiac Cath Laboratory
- Post Anesthetic Recovery
- Medical Day Care
- Ophthalmology Clinic
- Central Processing
- Stores/Transport
- Housekeeping
- Cardiovascular Unit
- Cardiology
- Patient Placement (Booking, Admitting)

### The History

During the 1990s, a "master plan" for the RJH site was developed and altered several times. In 1996, the government announced the funding for a redevelopment at the RJH. Unfortunately, a capital projects funding freeze delayed the start of the project. The Minister of Health and Minister Responsible for Seniors broke ground on the project in June 1997. The redevelopment encompassed the building of the new Diagnostic and Treatment Centre only.

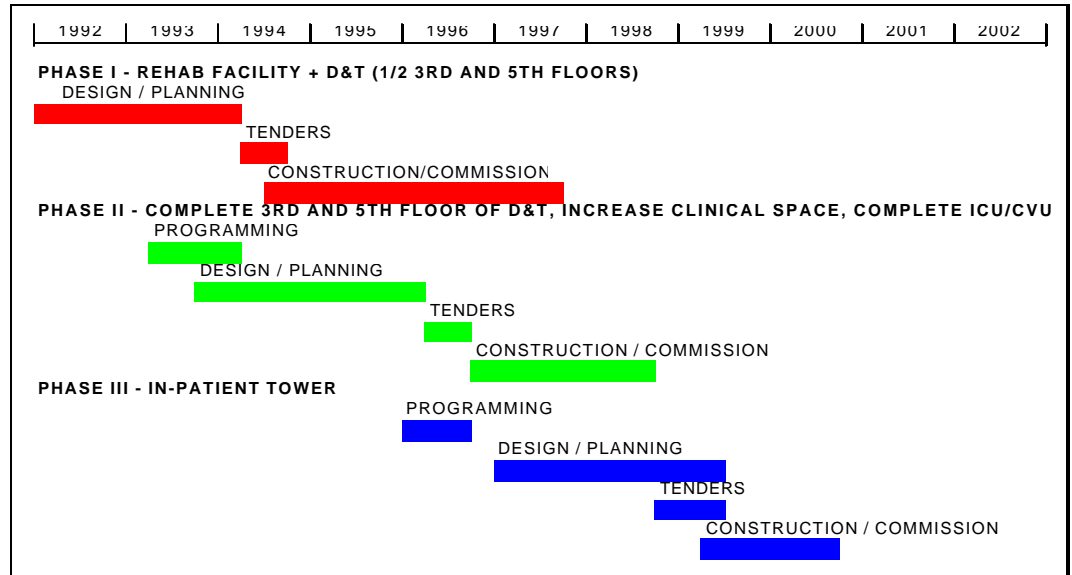
Blasting, drilling and excavation was completed in 1998 and construction was underway by June 1999. Occupancy is anticipated by summer 2002. The budget for the project is \$116,008,816

# EXECUTIVE SUMMARY CONT.

## Problem Statement

Time and program pressures overtook the original design of the D&T Centre which was initially approved by the Ministry of Health and Capital Regional District in July of 1992.

*The approved Ministry of Health and Capital Regional District timeframe — July 8, 1992*



This led to three critical issues:

1. The fundamentally important services within the facility such as Emergency, Medical Imaging, and the Operating Rooms were now far apart from the Critical Care areas left behind in the old buildings. This would create unacceptable distances that would seriously compromise patient care and cause inefficiencies in the use of both personnel and medical equipment.
2. Demand for both Heart Health and Renal Services grew beyond the capability of the Diagnostic and Treatment Centre design. A solution was required to meet both the current and future needs of these areas.
3. A method was needed to incorporate design changes and the subsequent construction in a timely manner so as to minimize delay of the openings of the facility.

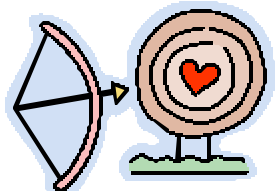
**Actions Taken**

- CHR staff and physicians develop a high level redesign that would address the issues; November 1999
- Submission to MOH from CHR requesting additional funding; May 2000
- Approved in principle by Ministry of Finance; July 15, 2000
- Progress Report to MOH on increase of scope of project; September 2000
- Final funding approval; May 11, 2001

**The Consequence**

- 5th level added to facility
- Relocate Renal Dialysis services in a separate building
- Critical care areas included within the D&T facility: Intensive Care, Coronary Care, Cardiovascular and Interventional Cardiology Units
- Delays in the completion and the opening of the D&T facility are minimized through a construction management agreement with Farmer Construction Ltd.

**The Target**



- Substantial Completion of the D&T Centre; February 15, 2001
- Full occupancy and delivery of services; June 2002



# OBJECTIVES OF THE PROJECT CONT.

## Solution #1

### Distance—Critical Care Locations

Create space within the D&T Centre through the addition of another floor (Level 5) to accommodate critical care areas requiring adjacency to important service areas e.g. Operating Rooms, Emergency and Diagnostics.

## Solution #2

### Space—For current and future needs

Relocate the Renal Services into a separate building. Use the space created by the vacated Renal footprint and the addition of Level 5 to enable the inclusion of the critical care areas and to allow for growth to meet future program pressures.

## Solution #3

### Time—Minimizing Delay

Enter into a Construction Management Agreement with the current contractor, Farmer Construction Ltd., to provide the fastest possible project completion.



Diagnostic and Treatment Centre

Area Plans Level 5

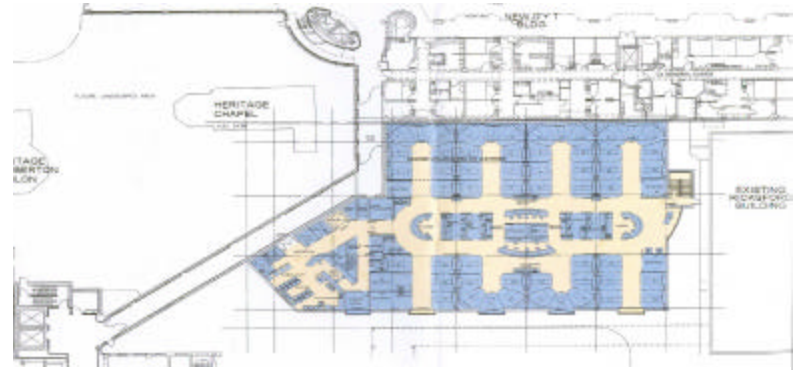
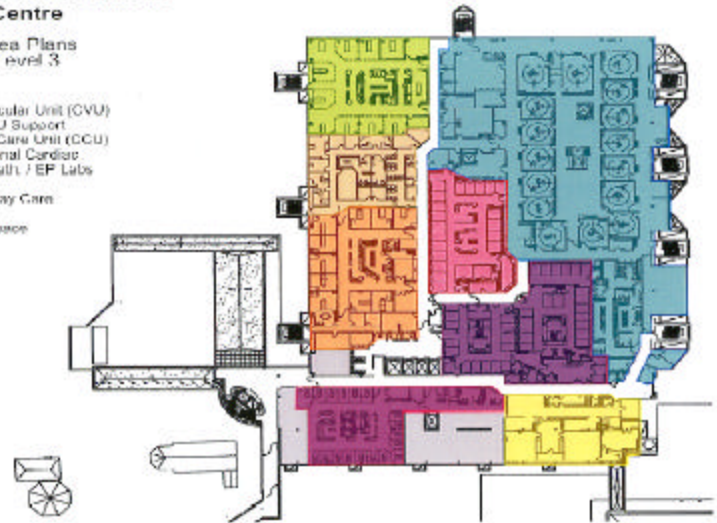
- Laboratory
- Intensive Care Unit
- Mechanical Penthouse
- Shelved Space



Diagnostic and Treatment Centre

Area Plans Level 3

- Cardiovascular Unit (CVU)
- CVU / CCU Support
- Coronary Care Unit (CCU)
- Interventional Cardiac
- Cardiac Cath / EP Labs
- ICR
- Outpatient Day Care
- PAJR
- Shelved Space



The new Renal Dialysis Services adjacent to Level 1 of the Diagnostic and Treatment Centre

# BENEFITS OF THE PROJECT



- Addresses patient safety issues raised by the medical experts with respect to critical care and transport.
- Provides safe and effective movement for patients to critical care beds.
- Consolidates emergency and critical care services.
- Accommodates critical adjacency considerations e.g Cardio-vascular unit next to open heart and vascular surgery; coronary care unit adjacent to interventional cardiology, good proximity of emergency room to cardiac cath lab.
- Arranges spaces with a view to cost-effective long term growth requirement.
- Minimizes cost/avoid delay.
  - Adding level 5 during current construction reduces the cost of adding the floor at a later date by approximately one half
  - Eliminates the need to demolish and rebuild constructed areas in order to accommodate the Critical Care areas.
  - The fifth floor and Critical Care areas are able to be included in current construction schedules.

The new building will provide a much better working environment: bigger, brighter, cleaner, and more aesthetically pleasing. Attention to ergonomics and efficiencies in the planning stages will greatly benefit the staff in caring for patients in so many ways. Just one example is the improvement in communication among all staff and physicians as a result of the physical layout of the OR areas instead of long corridors the area is more circular in shape with an inner core. There is no question that the advantages of the new building will be passed along to the patients.

## KEY RESULTS – RENAL DIALYSIS UNIT

- Provides early occupancy – June 2002. Physical condition of Bay Pavilion basement deplorable; overcrowded, poorly designed, with risk management issues
- Build to address current needs and provide for cost effective expansion for future growth – 16% increase per year. Original D&T plans allowed for 20 dialysis stations; will require 30 by June 2002; will require 60 stations in 2015
- Facilitates excellent functional design opportunity
- Good access to high intensity services in the D&T (EG, Radiology and ICU)
- Internal corridor access for inpatients
- Easy and good access for out patient parking and drop-off

When the D&T is finished and departments are moving in next spring, the Renal Program will be moving into its own stand-alone facility attached to the main D&T. The Renal area was originally planned for the 3rd Level, but during the years when the beginning of D&T construction was delayed, the need for Renal services grew locally, Provincially and Nationally.

The present RJH Renal area has 19 dialysis stations serving 103 patients who each visit three times a week. By 2002, 30 stations will be needed at RJH and this number will increase to 60 stations by 2015. The growing number of patients requiring hemodialysis treatment is a national trend attributed to a variety of factors including general population growth, an aging population, increasing survival of those on dialysis, and a lack of viable organs for transplantation.

The new space will open with 30 stations and will have the capacity to expand to 60 stations (serving 360 patients) when needed. In addition to more space and stations, patients and staff will benefit from a greatly improved physical environment and up-to-date technology including:

- a new water treatment system
- labour-saving systems such as centralized solution delivery to patient stations (eliminating the need for manual delivery and missing/filling of solutions)



*The current Dialysis Unit is crowded into the basement of Bay Pavilion*

## BENEFITS OF THE PROJECT CONT.

### CARDIO-VASCULAR: 7 BEDS

- excellent access to open heart and vascular surgery
- provides critical space for future CVU bed expansion

### CORONARY CARE: 8 beds

- good access by elevator from the Emergency Department
- excellent adjacency to Interventional cardiology
- provides critical space for future CCU bed expansion

### INTERVENTIONAL CARDIOLOGY: 18 beds

- maintains original cardiac and EP labs design
- provides excellent adjacency to other Heart Health Program components and Surgical Suites
- provides critical space for future expansion of Interventional beds and for Cardiac Catheterization Labs
- allows this important component to reside in the new high technology/high intensity facility

The Coronary Care and Cardiovascular Units will open with the same number of beds as currently exists and will have room for new beds when needed in the future. The CVU's close proximity to the Operating Suites will be a major benefit for the Open Heart patients.

### KEY RESULTS: Level 3



*Patient lifts will ease "back-breaking" labour for staff*

### KEY RESULTS – Level 5

#### LABORATORY

- Relocate Laboratory to level 5 as per original Master Plan
- Minimum design change by adjustment of flexible support space
- Good adjacencies but not impeding other programs

#### INTENSIVE CARE UNIT

- Good access by elevator from Emergency
- Close to OR's and other high intensity services and support
- Good separation from impeding on other programs

The Intensive Care Unit will be located on the 5th floor and will open with 8 beds, the same number as there are in the current unit. These beds will also be in close proximity to both the operating rooms and the new Emergency. The staff, planners and architects worked on design and equipment requirements to ensure a smooth transition of quality care into this new department.

### KEY RESULTS – Construction Management

- Fastest project completion; allows construction of the new Critical Care Units and additional floor (Level 5) while the original building is under construction
- Fees known in advance
- Reduced risk of punitive delay claims on the original D&T contract

*A view of the new facility from the Bay St. entrance with the main entrance on the right.*



## COSTS OF THE PROJECT

### Background:

In June 1999 the Ministry of Finance and Corporate Relations, Ministry of Health and Capital Regional Hospital District approved the Diagnostic and Treatment (D & T) Building project for a total estimated cost of **\$101,622,994**. Following a public tendering process the Capital Health Region (CHR) entered into a 30 month contract with Farmer Construction Ltd. to complete the Construction of the Diagnostic and Treatment Building for a stipulated lump sum contract of **\$70,462,891** including GST.

In early 2000 the decision was made to add critical care beds to the D & T project. The D & T building was well under construction nearing the point when the roof would be completed and construction of the Clinical Laboratory interior finishes on Level 3 would commence. The critical care beds would work most efficiently on Level 3, therefore the Clinical Laboratory had to be relocated on Level 5, not yet part of the project.

To meet critical construction targets the hospital had few options:

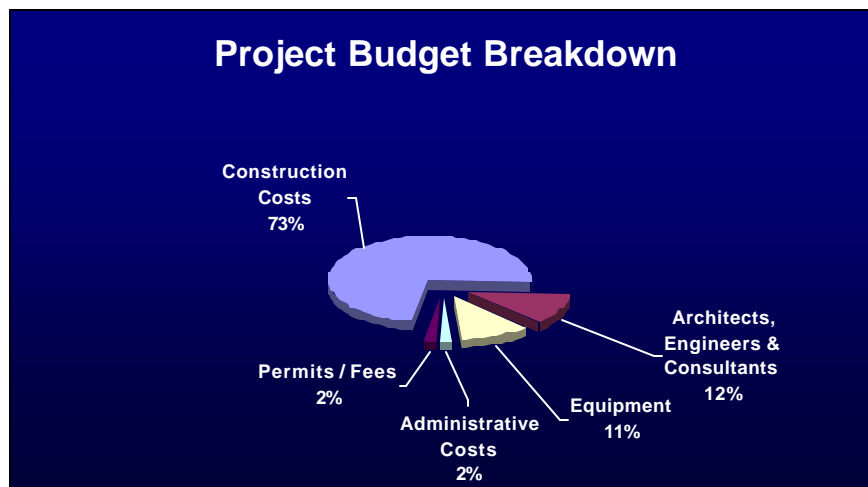
1. To wait until the D & T was complete and then complete the additional floor and critical care space;
2. Negotiate a separate contract for this new work; or
3. Negotiate a price for the proposed change under the existing contract.

A business plan was completed and submitted to the Ministry of Finance and Corporate Relations, Ministry of Health and the Capital Regional Hospital District. Project cost shared by the Provincial Government at 60% and CRHD at 40%.

- Option one would have been the most expensive, some 55% or more higher than either of the other two options. This due to the fact that the roof and other newly completed building elements would be demolished followed by the new floor being constructed. In addition, to complete the critical care space would take a year longer with the D & T remaining empty and unused for that year.
- Option two to enter into a separate contract proved to be too complicated to result in any cost savings and would have resulted in a longer period of time to complete the work.
- Option 3, to negotiate a price for the work was the best option. Prior to design commencing a total estimated project budget for the Shell and relocation of the Clinical Laboratory was approved at **\$3,935,000**.

Capital Health Region took the initiative and commenced planning, preparation of technical documents and began negotiations. After significant negotiations with the contractors the final price was **\$220,723** below budget.

Review by the funding agencies of the negotiation process and prices resulted in approval to enter into a contract change with the existing contractors to complete the Level 5 Shell and relocation of Clinical Laboratory, bringing the total estimated project cost to **\$105,337,271**.



## **COSTS OF THE PROJECT CONT.**

### **Design and construction of the Critical Care Space:**

While the design and construction of the Level 5 Shell was underway the Capital Health Region presented justification to the funding agencies for the numbers of beds to be constructed immediately, shelled for future expansion and the space requirements to support the final bed needs. The proposals were compared with other jurisdictions both within the Province and across Canada.

Following approval of the numbers of beds and related space, design meetings with design consultants and the physicians and nursing staff fine tuned the design and technical documents to enable pricing to be provided by the contractors.

The final negotiated price exceeded the budget. Before the hospital made its submissions to the funding agencies an independent cost consultant with expertise in value management was commissioned to:

- Review and identify any changes in scope of work or market conditions between the original budget and Cost Consultants pre-tender estimate.
- Review and identify any changes in scope of work between the pre-tender estimate and Contractor's price.
- Liaise with parties to the contracts to ensure that any post-tender negotiations represented a fair price for the scope of work.
- In the event that the final negotiated price cannot meet the original budget, recommend a course of action, including identifying any potential reductions in scope.

The independent cost consultant concluded that:

- There were no significant changes in scope from the program stage estimate prepared in October, 2000, up to the time of quotation, with the exception of the addition of structural supports for the patient lift system. Nor were there significant changes in scope from the design development pre-tender estimate to receipt of the quotation.
- There were significant increases caused by the various change orders associated with the locating the critical care beds and Clinical Laboratory on Levels 3 & 5, such as code requirements needing to be readdressed by the design consultants, elevator modifications and air handling unit size increases. These proved to be significantly more expensive than was anticipated at the budget stage.
- The negotiation process and sole sourcing of some products compatible with the existing D & T Building also added to the cost.
- The negotiation process with the contractors appears to have achieved significant reductions.
- Clearly, given the contracting circumstances, there are no guarantees that the final price will represent the lowest cost.
- In accordance with the Terms of Reference, we have also reviewed the project to identify any areas of potential reduction to the scope of work. Given the complex nature of the planning for the critical care bed unit we do not believe that the scope of work can realistically be reduced at this stage.

The independent Cost Consultants recommendation:

- In view of the alternatives, we believe that the most cost effective solution is to award the contract to Farmer Construction Ltd. once negotiations are complete.

### **Approvals:**

On May 11, 2001 the Ministry of Finance and Corporate Relations supported by the Ministry of Health approved the increase to the budget for the Critical Care Units to **\$10,671,545**, bringing the total estimated project cost for the Royal Jubilee Hospital Redevelopment to **\$116,008,816**.