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2014/15 Multi-year Capital Plan (prepared for COPSE) - September 10, 2013

Executive Summary

This document presents the first draft of University of Manitoba's Multi-year Capital Plan, as produced for the Council on Post-Secondary Education (COPSE) for the 2014/15 fiscal planning period. This document identifies infrastructure renewal and major capital projects over a twenty year horizon. The list is considered a living document that will be updated as new projects become identified and added, re-prioritized, budgets updated or as projects are removed.

Consultation to inform the list of projects in this plan included representatives from Physical Plant, the Office of Vice-President (External), Campus Planning Office, the Office of Vice-President (Research), Information Services and Technology, Financial Services and Ancillary Services.

Most of the Major Capital Projects are listed as "Emerging"- indicating that the project has come through stakeholders who have been solicited for information and is being considered. The project has not been vetted through any capital project approval process, senior management approval or Board of Governors approval. The University has committed to creating a process to develop an Integrated Multi-year Capital Plan (IMCP). An Integrated Capital Planning committee will be created to review, revise and implement Campus Space and Planning Policies, Procedures and Processes.

The University has set several initiatives into place that will inform this document with more detailed information over the coming year. These initiatives include:

- Educational Consulting Services has been retained to provide a Space Utilization Report for both Fort Garry and Bannatyne campuses to be completed in the Fall 2013.
- The master plan exercise for the Bannatyne Campus is expected to be complete Spring 2014.
- The master plan (Visionary reGeneration) for the Fort Garry Campus is expected to be complete Fall 2015.
- Vice President (External) case for support process for new initiatives are included this report.
- Incorporation of the Integrated Multi-year Capital Plan within the University's budget framework in support of University priorities; identifying opportunities, risks within key planning and budget assumption.

Project Summary

Project Category 1 and 2 both represent a list of Infrastructure Renewal projects. There are 28 projects identified, for an estimated cost of $313.87 million. A large portion of the Total Cost Estimate represents deferred maintenance at the University. $33.18 million of projects in these two categories have been identified as a high priority for 2014/15.

Project Categories 3, 4, 5 represent Major Capital Projects. There are 25 projects identified for an estimated cost of $732.60 million. Virtually all of these projects are listed as "Emerging"; they have been gathered through the current status of the master planning, space master planning process as well as through consultation with faculties, departments and units through the Strategic Resource Plan (SRP), and consultation process underway. It is expected that many of these project requests will be rationalized and cost estimates refined for each subsequent update of the Integrated Multi-year Capital Plan.

Project Category	Total Cost Estimate $ M*	Years 1-5*	Years 6-10*	Years 11-15*	Years 16-20*
1. Infrastructure Renewal Projects - Building Envelope and Structural Systems Renewal	157.82	44.32	40.49	39.43	33.58
2. Infrastructure Renewal Projects - Mechanical and Electrical Systems Replacement	156.05	82.67	26.14	26.14	21.10
Sub-total	313.87	126.99	66.63	65.57	54.68
3. Major Capital Projects - Renovation, Adaptive Re-use or Replacement	223.50	132.50	91.00	TBD	TBD
4. Major Capital Projects - New Construction	479.50	351.25	128.25	TBD	TBD
5. Other Major Capital Projects	29.60	29.60	TBD	TBD	TBD
Sub-total	732.60	513.35	219.25	TBD	TBD
Total Investment	1046.47	640.34	285.88	65.57	54.68

* Estimates provided in 2013 dollars.

Budget Class Definitions

E – Emerging. The estimate for an emerging project includes a Level 1 Order of Magnitude Budget (see definition below). These projects are considered to be in the earliest stage of conception. The project has not been vetted through any capital project approval process, senior management approval or Board of Governors approval

Level 1 – Order of Magnitude. A Level 1 estimate is a guess at an Order of Magnitude cost so as to begin budgetary and feasibility determinations. If there has been precedence of a very similar project with similar constraints it can be based on that historical information with adjustments made for quality, scope and escalation. As project size and quality are not yet determined there is no commitment made with the cost accuracy.

Level 2 – Conceptual. The purpose of the Level 2 estimate level is to provide a cost estimate with greater confidence for budget and feasibility determinations. The goal is to have a concise concept and approach so that variables can be limited and appropriate gross unit costs ascribed to elements to derive an overall cost guideline. A detailed functional and space program, and schematic layout are required at this stage. Information is typically supplemented with descriptions of utility requirements, structural implications, and any other information that may have an impact on the estimated construction cost. Estimates are based on bulk system requirements stated as an approximate square footage cost over the renovation/construction area with allowances for anomalies not covered. This estimate is used to seek approval to begin the design stage. This estimate is considered accurate to +/- 30-50%.

Level 3 –Design Development. Estimates prepared at Level 3 are used to verify budget conformance as the scope and design are finalized and final materials are selected. Information required for this level typically includes not less than 25% complete drawings showing floor plans, elevations, sections, typical details, preliminary schedules (finishes, partitions, doors, and hardware etc.), engineering design criteria, system single line diagrams, equipment layouts, and outline specifications. The Level 3 estimate provides a greater amount of accuracy, made possible by better defined and detailed design documentation. Estimates at this phase may be used for value engineering applications before the completion of specifications and design drawings. Estimates would be based partially on bulk system costs combined with a quantity take-off and appropriate unit costs applied to select elements. This estimate is considered accurate to +/- 20%.

Level 4 Construction Document Estimate. Level 4 estimates generally apply to larger projects and are used to confirm funding allocations, to again verify the construction cost as design is being completed, for assessment of potential value engineering opportunities before publication of the final project design documentation for bids, and to identify any possible "design creep" items, and their costs, caused by modifications during the completion of the construction documents. Level 4 estimates are typically based on construction documents not less than 90% complete. Estimates would be primarily based on a quantity take-off and appropriate unit costs applied to most elements with some bulk system costs allowances. This estimate is considered accurate to +/- 10-15%.

Level 5 – Bid Phase. The purpose of this level estimate is to develop probable costs in the preparation and submittal of bids for contract with an Owner. This would be with 100% completed and coordinated documents. A quantity take-off would be performed and appropriate unit costs applied to each element. The Level 5 estimate will be used to evaluate sub-contractor bids and change orders during the construction process. This estimate is considered accurate to +/- 5% where market conditions create the most uncertainty.

1. Infrastructure Renewal Projects - Building Envelope and Structural Systems Renewal

Priority by Category	Overall Infrastructure Priority	Project Description	Faculty / Sponsor	Budget Class	Total Cost Estimate $ (M)	2014/15	2015/16	2016/17	2017/18	2018/19	Years 6-10	Years 11-15	Years 16-20
1	1	Asbestos/Mold Remediation	F.G./Bannatyne Infrastructure	1	40.00	2.00	2.00	2.00	2.00	2.00	10.00	10.00	10.00
2	8	Medical Rehabilitation Window Replacement	Medicine	2	1.70	1.70							
3	10	Accessibility / Elevator Upgrades	F.G./Bannatyne Infrastructure	2	26.60	1.00	1.00	1.00	1.00	1.00	7.20	7.20	7.20
4	11	Education Building I, II & III Selective Window Replacement and Repairs	Education	2	2.00	2.00							
5	12	Dairy Science Window Replacement	Agricultural & Food Sciences	2	0.58	0.58							
6	14	Animal Science Precast Sills Replacement	Agricultural & Food Sciences	2	0.30	0.30							
7	15	University College Entry Plazas-Precast Cladding, Steps and Ramps	Arts/Residences	1	0.40	0.40							
8	16	Roofs	F.G./Bannatyne Infrastructure	2	19.82	1.00	0.90	0.62	1.40	0.90	5.00	5.00	5.00
9	17	Building Envelope	F.G./Bannatyne Infrastructure	2	18.48		1.00	1.00	1.00	1.00	5.00	5.00	4.48
10	18	Window Replacement	F.G./Bannatyne Infrastructure	2	19.23		1.00	1.00	1.00	1.00	5.23	5.00	5.00
11	19	Building Foundations/Basement Upgrades to Structural Slab Floors	F.G/Bannatyne Infrastructure	2	4.26		0.75	0.75	0.75	0.75	1.26		
12	20	Road Repairs and Restorations and Walkway Repairs	F.G. Infrastructure	2	14.38		1.00	1.00	1.00	1.00	5.00	5.38	
13	21	Sewer System Upgrades and Backflow Prevention Devices	F.G./Bannatyne Infrastructure	2	8.50		1.00	1.00	1.00	1.00	1.50	1.50	1.50
14	27	Parkades	Ancillary Services	1	1.32	0.05	0.05	0.05	0.06	0.06	0.30	0.35	0.40
15	28	Residences - Roof Replacement	Ancillary Services	1	0.25	0.25							
				Total $M	**157.82**	**9.28**	**8.70**	**8.42**	**9.21**	**8.71**	**40.49**	**39.43**	**33.58**

2. Infrastructure Renewal Projects - Mechanical and Electrical Systems Replacement

Priority by Category	Overall Infrastructure Priority	Project Description	Faculty /Sponsor	Budget Class	Total Cost Estimate $ (M)	2014/15	2015/16	2016/17	2017/18	2018/19	Years 6-10	Years 11-15	Years 16-20
1	2	Fire Safety Non Compliance/Central Monitoring Upgrades	F.G./Bannatyne Infrastructure	3	26.47	1.50	1.50	1.50	1.50	1.50	8.00	8.00	2.97
2	3	BMSB Asbestos Encapsulation/Sprinkler Installation Phase II	Bannatyne Infrastructure (Medicine)	3	12.40	2.50	2.70	3.20	3.60	0.40			
3	4	Education Asbestos Removal & Sprinkler Installation	Education	3	8.40	1.20	1.70	2.20	1.90	1.40			
4	5	Dentistry Sprinkler Installation	Dentistry	3	2.00	2.00							
5	6	Chown Building Mechanical Infrastructure Upgrades	Medicine	2	11.55	11.55							
6	7	Asbestos Cement Water Line Replacement	F.G. Infrastructure	2	9.55	1.85	1.80	1.35	1.35	3.20			
7	9	Electrical Distribution Upgrades	F.G. Infrastructure	2	7.36	1.70	1.70	1.70	1.14	1.13			
8	13	Allen Building Ventilation/Sprinkler & Ceiling Upgrade Phase I	Science	2	7.30	1.60	1.40	1.30	1.40	1.60			
9	22	Heating, Ventilation and Air Conditioning	F.G./Bannatyne Infrastructure	2	45.35		2.39	2.39	2.39	2.39	11.93	11.93	11.93
10	23	Galvanized, Reverse Osmosis, Drain, and Vent Pipe Replacement	F.G./Bannatyne Infrastructure	1	13.53		0.71	0.71	0.71	0.71	3.57	3.57	3.55
11	24	Safety - Campus Security, Security Cameras, Code Blue Stations, Exterior Lighting	F.G./Bannatyne Infrastructure	1	8.00		0.42	0.42	0.42	0.42	2.11	2.11	2.10
12	25	Fumehood Exhaust Fan Upgrades	Bannatyne Infrastructure	1	2.10		1.05	1.05					
13	26	Environmental Controls Replacement	F.G. Infrastructure	1	2.04		0.11	0.11	0.11	0.1	0.53	0.53	0.55
				Total $M	**156.05**	**23.90**	**15.48**	**15.93**	**14.52**	**12.85**	**26.14**	**26.14**	**21.10**

3. Major Capital Projects - Renovation, Adaptive Re-use or Replacement

Priority by Category	Overall Major Capital Priority	Project Description	Faculty / Sponsor	Budget Class	Total Cost Estimate $ (M)	2014/15	2015/16	2016/17	2017/18	2018/19	Years 6-10	Years 11-15	Years 16-20
1	6	Palace Theatre	Multi-Faculty, Social Work lead	E	3.00	0.50	2.50						
2	8	"Sandbox" Demonstration Project	VP Admin *(Component of Instructional Space Optimization)*	E	4.50	0.50	4.00						
3	10	Classroom Optimization and Reconfiguration (resulting from ECS study - multi-phased)	VP Admin *(Component of Instructional Space Optimization)*	E	27.00	1.00	2.00	8.00	8.00	8.00			
4	11	Laboratory Optimization and Reconfiguration (resulting from ECS study - multi-phased)	VP Admin *(Component of Instructional Space Optimization)*	E	74.00	4.00	12.00	12.00	12.00	12.00	22.00		
5	13	Library Renovations	Libraries	E	10.00		1.00	2.00	4.00	3.00			
6	16	FitzGerald Bldg and Annex Renovation	VP Admin	E	9.00		1.00	6.50	1.50				
7	17	Music Building Renovation	VP Admin	E	12.00		0.50	1.00	6.00	4.50			
8	18	Repurposing of Helen Glass	VP Admin	E	3.00						3.00		
9	22	Basic Medical Sciences Renovation, Gross Anatomy, Vivarium, Physical Plant	Health Sciences	E	72.00			3.00	3.00	9.00	57.00		
10	23	Bannatyne - New Green Space (former T Bldg site) and Interior Circulation Renovations	Health Sciences	E	9.00						9.00		
				Total $M	**223.50**	**6.00**	**23.00**	**32.50**	**34.50**	**36.50**	**91.00**		

4. Major Capital Projects - New Construction

Priority by Category	Overall Major Capital Priority	Project Description	Faculty / Sponsor	Budget Class	Total Cost Estimate $ (M)	2014/15	2015/16	2016/17	2017/18	2018/19	Years 6-10	Years 11-15	Years 16-20
In Progress*	In Progress	Taché Arts Project	School of Art/Music	Tender/3	66.70	29.70	23.70	13.30					
In Progress*	In Progress	Active Living Centre	Kinesiology and Recreation Management	Tender	15.77	15.77							
1	1	Bannatyne Parkade Expansion	VP (Administration)	E	9.00	0.50	4.00	4.50					
2	2	Nursing Building, Bannatyne Campus	Health Sciences	E	50.00	2.00	2.00	15.00	15.00	16.00			
3	3	Expansion of Richardson Centre for Functional Foods and Nutraceuticals to incorporate new RCSC and upgrades	Agriculture/ Human Ecology	E	40.00	2.00	2.00	12.00	14.00	10.00			
4	4	Plant Genomics Institute	VPRIO	E	25.00	1.00	5.00	12.00	7.00				
5	5	Fort Garry Student Residence	Ancillary	E	26.03	5.00	12.88	8.15					
6	9	IT Data Centre	Campus-wide	E	15.00	1.00	13.00	1.00					
7	14	Dual Faculty Design Centre	Engineering/ Architeture	E	25.00			1.00	1.00	10.00	13.00		
8	15	National Research Centre - Truth and Reconciliation Archives	Indigenous Achievement/ Libraries	E	12.00					1.00	11.00		
9	19	Bannatyne Multi-Purpose Building (MPR): T Block Replacement, Dentisty Expansion	Health Sciences *(Component of Bannatyne Multi-Purpose Building)*	E	55.00		2.00	2.00	10.00	10.00	31.00		
10	20	MPR: Centre for Community Engagement and Interprofessional Teaching Clinic	Health Sciences *(Component of Bannatyne Multi-Purpose Building)*	E	10.00		0.50	0.50	1.50	1.75	5.75		
11	21	Bannatyne Interprofessional Research, Teaching - Future Needs	Health Sciences	E	60.00						60.00		
12	24	MPR: Student Services, Student Life, 200 Bed Student Residence	Ancillary Services *(Component of Bannatyne Multi-Purpose Building)*	E	35.00		1.50	1.50	6.00	18.50	7.50		
13	25	Cyberinfrastructure (IT Office) Complex	Campus-wide/IST	E	35.00	5.00	5.00	20.00	5.00				
				Total $M	**479.50**	**61.97**	**71.58**	**90.95**	**59.50**	**67.25**	**128.25**	**0.00**	**0.00**

*Total Cost Estimate indicates portion of total projet budget remaining to complete.

5. Other Major Capital Projects

Priority by Category	Overall Major Capital Category	Project Description	Faculty/Sponsor	Budget Class	Total Cost Estimate $ (M)	2014/15	2015/16	2016/17	2017/18	2018/19	Years 6-10	Years 11-15	Years 16-20
1	7	Oil Spill Sea Ice Research Lab (Churchill, MB)	Clayton H. Riddell Faculty of Earth, Environment and Resources	E	24.00	1.00	8.00	14.00	1.00				
2	12	Wayfinding, Fort Garry Campus	VP Admin	E	5.60	0.80	0.90	1.30	1.30	1.30			
				Total $M	**29.60**	**1.80**	**8.90**	**15.30**	**2.30**	**1.30**	**0.00**	**0.00**	**0.00**

UNIVERSITY OF MANITOBA

2014/15 MULTI-YEAR CAPITAL PLAN

CATEGORY 1 - INFRASTRUCTURE RENEWAL PROJECTS
Building Envelope and Structural Systems Renewal

Category Priority #	Project Description	Cost Estimate
1	Asbestos/Mold Remediation	$40,000,000
2	Medical Rehabilitation Window Replacement	$1.700,000
3	Accessibility / Elevator Upgrades	$1,000,000
4	Education Building I, II & III Selective Window Replacement and Repairs	$2,000,000
5	Dairy Science Window Replacement	$575,000
6	Animal Science Precast Sills Replacement	$300,000
7	University College Entry Plazas-Precast Cladding, Steps and Ramps	$400,000
8	Roofs	$19,820,000
9	Building Envelope	$18,480,000
10	Window Replacement	$19,230,000
11	Building Foundations/ Basement Upgrades to Structural Slab Floors	$4,260,000
12	Road Repairs and Restorations and Walkway Repairs	$14,380,000
13	Sewer System Upgrades and Backflow Prevention Devices	$8,500,000
14	Parkades	$1,320,000
15	Residences – Roof Replacement	$250,000

1) Asbestos/Mold Remediation

Many of our buildings constructed prior to 1975 contain large amounts of asbestos materials. Asbestos is found in materials such as pipe insulation, ceiling tiles, floor tiles, fire proofing insulation, plaster walls, drywall joints and others. This means that there is an asbestos abatement cost associated with nearly every project underway at the University of Manitoba.

The University has spent nearly $20M since fiscal year 2001/02 on asbestos and mold related issues. The allocation of funding from Capital Debt for this initiative has been depleted and it is imperative that funds are allocated to deal with ongoing issues in the coming years. It is necessary to prevent spreading the asbestos fibres into the indoor environment and to permit maintenance personnel to carry out repair without exposure. Disposal of asbestos also falls under very stringent regulations, which further adds to the cost of asbestos abatement.

There have been 1,325 Asbestos Damage Reports (ADR's) and Mold Investigation Reports (MIR's) since we started tracking these issues in 2002. Currently we have completed 1,163 and 162 are still outstanding. We are currently getting about 70 new reports per year. We expect that it will take

approximately $2.0M/year to deal with asbestos and mold issues in order to perform regular maintenance issues and project work.

Building areas containing asbestos were categorized into 3 different levels of urgency with Priority 1 being the most critical. The University has spent $21.7 M since fiscal year 2001/02, and is planning to spend an additional $2.2 M in fiscal 2013/14 to deal with Priority 1 and other asbestos related issues. In addition, several of the major renovation projects incurred large expenditures in order to carry out asbestos abatement in order for the projects to proceed. Some of the major asbestos expenditures in recent years were as follows: Parker Building East and West side Ceiling Replacement $883,349 Tache Hall Asbestos Abatement $161,690, Dafoe Library $294,106 and Education Building Phase I Ceiling replacement/abatement $213,004. In 2013/14 a number of large projects are underway. Phase IIA of the Education Building Ceiling replacement is presently underway with Phase IIB planned for 2014/15. The original design of the Education complex, as well as the Parker Building contained plaster containing asbestos in the ceiling systems.

We presently have over several hundred active asbestos projects in estimate and construction phases and also need to address many more abatement and encapsulation projects but have been limited due to a shortage of funds.

Although millions have been spent on asbestos abatement and encapsulation projects, it is estimated that due to escalating costs and additional areas where asbestos has been found it will still require in excess of $40 M to completely abate or encapsulate the remaining asbestos issues.

2) Medical Rehabilitation Window Replacement

This building was constructed in 1955 and has the original windows. This window system consists of double glazed fixed, double hung and projecting or hopper style operable units in aluminum frames, which do not contain a thermal break. Numerous window leaks, failed seals units and damaged glazing seals have occurred, contributing to moisture damage to the surrounding wall assemblies. The normal life expectancy of this window system is 25 to 30 years. Overtime the deterioration of the weather seals, along with the failure of numerous sealed units the effectiveness of these window assemblies has been dramatically reduced contributing to significant air leakage and energy efficiencies.

3) Accessibility/ Elevator Upgrades

Several of our older buildings are inaccessible to people with physical disabilities. Although over $3 million has been spent since 2001 on automatic door openers, elevator upgrading, improved access to classrooms and washrooms, and wheelchair ramp installation, much more needs to be done to improve accessibility.

The University of Manitoba portfolio includes approximately 100 elevators. With each having a life expectancy of 25 years, the refurbishment rate averages out to 4 per year, every year, forever. Physical Plant has refurbished one in the last six years and as such is behind in the predictable life cycle replacement program. This is illustrated through the number and nature of problems realized in daily operations. Each refurbishment would cost roughly $250K depending on technical parameters. In order

to maintain the necessary cadence of life cycle refurbishment, and manage this critical capability, Physical Plant requires a multi-year program to upgrade and insure this equipment and facilities meet the accessibility requirements. Accessibility and elevator upgrades are a continuous maintenance item which requires approximately $1 million per year ongoing.

Since the last report, a number of significant projects were undertaken to improve accessibility to building occupants and the community. The most notable of which are Ellis Building elevator installation, Joyce Fromson Pool accessibility, tunnel connection between Extended Education and Architecture II/Active Living site, University Centre entrance stairs and washroom upgrades in Parker, Sinnott, Music Building, Administration (Women's) and University Centre. Several auto door opener installations have been carried out at both campuses

There has been a substantial increase in requests for accessibility projects. This is reflected in the following increase of projects as listed below:

Administration Building - Upgrade of washrooms for wheelchair users (men's)
Allen Building – Improvement of access in classrooms 200 and 216
Agriculture - Automatic door openers (west side)
Animal Science - Ramp to courtyard, ramp to Dafoe Road
Architecture II - Provide accessible washroom
Armes Building - Provide accessible washroom
Brodie Centre - Automatic door opener, Level 100 to HSC tunnel, automatic door opener, level 200 to BMSB, Level 100, washroom accessibility, Level 200, washroom accessibility
Buller Building - Renovations to women's washroom on main floor to improve accessibility
Buller to Armes Link - Install Ramp
Campus - Purchase accessible tables (Phase 2), accessible/washroom, signage, increase accessible parking, detectable warning surface at stairs
Chown Building - Automatic door opener (100 level on fire doors), provide accessible washroom
Drake Centre - Upgrade lift
Duff Roblin Building - Provide exterior access at north side of building, upgrade lighting in tunnel to Buller Building, provide interior ramp off of tunnel
Education Building - Install access ramp to main entrance, provide accessible washrooms, provide access to Room 200
Elizabeth Dafoe Library - Provide access from level 200 to Fletcher Argue, provide access to room 160 from main circulation area, provide accessible washrooms (Level 200), improve elevator access (Level 200)
Extended Education - West Entrance Ramp, provide accessible washrooms in corridor (men's and women's), install lever action door handles in all washrooms
Fletcher Argue - Install doorway to provide access to patio area, provide women's accessible washroom, provide accessible washroom (Psychological Services Centre)
Frank Kennedy - Provide accessible washrooms, install wheelchair controls
Human Ecology Building - Repair of dropped floor in level 100, provide access to apartment areas
Machray Hall - Provide accessible washroom
Medical Services - Upgrade access lift
Music Building - Automatic door openers to central stair
Parker Building - Improve accessibility and lighting in washrooms, install ramp at west entrance of link between Allen/Armes and Parker

Pathology Building - Automatic door openers on 000, 100, 200, and 300 levels on fire doors
St. Paul's College - Accessible parking signage change
Stadium - Provide accessible washroom
Tunnel - Directional signage
University Centre - Install ramps to plaza deck east side
University College - Provide accessible washroom in office wing, automatic door openers, ramps

Buildings Requiring Elevators:

St. Paul's College - Provide elevator to improve access to 3rd floor to both buildings
Music Building - install elevator to permit access to all floors
Dairy Science Building - Elevator required making all floors accessible
Arts Barn - Install elevator for access to all floors
Agriculture Lecture Block - Elevator required to access all floors

Buildings Requiring Elevator Upgrades (with years of installation):

Dafoe Library (Freight) - 1956
Medical Services (Freight) -1958
Fitzgerald Building -1958
Plant Science Building -1959
Chown Passenger -1960
Engineering 3- 1960
Pembina Hall (Freight) - 1961
University College Residence (women's) - 1962
Parker Building - 1966
Fletcher Argue Passenger (2) - 1967
Duff Roblin Building - 1968
University College Study Wing - 1970
Education Building - 1970
Frank Kennedy Building - 1970
Basic Medical Sciences Passenger (2) - 1971
Basic Medical Sciences (service) - 1971
Tier Building (handicap lift) - 1976
Max Bell Centre -1979
Pathology Building - 1980
Wallace Building (east) - 1980
Drake Centre, #1 - 1988
Drake Centre, #2 - 1988
Sinnott Building -1988

4) Education Building I, II & III Selective Window Replacement and Repairs

Longterm exposure has opened mortar joints in the Tyndall Stone cladding system, as well as the cement plaster at the window heads and jambs resulting in significant water infiltration and air leakage. Further, many of the windows are wood framed and suffer from degradation and movement. This remediation project includes window replacement, cement plaster replacement and re-pointing only localized masonry joints, specific to the window areas. Also, all window jamb stones observed to be

fractured or spalled, will undergo stone repairs at a nominal number of locations. Site access is a challenge with a variety of conditions at grade level on the south, west, and north elevations. We anticipate that exterior access will need to be achieved with a combination of scaffolding and an articulated lift.

Crosier Kilgour & Partners (CKP) provided a report, dated August 5th, 2010 on E3 windows (Report provided previously). Currently E1 and E2 are being investigated to confirm the extent of replacement required. It is likely that all of the second floor windows will require replacement and that a portion of the main floor windows as well. The budget will include replacement of 20% of the main floor windows and replacement of the glazing only for the link. A current project cost including soft costs is estimated at $2,000,000 including design, contingency, etc.

5) Dairy Science Window Replacement

The Dairy Science Building is one of the few heritage buildings on campus that retains its original but inefficient wood window system. Not only does this waste energy but also requires ongoing maintenance (painting and sealing) and is prone to moisture penetration. This moisture has collected at the internal wood components of the window system and caused severe decay. This window system has exceeded its useful life and needs to be replaced. Crosier Kilgour & Partners (CKP) provided a report on April 18, 2008, which provided the construction cost estimate. The current project cost, including soft costs, is estimated at $575,000 including design, and contingency.

6) Animal Science Precast Sills Replacement

The Animal Science Building is predominantly clad with Tyndall stone panels but main floor sill and spandrel panels were constructed of precast concrete. This material predates air-entrained precast techniques and so is highly susceptible to freeze thaw action. An earlier attempt was made to extend the life of the precast panels by applying a waterproof coating but moisture has still found its way into the material and degradation continued. The south side exposure has suffered most significantly but other exposures have some damage as well. Replacement of precast panels as well as providing wall drainage is required. At the same time we will be reworking the areaway enclosure to prevent moisture intake.

Crosier Kilgour & Partners (CKP) have been requested to prepare a report. We estimate a current project cost at $300,000 including soft costs of design, contingency, escalation costs to 2014 construction, etc.

7) University College entry Plazas – Precast Cladding, Steps and Ramps

Two of three entry plazas have had new waterproofing and pavers installed. The third (south) plaza requires the same attention plus complete replacement of the failing precast cladding and the concrete steps. The southeast plaza requires the complete replacement of the failing precast, the concrete steps and the wheelchair ramp. These changes will also require replacement of some or all of the guardrail/handrail system.

8) Roofs

Many roofs on campus have outlived their useful life resulting in serious roof leaks causing damage to building interiors, damaged equipment and computers, occupant discomfort, and in many cases, damage or destruction of occupant's paperwork and belongings. The leaking roofs have insufficient insulation and/or roof membranes that have broken down completely or are in an advanced state of disintegration. Roofs are a continuous maintenance item which require approximately $1 million per year ongoing.

Since the last report, roof or membrane replacements were carried out on Ellis Building (south roof) and Duff Roblin Plaza Deck. Repairs to the Helen Glass roof were completed. Roof replacements are currently underway on the following buildings: Administration, Fletcher Argue Theatre, St. John's College, lower roof section, Sculpture/Ceramics Building and Sinnott Building.

Due to the condition of the Frank Kennedy/Extended Education roof, this project was moved to the Critical Category for immediate replacement and work is also currently underway. The University of Manitoba received $250,000 towards the Frank Kennedy Roof Replacement from the Community Infrastructure Improvement Fund (CIIF). Funding is being delivered through the Western Economic Diversification (WD).

The following is a list of the buildings on campus still in need of major roof repairs or replacement. Budget figures have been revised to reflect tendered costs and updated building surveys. The following is in the order of priority:

Dairy Art Barn Studio, Education 3, Fitzgerald Building, Fletcher Argue, Human Ecology, University Centre, University College Lecture Building, University College Building, St. Paul's College, St. John's College, Drake Centre, Mary Speechly Hall, Armes Lecture Block, Wallace, St. Paul's College

9) Building Envelope Upgrades

Many older building on campus are experiencing serious building envelope problems resulting in extensive damage to interior and exterior walls.

This project includes restoration, re-pointing, and re-caulking of exterior walls. It also includes installation of a waterproofing membrane on the exterior of building foundation walls to prevent infiltration of moisture to interior walls causing blistering and general deterioration of interior walls as well as the provision of a suitable air barrier. Most buildings would require an extensive audit to determine actual requirements.

Foundation repairs have been completed at Agriculture Lecture Block, Day Care Centre Coating, Education, Isbister Exterior Concrete Repairs, Machray Hall (west wall), Parker Building Loading Dock, Sinnott Building Solarium, University College North entrance and Wallace Stone Cladding.

The following work has been approved to proceed: Administration Tyndall Stone Cornice Distress, Admin/E2 Tunnel Leak, Architecture II/Russell Building Tunnel water-proofing, Ellis Building Exterior Stair Replacement, and Pembina Hall Exterior Wall Repair.

Crosier, Kilgour and Partners Ltd. were contracted to review a number of building envelopes and provide cost estimates for remedial work. As can be seen, the investigative reports have determined remedial costs are significantly higher than originally anticipated. Further investigative work is required on the remaining buildings.

The following is a list of previously identified requirements:

a) Restoration, re-pointing and caulking:
Administration Building, Allen Building, Animal Science, Architecture II, Armes Building, Basic Medical Sciences, Dafoe Library, Dairy Science, Dairy Art Barn,Education I, II and III, Ellis, Building, Engineering Building, Extended Education, McMath High Voltage Lab, Fletcher Argue Building, Frank Kennedy Building, Human Ecology Building, Joyce Fromson Pool, Mary Speechly Hall, Medical Library Building, Medical Services Building, Music Building, Parker Building, Pathology Building, Pembina Hall, Robson HallSt. Paul's College, St. John's College, University Centre

b) Water proofing of below grade foundation walls:
Administration, Dentistry, Human Ecology, Isbister Building, Robson Hall tunnel, St. John's Residence tunnel, St. John's Academic Wing

c) Restoration of Exterior Masonry Wall including air/vapour barrier:
University College Residence

d) Entrances:
Extended Education, University College, Dairy Art Barn

10) Window Replacement

Many buildings on campus still have the original wooden window frames, which in many cases are rotten. Other older buildings have single glazing, many with broken hardware and faulty caulking resulting in air infiltration, heat loss and damage to interior walls. Window replacements in these buildings would result in less maintenance, increased personal comfort levels and energy savings. (Window analysis based on 100 sq. ft. of glazing was previously forwarded). Windows are a continuous maintenance item which requires approximately $1 million per year ongoing.

The recommended window performance specifications are that there is no resultant condensation when the exterior temperature is -30°C, the inside glass surface is to be 22°C with a 30% relative humidity.

Since the last report, the Dentistry and Medical Services Window Replacement projects have been completed, as well as the Brodie Centre skylight restoration project.

Two of the projects in the Critical Category are currently underway – St. Paul's College/Sinnott Building and Parker Building Window Glazing/Precast Repairs. The windows at Dairy Science, Education 3 and Medical Rehabilitation are extremely inefficient, prone to moisture problems and severe decay, and urgently require replacement.

The following is a list of buildings requiring window replacement:

Administration weather-stripping, Agriculture Greenhouses (glass & roof shutters), Allen Building (seal perimeter of frames), Animal Science (hardware), Architecture II (Studio Clerestory), Armes Building & Link, Dairy Barn (Art Studio), Dafoe Library, Duff Roblin (replace sealed units), Fitzgerald Building, Frank Kennedy and Joyce Fromson Swimming Pool, Mary Speechly Hall, Music Building (part of Building Envelope of $2.125 M), St. John's College, Tier Building, University Centre (opening window repairs), University College Academic, University College Residence (window replacement only)

11) Building foundations/Basement Upgrades to Structural Slab Floors

Many buildings on campus have been constructed with slab on grade basements. Many of these basements are moving due to ground shrinkage or swelling. Some areas are so severe that the space is becoming unusable and unsafe. The slab on grade floors should be replaced with structural slabs to rectify this serious problem.

The replacement of the Buller Building 100 Level Slab was completed as part of the Knowledge Infrastructure Program (KIP) upgrade to the Buller Building. Other areas include Animal Science, Dafoe Library ad Human Ecology.

12) Road Repairs and Restorations and Walkway Repairs

The Fort Garry Campus has in excess of 12 kilometres of roadways. Most of the roadways on Campus have had nothing but patchwork for over twenty years. There are many sections that are uneven and settling has occurred, which require reconstruction. Some sections of Sifton Road are slipping into the adjacent ditch. In October 2000, UMA Engineering conducted a complete audit of municipal services at the University (previously submitted). The recommendation is $330,000 for annual maintenance of paved network.

The following recommendation is to restore and upgrade roads:

Freedman Crescent from Ellis Building to Alumni Lane intersection (approximately 2,500 feet)
Dafoe Road Reconstruction (Asphalt construction starting at University Crescent to Gillson Street, concrete construction starting at Gillson Street to Alumni Lane.
Sifton Road, from University Crescent, east 1400 feet:
Dysart Road, from Sidney Smith Street to Sifton Road intersection, approximately 900 feet:
Dysart Road, from University Crescent east approximately 200 feet

The following recommendation is to replace walkways:

Presently there are approximately 500,000 sq. ft. of walkways on the Fort Garry Campus, of which approximately 200,000 sq. ft. will require replacement and/or upgrading in the next few years. Several areas have severe cracking and sagging causing hazards for pedestrians. It is also estimated that an additional 150,000 sq. ft. of walkways are required in such areas as the south side of Freedman Crescent and Dysart Road, etc.

13) Sewer System Upgrades and Backflow Prevention Devices

In October 2000, UMA Engineering completed an audit of Municipal Services on Campus (submitted with previous request). The report indicates that the University has a replacement cost in excess of $28 M for water mains and sanitary and storm sewers on campus. Immediate remedial work required is $5.5M and future funding requirements range from $200,000 to $450,000 per year. Sewer system upgrades and backflow prevention devices are a continuous maintenance item which requires approximately $1 million per year ongoing.

14) Parkades

Parkade maintenance - ongoing maintenance to support the lifecycle of concrete parkades.

15) Residences - Roof replacements

Many roofs on campus have outlived their useful life resulting in serious roof leaks causing damage to building interiors, damaged equipment and computers, occupant discomfort, and in many cases, damage or destruction of occupant's paperwork and belongings. The leaking roofs have insufficient insulation and/or roof membranes that have broken down completely or are in an advanced state of disintegration.

University College and Mary Speechly Residences

CATEGORY 2 - INFRASTRUCTURE RENEWAL PROJECTS

Mechanical and Electrical Systems Replacement

Category Priority #	Project Description	Cost Estimate
1	Fire Safety Non-Compliance/ Central Monitoring Upgrades	$26,470,000
2	Basic Medical Sciences Building Asbestos Encapsulation/Sprinkler Installation	$12,400,000
3	Education Building Asbestos Removal/Sprinkler Installation	$8,400,000
4	Dentistry Sprinkler Installation	$2,000,000
5	Chown Building Mechanical Infrastructure Upgrades	$11,550,000
6	Asbestos Cement Domestic Water Line Replacement	$9,550,000
7	Electrical Distribution Upgrades	$7,360,000
8	Allen Building Ventilation/Sprinkler and Ceiling Upgrade Phase 1	$7,300,000
9	Heating, Ventilation and Air Conditioning	$45,350,000
10	Galvanized, Reverse Osmosis, Drain and Vent Pipe Replacement	$13,530,000
11	Safety – Campus Security, Security Cameras, Code Blue Stations, Exterior Lighting	$8,000,000
12	Fumehood Exhaust Fan Upgrades	$$2,100,000
13	Environmental Controls Replacement	$2,040,000

1) Fire Safety Non-Compliance and Central Monitoring Upgrades

The City of Winnipeg Fire Prevention Department has conducted mandatory inspections of all buildings at the University and issued violation notices with mandatory re-inspection dates. The remedial costs to address these non-compliance orders have been covered by the Fire Safety allocation. The University is requesting an annual allocation of $1.5 M to address current non-compliance orders and to implement a program to systematically install sprinkler systems in buildings that require them, repair damaged fire separation, upgrading of fire alarm systems and repair/replace/add fire doors assemblies. The Central Monitoring Station is also beyond its life cycle and there is no longer technical support. This station must be upgraded within the next 2 years. City of Winnipeg Fire Department has made several inquiries as to when the University will address these issues.

The Winnipeg Fire Department, Fire Prevention Branch, carried out mandatory inspections of all University buildings resulting in a long list of violations to be addressed. Work orders have been issued to address many of the minor violations and the Faculties are cooperating to address the violations that are under their jurisdiction. Many of the code compliance issues required
architectural design and contracted construction. Funding is required on an annual basis to ensure compliance. The cost of this program is dependent on the length and number of re-inspections carried out and the University's efforts to achieve compliance.

The non-compliance issues consist of:

- Fire Separation/Hardware Code Upgrades
- Major Building Egress and Fire Separation Issues requiring review and design
- Fire Alarm Installations and Upgrades
  Since the last report, fire alarm installations and upgrades were carried out in Basic Medical Sciences, Drake Centre, Duff Roblin, 37 King's Drive and University Centre. Major fire alarm and sprinkler upgrades have been approved to proceed for Education 100 and 200 levels, and Dentistry Building.
- Emergency Lighting Additions and Upgrades
- Fire Protection Sprinkler Systems New Requirements
  The first phase of the Dentistry sprinkler installation is currently underway, Education 100 level was completed and the 200 level sprinkler installation will begin shortly. Work is underway on the phased BMSB sprinkler installation and funding has been required in the Critical category.

The following projects require funding:

University Centre levels 300 to 500
Allen Building requires full sprinklering
Ellis Building requires full sprinklering
Armes requires full sprinkler
Isbister requires full sprinkler
Tier requires full sprinkler
Medical Services requires full sprinkler
Fletcher Argue Theatre requires full sprinkler
Pathology Building requires full sprinklering

2) Basic Medical Sciences Building Asbestos Encapsulation/Sprinkler Installation – Phase II

The Basic Medical Sciences Building was constructed at a time when asbestos fire proofing was commonly sprayed on structural steel as protection against heat failure during a fire. The building construction also occurred at a point in time when full coverage sprinklers were not required by Code. Both of these features have created dramatic building challenges regarding health and life safety concerns.

In the spring of 2009, a project to construct a sixth floor addition to The Basic Medical Sciences Building (BMSB) to house the New Regenerative Medicine Research Program was approved for $5.039 million in funding under the Federal Knowledge Infrastructure Program. The project was completed in 2011. As per code requirements, this addition must be fully sprinklered, and in order to grant an occupancy permit for this new addition the City of Winnipeg has requested a detailed analysis of the installation procedure and timeline for sprinklering of all 5 floors. Specifically, the City has requested a letter from the University indicating the unequivocal commitment to install the sprinkler system in all BMSB within 5 years of the occupancy of the sixth floor addition (July 2011). The requirement for sprinklering the entire BMSB is a condition of the sixth floor occupancy; if it is not provided, occupancy can be revoked (Correspondence previously provided).

It was initially estimated that the removal and reapplication of the sprayed on asbestos fire retardant insulation in the existing 6th floor interstitial space would cost in excess of $30 M but a less costly approach is being used which will involve safely encasing the asbestos insulation. It is estimated that the

total project costs for encasing the asbestos and the installation of the sprinkler system will cost $14.5M. In 2013/14, the asbestos encasement of the second floor interstitial space and air shaft is now underway. Also a contract has been awarded for the installation of the sprinkler system in the first 2 floors of the building. Total costs for this work is estimated at $2.2M. To complete the encasement and sprinkler installation is still estimated to cost over $12.4 M.

To efficiently install the sprinkler system throughout the remaining building the safest and most effective method is to first encapsulate the asbestos insulation and then install the sprinkler system. It was originally estimated that the treatment of asbestos and the installation of the sprinkler system throughout BMSB would cost in excess of $15.45M (cost estimate previously provided, this cost has been adjusted for inflation).

In fiscal 13/14 we are proceeding with the installation of the sprinkler system in the Crawlspace, Basement, and Main Floor levels. We are also proceeding with the cleanup and encapsulation of the asbestos in the 2 level interstitial space. We now have tendered costs for this portion of the work, which is $1.5M. We are now revising our overall project costs to $13.9M. However this project will still take an additional 5 years to complete. We are requesting $2.5M, $2.7M, $3.2M, $3.6M and $0.4M respectively for each of the next 5 years to keep proceeding with this project.

3) Education Building Asbestos Removal/Sprinkler Installation

The original design of this building complex utilized asbestos containing plaster as the ceiling membrane in order to provide the floor to floor fire rating. The asbestos needs to be abated to allow access to services and to sprinkler the building. Steel floor structures presently protected by the plaster will need to be sprayed with fire-proofing and the ceilings replaced. In 2012/13, ceiling replacement was carried out on the main floor area at a cost of $1.2M. The remaining areas need to be completed as well. In fiscal 2013/14 we are proceeding with Phase II A which is the initial phase of the Second Floor retrofit. We still need to complete the remainder of the building work, but would like to proceed with Phases 2 B, C, and D to finish off the Second Floor. This work will include the abatement of the remaining 2nd floor ceilings, installation of new ceilings, appropriate fire stopping and the installation of a fire alarm and sprinkler system. It is estimated that cost for phase II B is $2,000,000.

4) Dentistry Sprinkler Installation

The 400 level of the Dentistry has a sprinkler system. Installation of the sprinkler system was a requirement for the renovations that are now completed as part of an upgrade required for accreditation purposes. The City of Winnipeg Plan Examinations has requested a letter from the University of Manitoba confirming the timing for sprinklering the entire building.

The University has made some progress on addressing this issue by moving ahead with the installation of the sprinkler system for the Basement and Main Floors with construction this year. The anticipated project cost to complete the remaining building sprinkler installation is $2,000,000. KGS Engineering is now working on the design of the outstanding sprinkler system. In fiscal 2014/15 we would like to install the sprinkler system on the remaining levels of the Dentistry Building and meet full compliance with the City of Winnipeg. It is estimated that this will cost $2,000,000

5) Chown Building Mechanical Infrastructure Upgrades

The Chown Building was constructed in 1963 and has all the original infrastructure. The Faculty of Medicine has developed plans to completely renovate two and a half floors of the Chown Building to develop the "Centre for Healthcare Innovation". The renovations to the third floor are scheduled to proceed in the spring of 2014. During these renovations it would be the ideal time and the most economical time to upgrade the envelope and infrastructure for this building. The building has an exterior wall of brick and block masonry with minimal insulation and no proper air barrier. Moisture is entering the masonry wall and causing portions of the exterior brick to spall off and fall to the street below. As well the aluminum windows do not have thermal breaks and lack a durable tie-in to the wall.

There are alternate approaches to correct these problems. The recommendation for the best long term solution is to remove the masonry facing from the exterior, apply an air barrier and insulation and then re-clad with the masonry. The project cost for this work would be $5.3M excluding windows.

Unfortunately, major interior renovations are required immediately and cannot wait for a major rework of the exterior wall. An alternate, albeit less effective, plan, which may be better, integrated into the major renovation, is available. This would entail applying steel stud furring and drywall finish adjacent the exterior masonry and spraying foam in the resultant cavity to provide needed building insulation and a continuous air barrier. Exterior work in the form of some masonry repairs and repointing would still be required. It is estimated that the project cost for this approach would be $1,600,000. This assumes that the animal area on the upper floor can be vacated for a period of time to carry out renovations on that level.

Window and curtain wall replacements should be carried out at the same time for either of these options. Project costs for this are $2,250,000.

6) Asbestos Cement Domestic Water Line Replacement

Portions of the Fort Garry campus were developed with asbestos cement (AC) water distribution piping. Out of a total of approximately 68,000 feet of existing water piping, 13,500 feet is AC piping. Portions of this piping have begun to consistently fail and require repeated emergency repairs. As this material ages, the failures will become more frequent and more widespread wherever this material is present. These continuous fail/repair cycles cause significant disruption to the users in the affected areas and the emergency repair costs strongly impact University resources. There are a variety of installations, sizes, and locations presently containing this material so total replacement will involve the majority of the Fort Garry campus as we change from asbestos cement to PVC piping. The complete replacement of this asbestos cement pipe is estimated to cost $9,550,000 over the next 5 years.

7) Electrical Distribution Upgrades

Much of the University's high voltage distribution system has not been upgraded for many years due to lack of funding. On many occasions electrical switchgear is found to be inoperative when used which then requires replacement. We are compelled by insurance requirements to check and service our 5 KV distribution annually. We are working on a 5 year plan to upgrade this cabling and equipment.

Also the Duff Roblin emergency generator is 44 years old. This generator is beyond its life cycle and is unreliable and in constant need of repairs. We have plans to connect the Duff Roblin emergency power requirements to the new 2MW generator set that was recently installed as part of the KIP upgrade project.

A 5 KV switchgear review was conducted in 1997 by AGE Engineering. Estimates were also obtained from Wesco and Westinghouse for electrical distribution upgrades. The Wesco budget provides for replacement of motor control centres that are obsolete and have parts that are no longer available. The estimate from Westinghouse provides for 2 weeks of infrared testing of high voltage equipment and the upgrade of mechanical trips to electronic I-Tektor trips.

This project includes replacement of lead shielded paper insulated feeder cables and the testing, upgrading/replacement of outdated electrical distribution equipment.

Recommendations by MCW/AGE Engineering for replacement of high voltage equipment at St. John's and St. Paul's Colleges.

Replacement of 5 KV lead shielded cables in various locations.

University of Manitoba's overhead U8 and U10 4,160 volt electrical feeders are of the old paper insulated lead shielded type. The entire overhead 4,160 volt cabling system along University Crescent is often loaded to near full capacity and due to its age and manufacture is near its end of useful life. Should a major problem occur, half the campus buildings on the north side could be without power with a limited power supply. Failure in winter would result in the building heating and water supply systems starting to freeze in a short period. Cost to replace the cabling from overhead to underground is a high priority.

Test, clean, repair/upgrade/replace distribution equipment in the following areas:

Allen Building, Animal Science, Animal Metabolism Unit, Armes Building, Education I, Education II, Education III, Parker Building, Parking Lot U, Parking Lot S, Parking Lot B , Parking Lot M, Parking Lot I, Parking Lot K & Q, Pembina Hall, Robson Hall, Sculpture Building, Tier Building, University College, University Centre

Upgrade/replace motor control centres in the following buildings:

Isbister Building, Tier Building, Education I, Education II, Education III, EITC III, University College, University Centre, Animal Science, Frank Kennedy, Max Bell, Pembina Hall, St. John's College

The following list of high voltage maintenance projects at the Fort Garry Campus requires funding:

Inspection of all overhead feeders, ground resistance testing on all buildings and rectifying possible problems, installation of new 600 v emergency power feeder to Physical Plant and new transformer and remove pole line, replacement of all pole MTD porcelain disconnect with new gang operated disconnect switch in eight locations, short circuit, coordination and arc flash hazard analysis for 13 – 5 kV feeders and associated buildings, Duff Roblin Emergency distribution upgrade, two gang operated switches on either side of the Art Lab feeder point (currently there isn't an isolating point to re-feed this portion of the 5,000 volt U9 feeder in case of a U9 failure - these would allow us to re-feed this bldg. with either U1, U8 or U10)

8) Allen Building Ventilation/Sprinkler and Ceiling Upgrade – Phase 1

The Allen Building was constructed in 1960 so it is now over 50 years old. While the building was well constructed using quality materials, this building is showing its age in many areas and some of the systems are now failing.

One of the major issues impacting building occupants is the deteriorated condition of the ventilation system air mixing boxes that control the hot and cold air supply to each occupied zone. Each box is lined with an acoustic/insulating material that is coated with a sealing compound. Due to the age of this material, it has experienced a gradual deterioration over the years and has now degraded to the point that the surface finish is now peeling off with the continual air movement. The flaking material is becoming air borne and is being deposited over all surfaces in the building labs, offices, and other spaces that are being ventilated. The material presents itself as dust, dirt and irregular particles over the work surfaces in occupied (ventilated) areas. This causes contamination of the research areas as well as all supporting work surfaces. The only cost effective and efficient resolution is the total replacement of the aged boxes with new units.

Replacing the ceiling-mounted mixing boxes requires that room ceiling systems are removed which gives us the opportunity to replace the aged and failing installations with new systems. These are also required to accommodate the lower ceiling heights required by the revised ventilation systems serving each room. In addition, because the ceiling systems are being lowered, it is an ideal time to install the required sprinkler systems and fire stopping to meet code requirements for this building. The total project cost is estimated at $7,258,000. We are planning to implement this project over a 5 year period.

9) Heating, Ventilation and Air Conditioning

This category addresses the upgrading of the heating and ventilation systems in many of the older buildings on campus. Several buildings do not have any ventilation systems at all and are heated with live steam. Also a number of chilled water upgrades are required to provide building air conditioning and complete chilled water distribution systems.

Accumulation of dust and mold has contributed to complaints of Indoor Air Quality contributing to sore throats, nausea, burning eyes and cold and flu symptoms. An annual program of cleaning building ductwork is required. Current annual operating budgets cannot support a regular ductwork-cleaning program.

The Russell Building was constructed in 1959 and is experiencing many of the problems of the University's ageing building stock. In addition, internal cooling demands and environmental requirements have dramatically changed since the original building design parameters were established. High population densities and new cooling loads such as photocopiers, printers, and computers have all contributed to a shortfall in building cooling capacity. Temperature zoning is also outdated and not to latest standards. Providing additional air handling/ventilation capacity and breaking up the temperature zoning will bring the building up to latest ASHRAE standards as well as substantially improve indoor comfort levels. A report from TPR Consulting was provided previously.

Laboratory safety and operational standards are continually expanding and these issues can impact existing infrastructure systems to the point where they can no longer meet increasing demands. The

University's Environmental Health and Safety Office have assisted Physical Plant in identifying deficient operations and suggest upgrades to bring systems back into compliance.

The Basic Medical Sciences Building on our Bannatyne campus has been identified as a facility that has become deficient in makeup air as new laboratories and the need for more exhaust are continually being added in support of the research and teaching activities in this building. When constructed the lab exhaust rates were quite minimal and were matched directly to the fume hoods installed in each area. New standards now require that not only must the fume hood rates be handled, but also each laboratory must function under an air exchange rate of 10 air changes per hour. The 400-500 cfm provided for the original fume hood now becomes 2000-3000 cfm to meet the air change requirement. These large demands for fresh air mean that the main air supply units must be made capable of heating and cooling major quantities of outdoor air. (Report from SMS Consulting previously attached).

Other buildings with inadequate ventilation are:

Dafoe Library, Education 2, Mary Speechly Hall, Sinnott Building, St. Paul's College, University College Academic

Buildings with no ventilation are:

Administration Building, Dairy Science, University College Residence

Buildings that require duct cleaning urgently:

Several buildings have been cleaned over the last couple of years; however a regular program needs to be established. It is estimated that $100,000.00 annually should be allocated to clean ductwork on a regular basis of the over 100 buildings on Campus.

Buildings that require upgrades and replacement of steam controls and valves:

Allen Building, Animal Science, Architecture ll, Armes Building, Dafoe Library, Dairy Science, Education l, Education ll, Education lll, Ellis Building, Engineering 3 Building, Extended Education Building, Fitzgerald, Fletcher Argue, Frank Kennedy, Isbister Building, Joyce Fromson Pool, Machray Hall, Mary Speechly Hall, Music Building, Parker Building, Pembina Hall, Physical Plant, Robson Hall, St. Andrew's College, St. John's College, Tier Building, University Centre, University College

Buildings that require heating system conversions to add treated make up:

Agriculture Building , Agriculture Lecture Block, Animal Science, Architecture l and ll, Central Energy Plant, Dafoe Library, Drake Centre, duff Roblin Building, Ellis Building, Engineering 3 Building, Extended Education Building, Fletcher Argue, Frank Kennedy, Investors Group Athletic Centre, Isbister Building, Machray Hall, Mary Speechly Hall, Max Bell Centre, Music Building, Pembina Hall, Physical Plant Building, Robson Hall, St. Paul's College, Sinnott Building, Tier Building, University College Academic Wing, Wallace Building

Chilled water air conditioning upgrades and additions:

St. Paul's/Sinnott

Campus – Steam/Condensate/Air Underground

Grid upgrade

10) Galvanized, reverse Osmosis, Drain and Vent Pipe Replacement

Galvanized Pipe Replacement

Galvanized pipe has been replaced in many buildings on campus, such as Administration, Agriculture Lecture Block, Allen, Animal Science, Armes, Buller, Dairy Science and Tier Buildings and the main risers in University Centre. However, several buildings on campus still contain galvanized pipe, which continues to deteriorate and provide a constant source of leaks causing damage to interior of buildings and interruptions to teaching and research as repairs are undertaken. It has also recently become evident that in the Administration Building, the drain water and vent piping has corroded to a point where in several locations there has been sewer gas entering the buildings. In order to eliminate the reoccurrence, immediate replacement is recommended.

In addition to replacing galvanized piping, we are also facing the replacement of a failing glass reverse osmosis water system in the Ellis Building. It has served us well for many years but requires increasing levels of maintenance and is no longer resilient to changes, repairs, and maintenance so suffers continual breakage and expensive remedial work. The option at this time is to replace it entirely with new stainless steel piping.

A more detailed study has been carried out and the cost estimates have been revised to reflect this study. The cost estimates do not reflect any additional costs for asbestos removal, as a detailed survey would have to be carried out. Cost estimates also do not include any architectural remedial work such as re-plastering and painting. The estimates in order of priority are:

University Centre, Frank Kennedy, Ellis RO Piping, Plant Science RO Piping, Buller RO Piping, Science Complex – 6" galvanized water main, Chown Building, Dairy Science, Medical Services, Medical Library, Pathology Building, St. John's College

Asbestos Cement Storm Water Pipe Replacement

University Centre was constructed with large runs of asbestos cement storm water piping in crawlspace areas. This pipe is quite brittle and installed with slip joints. This system has aged and has become susceptible to damage from storm surges. When subjected to high storm water flows, slip joints are now coming apart with resulting water damage to surrounding areas. Clamping the pipe joints is not possible because of the asbestos material, which may be released, and because of the brittle nature of the pipe. This material is also subject to breakage if struck. It has been shown that these systems are no longer reliable for drainage purposes. Our best option will be to change these piping systems over to PVC with permanently sealed joints.

University Centre

Drain and vent pipe replacement

Administration Building

Domestic Underground Water Distribution

Portions of the Fort Garry campus were developed with asbestos cement (AC) water distribution piping. Out of a total of approximately 68,000 feet of existing water piping, 13,500 feet is AC piping. Portions of this piping have begun to consistently fail and require repeated emergency repairs. As this material ages, the failures will become more frequent and more widespread wherever this material is present. These continuous fail/repair cycles cause significant disruption to the users in the affected areas and the

emergency repair costs strongly impact University resources. There are a variety of installations, sizes, and locations presently containing this material so total replacement will involve the majority of the Fort Garry campus as we change from asbestos cement to PVC piping. Plans and specifications have been done to proceed with the first phase of this work in 2014 with a cost estimate of $1.83M. To complete the replacement of this asbestos cement pipe is estimated to cost $7,650,000 over the next 5 years.

Underground Water Distribution

11) Safety- Campus Security, Security Cameras, Code Blue Stations, Exterior Lighting

There has been increasing concern of personal safety on the Fort Garry and Bannatyne Campuses in recent years due in part to the fact that the University conducts classes late into the evening. As off campus communities increase their surveillance systems, those committing criminal acts are coming onto campus properties due to the openness of the community and lack of contemporary surveillance systems. Many building classrooms, laboratories and offices store valuable equipment, computers and exam material and are vulnerable to break and entry as well as mischief theft. In addition, many employees work alone after regular in buildings that are otherwise vacant. In 2010, there have been 3 reported serious unprovoked assaults against students and staff; two outside a building and one inside.

The one time allocation of $1.2 million received in March, 2008 is being used to implement a campus wide emergency notification system. However, it is estimated that $8.0 M is required to alleviate concerns expressed and reduce the real threat to personal safety by improving access to code blue stations, improving observation through security cameras, card access systems, and improving exterior lighting levels where required.

For the time period 2007-2012 (as of August 8, 2012), there were 1,738 reported criminal code offences. Increased staffing level and other factors have resulted in a drop in Criminal Code offences on campus in recent years. The value of property stolen or damaged during this period was approximately $550,000, although many incidents are lacking a comprehensive estimate of damages. Risk to personal safety far outweighs of course property loss of any value.

12) Fumehood Exhaust Fan Upgrades

Increasing safety concerns over the discharge of exhaust from the fume hoods on several buildings have been brought up. These concerns are the exposure of maintenance personnel to fumehood exhaust and the short-circuiting of exhaust fumes into building make-up air systems.

An additional concern is the high maintenance of the large number of these fan systems. It is recommended that a manifolded duct system and proper fans be installed on these buildings to insure adequate dilution and adequate discharge velocities be attained to provide proper disbursement of the fumehood discharge gases. This would eliminate the safety concerns and reduce maintenance costs.

Basic Medical Sciences Building (BMSB) has an assortment of exhaust fans serving over 60 individual fume hoods. Each unit is individually controlled and causes fume hood shut downs whenever a fan system fails. This can lead to safety concerns in the affected lab space and interruptions to active research projects. It is intended to replace the wide collection of fans with large central fans and back up fans to provide support should a main fan shut down.

13) Environmental Controls Replacement

A large part of the building environmental controls system (Delta Control System) at the University of Manitoba has been upgraded through the MCW/ESCO Energy Performance Contract (1997/98); however there are still several areas that require upgrading to maximize energy efficiency and occupant comfort. Also the initial versions of this software are now outdated and incompatible with the new versions.

The following is an updated list that fairly accurately reflects the remaining areas on campus that require control system upgrades to improve environmental control and energy efficiency:

Upgrade current software and servers to the latest version of Delta so all systems are compatible

Convert Control Systems from Honeywell to Delta (Drake Centre, Fitzgerald Building, Wallace room level control, Max Bell (200/300 levels only)

Automate non-DDC HVAC Systems

Administration Building - 6 AHU's
Animal Science - Annex Animal Holding
Animal Science - Perimeter Heating
Architecture II - Computer Lab
Dafoe Library - Greenhouse Café
Dafoe Library - Reading Area
Dentistry - Multi-zone zones
Drake Centre - 21 Classrooms
Fitzgerald - Basement MR & Annex
Max Bell - Change Rooms, Lobby
South Tunnel - Ventilation Fans
University Centre - Microcomputer Centre

CATEGORY 3 – MAJOR CAPITAL PROJECTS
Renovation, Adaptive Re-Use or Replacement

Category Priority #	Project Description	Cost Estimate
1	Palace Theatre	$3,000,000
2	"Sandbox" Demonstration Project	$4,500,000
3	Classroom Optimization and Reconfiguration (resulting from ECS study – multi-phased)	$27,000,000
4	Laboratory Optimization and Reconfiguration (resulting from ECS study – multi-phased)	$34,000,000
5	Library Renovations	$10,000,000
6	Fitzgerald Building and Annex Renovation	$9,000,000
7	Music Building Renovation	$12,000,000
8	Repurposing of Helen Glass	$3,000,000
9	Basic Medical Sciences Renovation, Gross Anatomy, Vivarium, Physical Plant	$72,000,000
10	Bannatyne – New Green Space (former T Building site) and Interior Circulation Renovations	$9,000,000

1) Palace Theatre

The University of Manitoba purchased the Palace Theatre (501 Selkirk Avenue) in early 2012 with the intention to redevelop the former theatre as a multi-purpose addition to the adjacent William Norrie Centre. The redevelopment will provide an opportunity to repurpose the space as a community-based facility that will support community activities in addition to some universal classroom space. Initial concept design and planning has taken place including community consultation, confirming that the space would best be redeveloped to provide classroom and community assembly space for approximately 150 people, looking at a current total useable net area of approximately 7500 sq. ft., split out in two levels.

2) **Sandbox" Demonstration Project**.

This project will be a center for innovate pedagogy including collaborative and active learning processes, as well as research into those innovations. It will be a flexible learning space able to accommodate different class sizes and methods of teaching, along with capabilities of developing, evaluating, and implementing software solutions for teaching and learning. The Space Master Plan project process being conducted by ECS has identified major shortfalls in the quality of classrooms. There is huge demand for more technologically upgraded and renovated classrooms, placing undue pressure on a small pool of teaching spaces. Students and Faculty members have all expressed the dire need for more technology in the classroom setting, and quality spaces that foster interdisciplinary education is University priority.

The Sandbox is learning space configurable to three envelopes with the appropriate fittings and furniture: 100 students for large group teaching, 4 x 25 students for seminar teaching, and 10 x 10 for

small group teaching. It contains the necessary learning and information technologies to support bring-your-own-device learning, synchronous and asynchronous approaches to teaching, and mixed media.

The Sandbox is also the nidus for a protected IT environment for the investigation, development, evaluation, implementation of novel software solutions for teaching and learning. The IT environment within the Sandbox will be designed to afford maximum flexibility for discovery and innovation without the risk of "contaminating" enterprise systems.

3) **Classroom Optimization and Reconfiguration (resulting from ECS study – multi-phased**

The instructional analysis report submitted by ECS has indicated an excess of larger classrooms on the Fort Garry campus, along with a low average utilization rate for campus classrooms in general. In an effort to make more efficient and sustainable use of existing instructional space on campus, the University plans to identify those classrooms that are underutilized due to size, location etc. and repurpose them for other essential functions. Generic functions such as central classrooms; communal, group and casual study space; as well as student services will occur throughout the campus but will congregate in greater intensity in central locations, whereas faculty and research buildings of a specialized nature will find places further out.

Of the 300 classrooms and 400 teaching labs at both University of Manitoba campuses many still require immediate attention to upgrades from both a basic physical perspective as well as a technological perspective. A considerable number of these rooms have fallen into such physical disrepair that the learning environment has been negatively impacted. Physical repairs are needed in many rooms ranging from simple patching; painting and ceiling repair to more serious structural repair. From a technological perspective, much progress has been made to upgrade the larger lecture theatres and teaching labs but many classrooms still date back to a previous era.

Classrooms are at the nexus of the converging technologies and they must be able to accommodate a variety of teaching and learning styles. To be used effectively the classroom will become an integral part of the campus information technology environment. They will also surround the instructor and the learner in an information envelope, providing access to learning materials and information processes.

4) **Laboratory Optimization and Reconfiguration (resulting from ECS study – multi-phased)**

The reconfiguration of labs is necessary to meet changing research needs, and to make more sustainable and efficient use of current lab spaces on campus. Following ECS' space planning work, the University plans to identify those labs that are underutilized and that require reconfiguration for optimized use.

5) Library Renovations

The libraries on UM's campuses support learning, teaching, and research. Renovations have begun in some of our libraries to improve customer service, increase access to resources (particularly with respect to electronic resources), and modernize the collections and space; however, there is more work to be done to ensure that our libraries are a valued resource to our University community. Plans are not

yet finalized, but UM is committed to raising funds to enable this work to take place. This would include the continued renovations to Dafoe Library.

6) **Fitzgerald Building and Annex Renovation**

The Fitzgerald Building and Annex is a signature building on the Fort Garry Campus and has been slated for extensive renovation including complete asbestos remediation and abatement. It has been identified in the ongoing Space Master Plan project as an important structural element in the core of the campus, which elevates its priority in the usage of more sustainable construction practices, and the provisions of suitable, healthy spaces for students, faculty & staff.

7) Music Building Renovation

Music Building occupants will be relocating to the new Taché Hall redevelopment. As a centrally located structure on the Fort Garry campus, it is a logical choice for repurposing and renovating in order to accommodate new functions and occupants. The building envelope requires upgrading due to the previous humidity levels that were required for musical functions. The space master planning work being done by ECS will help determine the new functions of this building.

8) Repurposing of the Helen Glass Building

The anticipated relocation of the Faculty of Nursing to the Bannatyne campus will result in the vacating of the Helen Glass Building. Through the Space Master Plan process and subsequent Campus Master Plan process, a reuse plan will be developed assuming nominal renovations, if any, to accommodate new users.

9) Basic Medical Sciences Renovation.

The BMSB facility was constructed in the early 1970's and the research laboratories are outdated, inefficiently structured and incapable of meeting researcher's needs to perform interdisciplinary research. The facility includes major research facilities of the Faculty of Medicine: Anatomy, Medical Microbiology, Biochemistry & Medical Genetics, Physiology, as well as Gross Anatomy and Central Animal Care.

Renovations would address the need for enhanced biosafety levels, facilitate the development of inter-disciplinary research in laboratories, enable evolving scientific program goals, maximize efficiency of core infrastructure (cold rooms, centrifuges, fume hoods, microscopy rooms) and reduce operational deficiencies of the existing layout. These renovations are imperative to achieving strategic research goals for the Faculty of Medicine and are fundamental requirements in order to enhance the quality of undergraduate and post-graduate medical education. This significant initiative would be undertaken at the same time that asbestos abatement and sprinklering is undertaken.

Before this takes place, the "Multi-Purpose Building" will have to be completed as it will provide decanting space for BMSB occupants during renovation, which will include the following projects**:**

a) Gross Anatomy Relocation and Expansion to address unsuitable current location and to reflect changes to equipment, techniques and procedures.
b) Vivarium Relocation and Expansion to address space deficiencies and suitability issues with current location, to reflect changes in interdisciplinary research and to centralize animal service holdings in one location.
c) Physical Plant relocation from current T-Building location into Level 1 of BMSB.
d) Animal Care Facility – The current facility is very close to failing CCAC standards for air handling, among other things. A new central animal facility will allow Bannatyne to consolidate small animal imaging, central breeding and have a true barrier facility for genetically modified animals and be current with CCAC standards.

10) New Green Space (former T-Building location) and Internal Circulation Renovations including indoor pedestrian bridges

a) A new campus green space is key to meeting the mandate of the Bannatyne Campus Master Plan. The creation of a vibrant campus rich with quality of life amenities includes adequate open space. The demolition of the T-Building will make way for a 'campus quad' that will also be the permanent home to the Bannatyne Campus Medicine Wheel Garden.
b) Indoor campus connections are important. Connecting the campus by completing an internal pedestrian loop includes the widening of existing corridors and construction of two indoor bridges to connect the south side of the campus to the north side. This circulation system is critical to support not only safe and comfortable student and staff movement but also the movement of animals.

CATEGORY 4 – MAJOR CAPITAL PROJECTS
New Construction

Category Priority #	Project Description	Cost Estimate
In Progress	Tache Arts Project	$66,700,000
In Progress	Active Living Centre	$15,770,000
1	Bannatyne Parkade Expansion	$9,000,000
2	Nursing Building, Bannatyne Campus	$50,000,000
3	Expansion of Richardson Centre for Functional Foods and Nutraceuticals to incorporate new RCSC and upgrades	$40,000,000
4	Plant Genomics Institute	$25,000,000
5	Fort Garry Students Residence	$26,000,000
6	IT Data Centre	$15,000,000
7	Dual Faculty Design Centre	$25,000,000
8	National Research Centre – Truth and Reconciliation Archives	$12,000,000
9	Bannatyne Multi-Purpose Building (MPR): T Block Replacement, Dentistry Expansion	$55,000,000
10	MPR: Centre for Community Engagement and Interprofessional Teaching Clinic	$10,000,000
11	Bannatyne Interprofessional Research, Teaching – Future Needs	$60,,000,000
12	MPR: Student Services, Student Life, 200 Bed Student Residence	$35,000,000
13	Cyberinfrastructure (IT Office) Complex	$35,000,000

Taché Arts Project

Taché Hall is undergoing a transformation into a performing and visual arts complex. Through the Taché Arts Project (TAP), the University of Manitoba will see the construction of the Art Research Technology Lab (ART Lab) and the bold redevelopment of facilities for the Marcel A. Desautels Faculty of Music, the School of Art and the Theatre Program's Black Hole Theatre Company.

Active Living Centre

The University of Manitoba is expanding its current recreational facility to create a world-class health, wellness and fitness centre. The new 100,000 square foot Active Living Centre will house a state-of-the-art indoor running track, a 40-foot climbing wall, a social gathering area for students, a strength and conditioning room, a group workout area, 3 multi-purpose rooms and a space devoted to bringing together service providers from multiple disciplines (exercise physiologists, exercise psychologists, registered dietitians, athletic therapists, etc.) with researchers and graduate students to support people striving to begin or sustain an active lifestyle.

1) Bannatyne Parkade Expansion

Addition of two levels at 100 spaces per level at a cost of $36,000 per stall plus access control equipment.

2) Nursing Building, Bannatyne Campus

Required in order to relocate the Faculty of Nursing to form the Bannatyne Health Science Cluster. Initial space programming on the relocation of the Faculty of Nursing concluded that the Faculty of Nursing requires 95,400 sq. ft. to accommodate its current enrolment on the Bannatyne campus.

3) Expansion of Richardson Centre for Functional Foods and Nutraceuticals

The RCFFN currently has 55,000 sq. ft. of space divided among various uses, pilot plant, analytical laboratories, animal care, clinical research unit, and administration areas. A feasibility study was launched last September to explore the expansion of the Centre to add seven new or enhanced capabilities on the lot east of the existing facility. New capabilities will include growth chambers, a nutrition research unit, a green/sterile bio-processing and extraction technology suite, a Department of Food Science pilot plant, a green packaging technology suite, co-packaging services, and innovation/commercialization services, all of which could add between 20-30,000 square feet of new space. The expansion will add to the capability of the research center and will provide a greater focus on commercialization of the research outcomes as well as partnerships with private sector industry.

4) Plant Genomics Institute

The Institute will focus on developing plants which can give bumper, high quality yield under abiotic (heat, drought, cold) and/or biotic (plant disease) stresses. This will help in maintaining Canada's reputation of supplying high quality grains to domestic and export markets and continue to contribute heavily to provincial and Canadian GDP. The Institute will be a three-way partnership (federal, provincial, university) and will require an initial invest of $25M (with an anticipated share of $8.33M from the University of Manitoba).

5) Fort Garry Student Residence

220 beds with equipment and furnishings based on the "D" Lot Residence estimate dated November 2012.

6) IT Data Centre

The University of Manitoba operates a complex network and computing infrastructure servicing over 85 buildings on multiple campus locations. The heart of this infrastructure is a 2,500 square foot Primary Data Centre located on the Fort Garry campus that is over 40 years old. Entering its fifth generation of service, the University has concluded the existing facility has reached end-of-life and cannot reasonably accommodate the long term needs of the University and its stakeholders, primarily due to weight/load restrictions and electrical limitations, and as such is embarking down the path of building a new Primary Data Centre. Renovating the existing space is not considered an alternative.

The new Data Centre will be the core of central IT services for the University. The technological needs of the University continue to grow and transform, and it is possible the new facility could also provide data centre services to other educational or public service entities in the province. Working closely with University departments such as Information Services & Technology (IST), Physical Plant (mechanical, structural, electrical and architectural services), Purchasing and the faculties and departments who rely on a dependable set of IT services, this project is expected to be a multi-phase, multi-year construction project.

Due to load-bearing requirements, no structure presently exists on campus to accommodate the new Primary Data Centre. Proposed locations for this new build are, in order of priority, the Music Annex (due to the proximity of major electrical and data fiber runs into E3), the southwest corner of SmartPark, or an offsite location if a shared facility with other educational or public service entities in the province can be negotiated.

7) Dual Design Centre

A major emerging theme of the current Space Master Plan process is the need for the academic research facilities to be located and developed to encourage intra- and inter- disciplinary contacts. The Dual Faculty Design Centre will include shared space and equipment that supports design education in both architecture and engineering which through the innovative design of the Centre encourages students to develop their imaginations and produce novel outcomes. The Centre will include significant facilities and space allowing novel digital designs to be prototyped using advanced rapid prototyping techniques and tested against design objectives. The Centre will be an integral part of the student learning experience by housing several supporting personnel and programs.

8) National Research Centre – Truth and Reconciliation Archives

The Truth and Reconciliation Commission is mandated to acknowledge the Indian Residential School experiences, impacts and consequences. On June 21, 2013, an agreement was signed with the Truth and Reconciliation Commission of Canada and the University of Manitoba, entrusting the U of M to host a National Research Centre on Residential Schools. The Commission has gathered statements, documents and other materials, which the UM will now preserve and make accessible to Survivors and their families, scholars and the general public. The Centre will help demonstrate and enact the University's commitment to social sustainability through truth and reconciliation and through continued dialogue on Aboriginal and human rights issues. It will also form part of the campus master planning work undertaken by the winning team from the Visionary (re)Generation competition. This will be a key and signature future building for the campus, necessitating and demonstrating an interface between a built structure and the landscape.

9) Multi-Purpose Building

The Old Basic Sciences Building or T-building was constructed over 100 years ago and is held together with steel cables. We have serious concerns about the continued structural integrity of the building and about the potential for large tyndall stone blocks to separate from the building and fall on passersby.

The roof needs replacement and the building envelop is basically porous and beyond repair. The most prudent and economically decision is to demolish the building and re-construct an efficient facility on site. Current occupants would be decanted during construction of a new facility.

a) Expansion and Renovation of the Faculty of Dentistry to address significant instructional and clinical space deficiencies identified through the analysis conducted by Educational Consulting Services (ECS) in the Bannatyne Space Master Plan process.
b) Decanting Space to accommodate T-Building demolition, co-locating of Department of Medical Rehabilitation and Medical Services.

10) Multi-Purpose Building: Inter-professional Teaching Clinic incorporating Medicine, Med Rehab, Dentistry, Pharmacy, and Nursing in an integrated way that combines teaching, research and learning with community outreach.

11) Interprofessional Research and Teaching Building

Key to meeting the expectations of a modern, state of the art health science campus is the ability to provide shared access to state of the art research and teaching facilities that are optimized with appropriate equipment and technology. As the space planning results for the Faculty of Medicine are not yet complete, there may be space needs in the Faculty of Medicine that could be addressed by utilizing space in this new research and teaching building.

12) Multi-Purpose Building, including the following uses:

a) Student Services and Student Life Amenities such as food, recreation, and other student services which are currently minimal on the campus, or that could be expanded.
b) 200-Bed Bannatyne Campus Student Residence (to be located on top of new multi-purpose building). A recent student housing market and demand study confirmed that there is significant demand for student housing on the Bannatyne campus but no existing supply. The study suggests that the current demand for housing from full-time, single graduate and undergraduate students is 319 beds.

13) Cyberinfrastructure (IT Office) Complex

As the principal provider of IT services to all stakeholders at the University of Manitoba, the Information Services and Technology (IST) department is comprised of approximately 180 staff within three divisions – Computer and Network Services, Enterprise Systems and Client Services – who are very geographically dispersed across the Fort Garry and Bannatyne campuses. In conjunction with the construction of a new Primary Data Centre, the proposed new Cyberinfrastructure Complex would serve to consolidate the staff from these multiple locations into a single building. In addition to the benefits of creating a vastly more team-centric, effective, efficient and productive IT workforce, the departure of IST staff from the current office locations would allow for faculties and departments to more readily reorganize their existing constrained office, classroom and laboratory facilities into these vacated spaces and places. The reconfigurable design of such a complex would allow for the expansion and contraction of staff, meeting and project room spaces to adapt to the ever-changing IT service demands of the University community.

Depending on the location selected and design of the complex, it is not intended to be exclusively for the use of IT personnel – possibly more of a corporate services facility that could include other departments on campus that IST collaborates closely and frequently with such as the OCI, Physical Plant, faculty IT support units and others. The facility will create synergies among researchers, faculty, staff and students by serving as a central location for collaboration and sharing of IT resources. It will also play a key role in the University's efforts to attract new technology-based opportunities and investments to the campus and the city. Ideally, the Complex would adjoin the site of new Primary Data Centre.

CATEGORY 5 – OTHER MAJOR CAPITAL PROJECTS

Category Priority #	Project Description	Cost Estimate
1	Oil Spill Sea Ice Research Lab (Churchill, MB)	$24,000,000
2	Wayfinding, Fort Garry Campus	$5,600,000

1) Oil Spill Sea Ice Research Lab (Churchill, MB)

In the future, less ice and the demand for more resources will prompt oil drilling in the Arctic Ocean. We need to be ready to address potential oil spills and their effects on the Arctic environment. The Churchill Marine Observatory/Oil Spill Sea Lab would include the Oil in Sea Ice Mesocosm (OSIM). The Observatory would be located in Churchill and run by the U of M. The proposal is still at the concept stage but there is considerable interest amongst partners/sponsors/donors and development of the plan is on-going.

2) Wayfinding

The overall guiding principle of the signage system is to maximize communication while minimizing the number of signs. The sign system guidelines direct the administration, design, implementation and maintenance of signs on the University of Manitoba properties. The sign standards and specifications are intended to:

- establish sign continuity throughout university properties;
- ensure consistency in presentation (colour, materials, typography)
- promote legibility and readability through effective use of graphic and typographic techniques
- develop signs that are functional and economical, serving the needs of students, staff and visitors
- develop signs which are easy to install and easy to maintain
- minimize the proliferation of signs through careful planning and placement
- provide for flexible application, recognizing the environmental and architectural differences, and permanent or temporary needs, and
- provide signage for visually impaired.

The first phase of exterior signage implementation is currently underway, and the second phase (interior signage) will be next in the process. The following signage is required:

Exterior:
- Building Lettering (60 buildings)
- Lawn Signs (50 buildings)
- Directory (50 buildings

Interior:
- Identification (60 buildings)
- Directional (60 buildings)
- Tunnel signage (20 locations)