University of Missouri – St. Louis



Wellness Center

Summary Program of Architectural Requirements

October 2004

DRAFT

BRAILSFORD & DUNLAVEY

Section

Section 01

This page intentionally blank

PROJECT BACKGROUND

In January 2004, the University of Missouri – St. Louis (UMSL) engaged Brailsford & Dunlavey (B&D) to evaluate the extent to which the University and its wellness / recreation facilities are meeting the institution's mission and to determine future demands for wellness / recreation activities on or near the campus.

B&D presented the University with a comprehensive feasibility assessment including recommendations to prepare detailed documentation describing the architectural requirements to develop a new wellness facility on the UMSL campus.

This *Program of Architectural Requirements* sets forth Brailsford & Dunlavey's findings and recommendations.

The findings contained herein represent the professional opinions of Brailsford & Dunlavey personnel based on assumptions and conditions detailed in this report. Brailsford & Dunlavey analysts have conducted research using both primary and secondary information sources which are deemed to be reliable, but whose accuracy Brailsford & Dunlavey cannot guarantee. Due to variations in national and global economic and legal conditions, actual project costs, revenues and demand projections may vary and these variations could be substantial.

FACILITIES HISTORY

UMSL's existing *Mark Twain Center* has been the only facility available to host wellness, physical education, and recreation activities. Since being built in 1969, the building has primarily served the University's athletic programs. It contains a gymnasium with several basketball and volleyball courts, a fitness room, weight room, swimming pool, indoor running track, racquetball / handball courts, men's and women's locker rooms, a trainer's room, and an equipment room. The building however lacks natural light and many spaces are cramped and awkward. The track alone is a safety concern with many doors opening on to it. The building is not on a commonly used path and does not encourage casual visits. Overall, students and staff have commented that the building does not provide many of the features, amenities, and facilities required to properly serve the wellness and recreation needs for a population of users the size of UMSL's.

PROJECT SUMMARY

The project will provide improved space for life-long wellness and recreation activities for UMSL students, faculty, staff, and alumni and possibly the neighboring community. The architectural program totals over 92,000 gross square feet of new construction. The comprehensive project budget totals approximately $21.8 million in hard and soft costs.

DOCUMENT GOAL

This document identifies architectural requirements that the design will need to meet in order to address the goals. Therefore, this document is the product of extensive planning and is the University's primary means for communicating the project's requirements to a design team. This document is organized to provide the project's general and specific requirements in a direct and easily accessible manner.

This document has been developed to act as a guide for the Architectural / Engineering team. It is not intended to stifle the creativity of designers; rather, the document's purpose is to provide the minimum requirements from which the A/E team may generate design solutions. The designers may diverge from these program requirements after meeting the minimum requirements and developing work products that illustrate superior solutions. This document is essential to the development of a design representing the goals and ideals of the University of Missouri – St. Louis.

DOCUMENT ORGANIZATION

- **Project Objectives**:
  A discussion of the University's overriding purposes for developing the project.

- **Design Philosophy**:
  A description of the overall atmosphere and aesthetic which the design must endeavor to achieve.

- **Site Design**:
  A description and diagrams of the selected site explaining the major site-related design considerations.

- **Outline Program**:
  A space-by-space summary of the project's assignable program elements.

- **Functional Relationships**:
  A matrix and diagram indicating the preferred adjacencies between program elements and their relative importance.

- **Project Efficiency Considerations**:
  A discussion of spatial efficiencies, the formulation of the project efficiency factor, and the impact of this on the development budget.

- **Development Budget**:
  A summary and description of budget requirements for the development of this project.

- **Project Finance**:
  A description of financing requirements for the development of this project.

- **Project Schedule**:
  A description of scheduling requirements for the development of this project.

Section 02

This page intentionally blank

PROJECT OBJECTIVES

The initiative for a Wellness Center on the UMSL campus is founded in the success of the Millennium Student Center (MSC). The MSC has been integral to enhancing the identity of UMSL and building an on-campus culture. Relative to the previous student center on campus, the MSC is thriving with activity and consider by many as the hub that all students to some degree, pass through, sit in, and enjoy.

It is in an effort to continue to **build a stronger on-campus culture**, that the Wellness Center finds it place in the campus context. The objectives for the project have been expressed in various ways such as:

- "we need to create the new feeling of a campus for the next generation of students to enjoy" (which would further support other initiatives such as the development of ponds and pathways in the inner core)
- "we need another place that everyone wants to celebrate; that the whole UMSL community is attracted to and is proud to take ownership of"
- "we need to create more reasons for a student to be proud to be at UMSL
- "we need to encourage to students to stay on campus instead of leaving after class"
- "we need to enhance recruitment, retention and class attendance"
- "we need to provide outlets for student and faculty/staff stress mitigation"
- "we need to build a larger amount of residential life facilities"
- "we need modern fitness equipment in a modern facility that is convenient to where classes are held and where students congregate such as the MSC"
- "we need more pieces of equipment to therefore be reliably accessible when students want to use them"
- "we need to provide wellness and fitness opportunities to address even the student who never works out and is only at UMSL to get a degree"
- "similar to mind-body-spirit, we should show commitment to a student's wellness opportunities-social opportunities-life skill opportunities"
- "we want to show commitment to the value of opportunities for student socialization to extend the spectrum of what students can do together"
- "we want to indirectly improve the athletic program by reducing the limitations created by sharing spaces"
- "we do not want to simply recreate Mark Twain Center"
- "we need a facility that will match what students want with what student can afford"
- "for non-student members, we should have a tiered pricing structure"

Section 03

This page intentionally blank

DESIGN PHILOSOPHY

The University of Missouri – St. Louis intends for the project to meet the identified space needs of the institution and to demonstrate the overall commitment of the University to the wellness of its students, faculty and staff. Overall, the project should bolster on-campus wellness and recreation activities while also adding to the campus' overall physical and aesthetic quality.

The new facility should integrate successfully with the architectural expression of UMSL's existing buildings, especially the nearby Millennium Center, as well as the overall layout of the campus. As the mass and scale of the project is so large, special care should be directed to making sure that the new facility aesthetically compliments existing facilities and does not dominate the campus or compete with the existing architecture.

The building will require complete architectural solutions that define both a campus recreation zone as well as an entry point for individual users. Design ideas should present the building successfully to the public while integrating it with existing facilities.

The new facility is envisioned as a place of vibrant activity, encouraging students to develop athletic and personal fitness skills that will last a lifetime. As such, it is imperative that the character of the building be inviting and dynamic while at the same time remain accessible and welcoming for those of all skill levels. Entry areas must be well-defined and extend an invitation to enter and use the facility. The use of a central core circulation system should be employed to provide visibility and cross views of available activities.

PROGRAM DESIGN REQUIREMENTS

Design will be considered to be in compliance with the program if space allocations for each element are within 10% of program requirements or 200 square feet, whichever is less.

An effective design effort will result in:

- unified program elements that help develop a sense of community
- meeting the projected efficiency calculations while creating circulation that is simple and wayfinding that is clearly articulated

- program elements that allow for views into other activity spaces

Section 04

This page intentionally blank

SITE SELECTION SUMMARY

Guided by input from the University, B&D completed a full review of potential sites for the new Wellness Center and performed a thorough site analysis which provided insights into potential space considerations and the relevant positive and negative impacts of each site. The analysis included the following component processes:

- Preliminary Analysis consisting of a brainstorming session during the feasibility phase of the project to determine every possible site for review, utilizing information from the Facilities Master Plan as well as the visual aid of a full aerial photograph of the campus.

- Development of qualitative “Site Drivers” to be employed in the ranking of potential sites by the Wellness Facility Initiative Group.

- Ranking of potentially viable sites per the Site Drivers by the Wellness Facility Initiative Group.

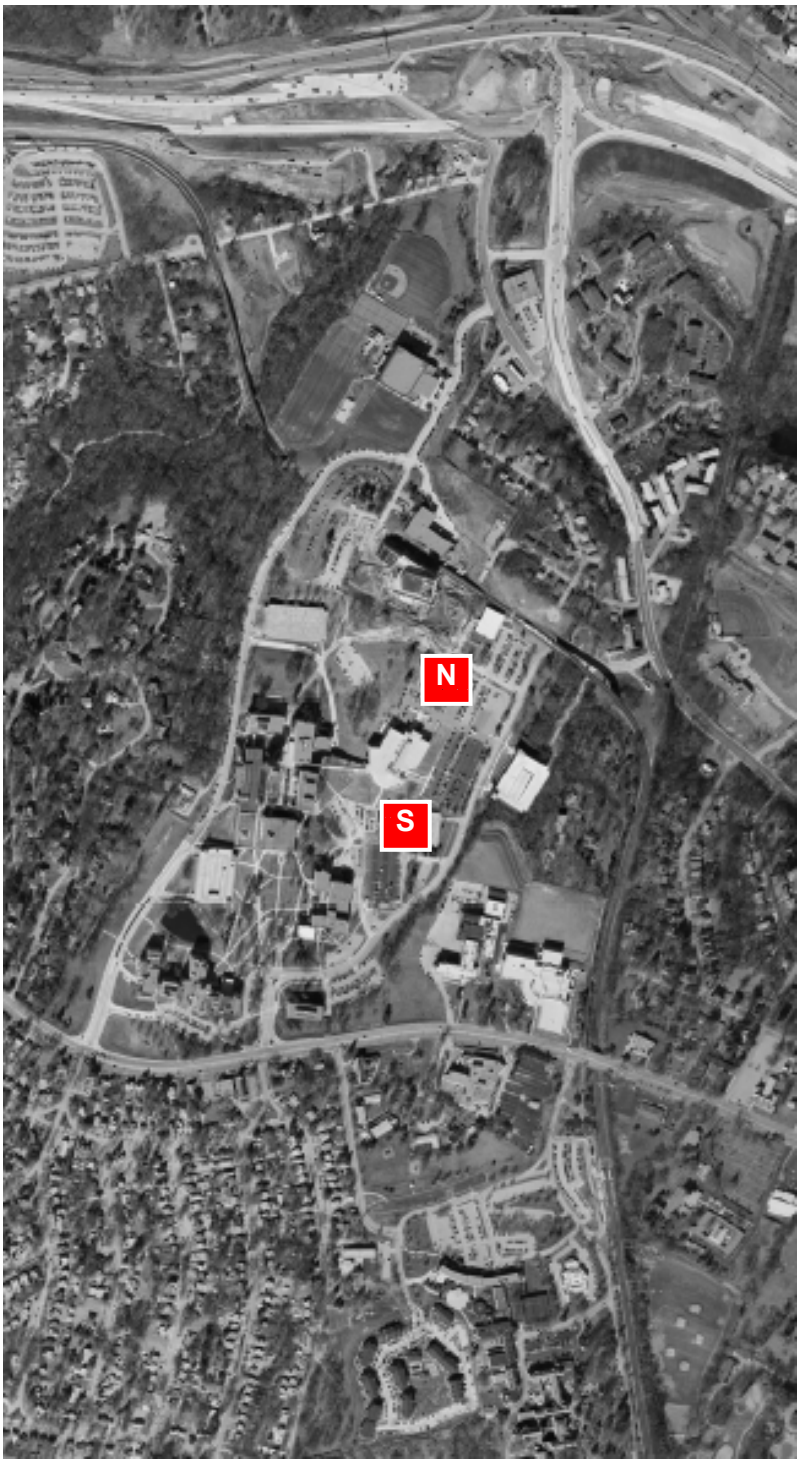
PRELIMINARY ANALYSIS

This analysis identified two sites on the campus which were thought to constitute potentially viable sites for a new Wellness Center. These sites were:

- North Site: The site is at the north-eastern quadrant of the campus, proximate to the existing MetroLink station.

- South Site: The site is adjacent to the south side of the Millennium Student Center.

The location of each of these sites is illustrated in the following image.



UMSL campus aerial photograph showing potential Wellness Center sites:
(**N**: *North Site*, **S**: *South Site*)

SITE DRIVERS

The following Site Drivers were identified by the University and B&D to be used as evaluation criteria for the final selection of the most effective site for the new Wellness Center:

Campus Planning Drivers
a. Campus Icon / Gateway Opportunity
b. "Wow" Site Development Opportunity
c. Massing Compatibility
d. Collateral Improvement Opportunities
e. Compatibility w/ Future Development Plans
f. Ease of Security Management
g. Impact on Existing Programs and Services
h. Proximity to Millennium Center / Complementary Functions
i. Proximity to Public Transportation
j. Proximity to On-campus Housing

Programmatic Planning Drivers
k. Building Efficiency Impact
l. Opportunities to Celebrate the Big Idea
m. Architectural Opportunities
n. Access to Parking
o. Site Accessibility / Convenience / Draw

Financial Drivers
p. Site Development Costs / Availability of Infrastructure
q. Site Development Costs / Demolition and Digging Required
r. Site Development Costs / Parking
s. Façade Development Implications
t. Project Scope Impacts (other than site)
u. Off-campus Merchandising Opportunity

SITE RANKING

Final evaluation of the two narrowed-down sites (North and South) was accomplished via a site selection working session with the Wellness Facility Initiative Group. The session included thorough discussion of each site and ranking. As the below chart illustrates, each site has significant value for different reasons. Once the criteria were weighted however, the **South Site** was identified as addressing the greater drivers and therefore rose as the preferred site. Essentially its adjacency to the side of the Millennium Student Center that is more visible to the bridge, the library, and the pond, at a time of uncertainty about the feasibility of other projects coming to fruition on that site, make the South Site most effective in achieving a campus core culture and energy.

UMSL Wellness Facility

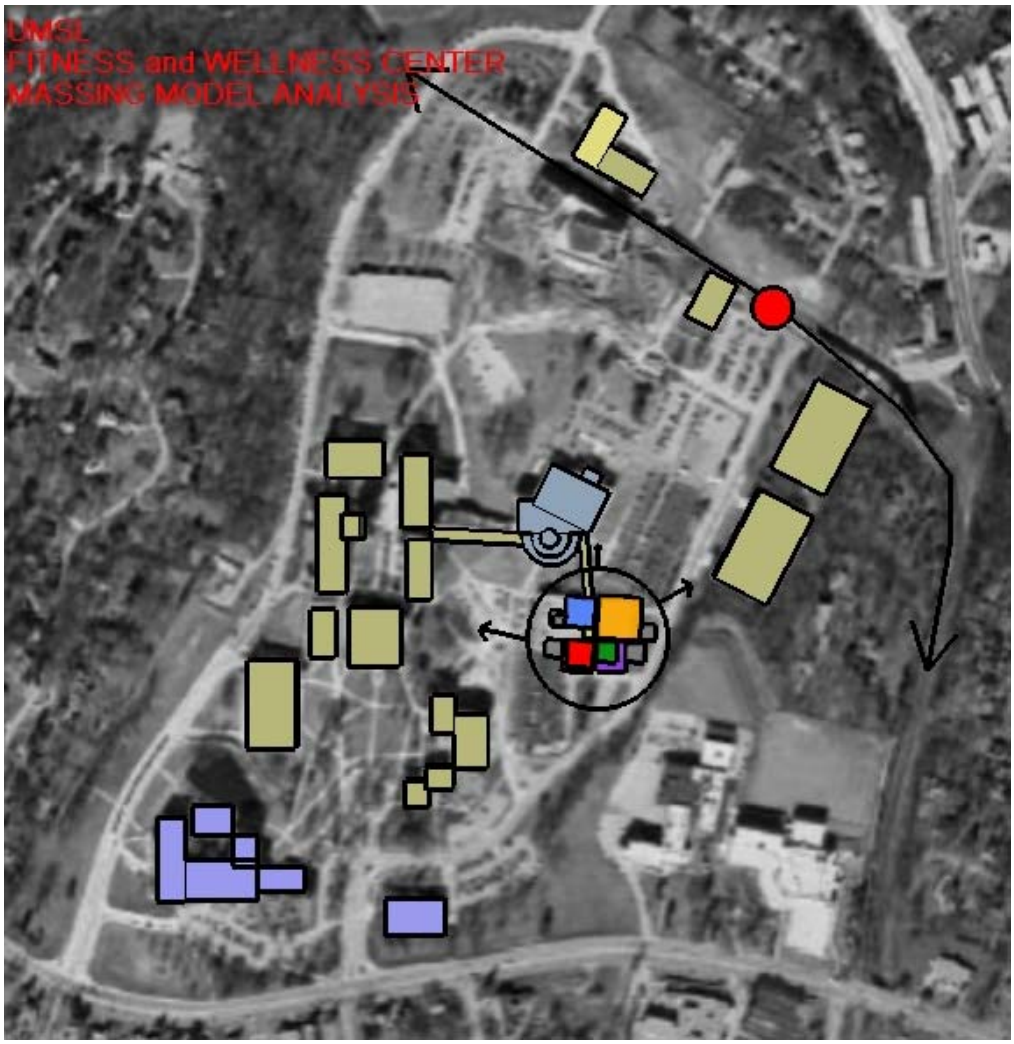
Brailsford & Dunlavey — ***grading:*** *low ability to meet objective (1) to high ability (5)*

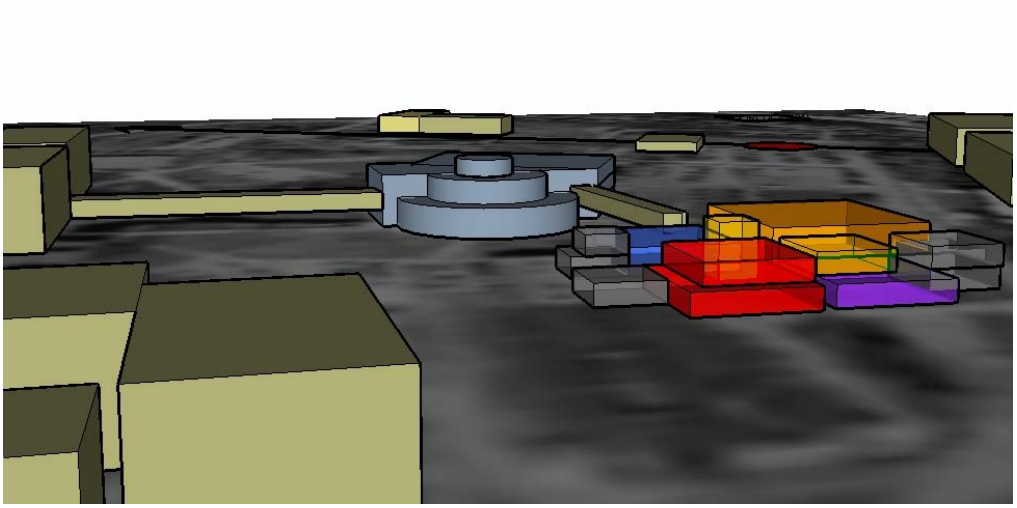
September 14, 2004 — ***weighting:*** *low priority objective (1) to an essential objective (3)*

Site Driver Worksheet

			Grading		Comments	
		Weight	North of MSC	South of MSC	North	South
Campus Planning Drivers						
a	Campus Icon / Gateway Opportunity	*1*	3	1	gateway at MetroLink	already into campus
b	"Wow" Site Development Opportunity	*2* *	3	5	more of a challenge; develop new part of campus	nice edge to work with
c	Massing Compatibility	*2*	3	5	visually high	locate to not block view of MSC from the South; push down
d	Collateral Improvement Opportunities	*2* *	5	5	break up walk from MetroLink; hide the loading dock	eliminate retaining walls
e	Compatibility w/ Future Development Plans	*3*	5	1	leave spot for academic bldg	respond to Valley
f	Ease of Security Management	*3*	3	3		
g	Impact on Existing Programs and Services	*3*	3	5		better relocation for wellness
h	Proximity to Millennium Center / Complementary Functions	*3*	3	5	enhance bookstore traffic	synergy with food service
i	Proximity to Public Transportation	*2*	5	3	MetroLink	
j	Proximity to On-campus Housing	*2* *	5	1	Station-to-Station	
Programmatic Planning Drivers						
k	Building Efficiency Impact	*2*	3	5	want to walk thru the building so extended free zone	careful stacking/vertical circulation
l	Opportunities to Celebrate the Big Idea	*3*	3	5	more projects later will create a feel	connect with social side of MSC; communal feel
m	Architectural Opportunities	*3*	3	5	create its own context	views from the bridge etc.
n	Access to Parking	*3*	5	5		
o	Site Accessibility / Convenience / Draw	*3*	3	5	convenient to MetroLink/parking pedestrian flow	more drop-in/linger potential; will appear close
Financial Drivers						
p	Site Development Costs / Availability of Infrastructure	*3*	5	5		
q	Site Development Costs / Demolition and Digging Required	*3*	5	3	probably on grade	probably demo/digging
r	Site Development Costs / Parking	*3*	5	5	no direct additional pkg required	no direct additional pkg required
s	Façade Development Implications	*3*	3	5	no back of house	no back of house
t	Project Scope Impacts (other than site)	*3*	3	1	lighted pathways; building next to station; trees	bridge or connection from MSC
u	Off-campus Merchandising Opportunity	*2*	5	3	more exposure to MetroLink riders	
		even	81	81		
	** indicates a weight that was not certain among the group*	*weighted*	208	**214**		

Blocking and stacking diagrams were created as part of an interactive 3-D graphic tool to assist with visualizing both sites and how the facility may “fit”. The following images represent a simplistic massing diagram with general volumes of the major spaces and should not be considered as any form of design.


UMSL
FITNESS and WELLNESS CENTER
MASSING MODEL ANALYSIS



Section 05

This page intentionally blank

PROGRAM SUMMARY

The University of Missouri – St. Louis has approved this program of spaces as the most appropriate response to institutional goals, the needs of the students, and the competitive market. Preliminary studies indicate that this program can be designed and built within the constraints defined by zoning, site, budget, and guidelines, as put forth in this document.

The master plan of needs involves approximately 92,000 gross square feet of new construction, and includes the following (in addition to other spaces):

Administrative Offices

Wellness Center:

- Fitness Assessment & Testing Lab
- Seminar Rooms
- Instructional Kitchen
- Consultation Rooms

Activity Spaces:

- Two Court Gymnasium
- Elevated Jogging Track
- Weight Training and Fitness Room
- Three Multi-Purpose Rooms
- Six lane Recreation Pool
- Whirlpool
- Rock Climbing Wall

Support Spaces:

- Lounge / Game Room
- Juice Bar / Vending Area
- Men's Locker Rooms
- Women's Locker Rooms
- Recreational Equipment Checkout
- Laundry Room
- Small Meeting Room

PHASING AND REDUCTION OF SPACES

If as a result of insufficient financial resources, all elements of this program may not be achievable. In such case, the University may chose to identify project component phasing options and/or priorities.

A phased element is a space that can realistically be built at a different date from the initial project, either as an addition or a separate facility. These elements are to be considered for phasing as the first option for addressing insufficient financial resources, to allow the remainder of the program to move forward. Items for consideration are:

- aquatics area
- gymnasium
- wellness components

An element for reduction is a space that can be modified to allow for cost reduction without limiting the project's ability to meet the University's primary objectives. Elements for consideration are:

- instructional kitchen
- elevated jogging track
- climbing wall
- a multipurpose room

The modification of any project elements, however, should be viewed as a last option for reducing cost and allowing the project to move forward.

OUTLINE PROGRAM

The proposed project program of spaces is as follows:

Free Zone

	Program Elements	Quantity	Unit NASF	Total NASF	Cost/SF	Total Cost
Administrative Offices						
A1	Director's Office	1	150	150	$150	$22,500
A2	Business Manager / Membership Services Office	1	100	100	$150	$15,000
A3	Assistant Director - Traditional Programs Office	1	120	120	$150	$18,000
A4	Assistant Director - Fitness Programs Office	1	100	100	$150	$15,000
A5	Assistant Director - Facilities & Aquatics Office	1	100	100	$150	$15,000
A6	Aquatic Director's Offices	1	100	100	$150	$15,000
A7	Secretarial Work Station	1	80	80	$150	$12,000
A8	Office for Staff Expansion	1	120	120	$150	$18,000
A9	Auxiliary Office	1	80	80	$150	$12,000
A10	Part-time Employee's Work Stations	2	60	120	$150	$18,000
A11	Student Employee Work Area	1	200	200	$150	$30,000
A12	Conference Room	1	300	300	$150	$45,000
A13	Duplication/mail room/Administrative Area	1	150	150	$150	$22,500
A14	Storage	2	60	120	$150	$18,000
A15	Pantry/Lounge	1	60	60	$150	$9,000
A16	Lobby / Guest Seating Area	1	200	200	$150	$30,000
A17	Admissions Control	1	150	150	$170	$25,500
	Subtotal - Administrative Suite			**2,250**	**$151**	**$340,500**
Wellness Center						
B1	Director's Office	1	120	120	$150	$18,000
B2	Resource Center	1	300	300	$150	$45,000
B3	Fitness Assessment &Testing Lab	1	500	500	$150	$75,000
B4	Seminar Rooms	2	400	800	$150	$120,000
B5	Instructional Kitchen	1	1,000	1,000	$150	$150,000
B6	Consultation Rooms	2	80	160	$150	$24,000
B7	Storage / Filing	1	60	60	$139	$8,340
B8	MISCELLANEOUS	1	2,060	2,060	$150	$309,000
	Subtotal - Counselling Component			**5,000**	**$150**	**$749,340**
	Subtotal - Free Zone			**7,250**	**$150**	**$1,089,840**

Activity Zone

	Program Elements	Quantity	Unit NASF	Total NASF	Cost/SF	Total Cost
Gymnasiums						
D3	Two Court Gymnasium - 84 ft courts	1	13,312	13,312	$150	$1,996,800
D3S	Two Court Gymnasium Storage	1	300	300	$140	$42,000
D4	Elevated Jogging Track	1	6,500	6,500	$75	$487,500
	Subtotal - Gymnasiums			**20,112**	**$126**	**$2,526,300**
Specialized Activity Spaces						
E1	Weight Training Room	1	7,000	7,000	$150	$1,050,000
E1S	Weight Room Storage	1	100	100	$140	$14,000
E2	Fitness Room	1	5,000	5,000	$150	$750,000
E2S	Fitness Room Storage	1	100	100	$140	$14,000
E3	Low Ceiling Multipurpose Type - 3	1	2,520	2,520	$150	$378,000
E3S	Low Ceiling Multipurpose Type - 3 Storage	1	200	200	$140	$28,000
4	Low Ceiling Multipurpose Type - 4	2	1,750	3,500	$150	$525,000
E4S	Low Ceiling Multipurpose Type - 4 Storage	2	150	300	$140	$42,000
E5	Small Competition/Warm-up Pool (25yds - six lanes)	1	6,000	6,000	$260	$1,560,000
E6	Whirlpool	1	200	200	$230	$46,000
E7	Natatorium Storage	1	500	500	$140	$70,000
E8	Rock Climbing Wall	1	800	800	$185	$148,000
	Subtotal - Specialized Activity Spaces			**26,220**	**$176**	**$4,625,000**
	Subtotal - Activity Zone			**46,332**	**$154**	**$7,151,300**

Support Zone

	Program Elements	Quantity	Unit NASF	Total NASF	Cost/SF	Total Cost
F1	Lounge / Game Room	1	1,000	1,000	$150	$150,000
F2	Juice Bar/ Vending Area	1	500	500	$160	$80,000
F3	Juice Bar/ Vending Storage	1	150	150	$150	$22,500
F4	Mens Locker Rooms					
	-- Single Tier 12" Lockers	120	6.0	720	$170	$122,400
	-- Double Tier 12" Lockers	400	3.0	1,200	$170	$204,000
	-- Showers	10	27.0	270	$170	$45,900
	-- Toilets	4	23.4	94	$170	$15,912
	-- Urinals	4	12.0	48	$170	$8,160
	-- Grooming Stations	5	15.0	75	$170	$12,750
	-- Sauna	1	100	100	$170	$17,000
F5	Womens Locker Rooms					
	-- Single Tier 12" Lockers	120	6.0	720	$170	$122,400
	-- Double Tier 12" Lockers	400	3.0	1,200	$170	$204,000
	-- Showers	10	27.0	270	$170	$45,900
	-- Toilets	9	23.4	211	$170	$35,802
	-- Grooming Stations	7	15.0	105	$170	$17,850
	-- Sauna	1	100	100	$170	$17,000
F6	Assisted Change Rooms	1	200	200	$170	$34,000
F7	Rec Equipment Checkout	1	600	600	$140	$84,000
F8	Laundry Room	1	400	400	$140	$56,000
F9	General Building Storage	1	800	800	$140	$112,000
F10	Small Meeting/Passive Activity Room	1	800	800	$150	$120,000
F11	Meeting/Passive Activity Room Storage	1	150	150	$150	$22,500
	Subtotal Support Zone			**9,712**	**$160**	**$1,550,074**

Total NASF		**63,294**	**$155**	**$9,791,214**
Building Core & Circulation With Building Efficiency @	**68.5%**	**29,100**	**$150**	**$4,365,000**
Total Building Envelope		**92,406**	**$153**	**$14,156,214**

Section 07

This page intentionally blank

GENERAL

In simple terms, a building's efficiency factor is an indication of how much of the building is usable for activities and how much is taken up for circulation and mechanical and electrical support spaces etc.

The "**base case**" assumption for a new recreation building's achievable efficiency factor is **75%**. This suggests for a 100,000 gross square foot structure, that 75,000 square feet is in the rooms themselves, and the remaining 25,000 square feet includes the walls, stairways, closets, public restrooms, etc. When estimating the cost of a building, it is important to allow for this additional space that needs to be built for it to function. When developing the size of a building, an outline program is created, listing all of the rooms that are desired. To determine the amount of additional space needed, an efficiency factor is applied. There are a number of issues that can impact the choice of efficiency factor, as described below.

Quantity of Small Elements

The typical recreation center program is dominated by spaces larger than 1,000 square feet. Spaces less than 1,000 square feet such as offices, classrooms, storage areas, and the like will not usually exceed 7.5% of the net assignable area. To the extent that small spaces do account for more than 7.5% of the net assignable area, building efficiency will be reduced due to the larger quantity of walls and secondary circulation space required. As a rule of thumb, every percentage point of net space above 7.5% allocated to small areas reduces the efficiency factor by 0.2%. For example, if small spaces account for 8.5% of the building, the efficiency factor is reduced from 75% to 74.8%.

Site Length / Width Ratio

Recreation centers tend to be most efficient when organized around a single central circulation core which accommodates both horizontal movement between program elements and vertical movement between levels. If the site is long and narrow relative to the required building footprint area and program elements must be extended along a horizontal circulation spine, a loss of efficiency of 1% can be expected. This effect is multiplied if the site is so long and narrow that program elements themselves must be extended lengthwise along the spine. This case is considered to cause a loss of an additional .5% to 1% in building efficiency.

Spectator Requirements

Building codes apply requirements for public restrooms and special egress from places of assembly, which include spectator seating areas. Buildings with such elements are required to provide corridors and vestibules of greater number, width, and capacity than

buildings without them. Each major spectator space in a recreation center can be expected to reduce the overall efficiency by 0.5%.

Multiple Entrances & Zones

If a building's functional requirements dictate that separate zones must be established to restrict user access from one to the other, efficiency is lost because of the inevitable increase in circulation space which results. Each major case of replicated primary circulation routes or entrances, extensive secondary circulation patterns within zones, and connectors between zones or buildings can cause a loss of efficiency of 1%.

Building Size & Complexity

Although larger program elements tend to improve building efficiency by increasing the ratio of assignable space to structure, a high quantity of program elements will reduce efficiency by reducing that same ratio and by requiring additional circulation to reach the additional elements. Recreation centers with multiple gymnasia or other major activity areas will suffer a loss in efficiency of approximately 1% for each replicated major element. Generally, buildings with a net assignable area greater than 100,000 square feet will suffer from this problem.

Site Topography & Size

A site with a particularly steep slope, or a particularly small site relative to the building area, can greatly increase vertical circulation features and require extensive structural and mechanical systems to support and serve the building's different levels. Such sites may cause a loss of efficiency of as much as 2%. A perfectly flat site with excess footprint capacity would provide opportunities to improve building efficiency moderately.

Central Plant Requirements

If excessive mechanical capacity, such as central plant facilities serving adjacent buildings or future phases, is included in the project, building efficiency can be reduced by as much as 2%. Likewise, buildings whose mechanical systems operate from an off-site central plant will have efficiency increased by as much as 2%.

Owner Value Judgments

The owner's level of commitment to achieving efficiency may dictate that certain spaces or elements, such as lobbies and wide corridors, can be minimized or eliminated from the design. In such cases, building efficiency may be improved by as much as 2%. Conversely, if an owner desires a particularly commodious or gracious building, extensive free zone circulation is required, or extensive non-assignable program elements such as a centrally organizing courtyard or public art is required, building efficiency may be decreased, depending upon the desired program changes.

WELLNESS CENTER

As shown in the following chart, the choices proposed for the issues related to this facility suggest an efficiency factor of 68.5%. This figure indicates a slightly lower efficiency than the baseline 75% for a number of reasons:

- There is a high number of small spaces.
- There is a need for additional entry points to accommodate the Wellness Center and to accommodate easy access from the Millennium Center.
- The conspicuous location of the facility necessitates that there be no “back”, therefore mechanical and other services can’t simply be hidden and given less architectural expression.
- There is a desire for a balance of high quality and practicality / functionality.

The 68.5% efficiency factor has been integrated into the outline program, adding over 29,000 square feet to the approximately 63,300 net square feet of activity spaces.

Adjustment Category	Adjustment	Comments
1. Quantity of Small Elements	-4.0%	The quantity of small spaces materially exceeds the base case model condition.
2. Site Length/Width Ratio	0.0%	No adjustment required.
3. Spectator Requirements	0.0%	No adjustment required.
4. Multiple Entrances & Zones	-2.0%	Access to wellness services; access from upper elevation and access at pond level
5. Building Size & Complexity	0.0%	No adjustment required.
6. Site Topography & Size	-1.0%	Challenge for mechanical systems to be hidden.
7. Central Plant Requirements	0.0%	No adjustment required.
8. Owner Value Judgments	0.5%	Stay aware of quality while focusing on practicality and functionality for greatest value within budget.

Adjusted Target Efficiency Factor =	68.5%

Section 08

This page intentionally blank

DEVELOPMENT BUDGET

Budgeting for the development of the facility is accomplished by allocating appropriate funds for different cost categories required for construction. These categories are as follows:

- **Hard Costs**: This includes the construction cost of the enclosed building (per the requirements of the architectural program), site preparation (may include demolition and excavation), site utilities and infrastructure, parking, and appropriate landscaping. An inflation factor is applied to allow for prices to go up before construction is complete. An inflation amount is usually timed to the midpoint of construction.

- **Soft Costs**: These are all the costs possibly not necessary to hypothetically rebuild the building. These include architectural and engineering fees, testing fees, surveys, governmental administrative fees such as building permits, start-up expenses, furniture, fixtures, and equipment, contingencies for hard and soft costs, consulting and management fees, an operating reserve, interest that will accrue during the construction period, fees associated with the issuance of debt financing, and credit insurance.

The Development Budget prepared for this project is as follows:

HARD COSTS					
1	**Site Acquisition**		$0		
2	**Construction Contract**		$14,956,200		
	A. Enclosed Building	$14,156,200			
	B. Demolition, Excavation & Site Preparation	$500,000			
	C. Site Utilities & Infrastructure	$250,000			
	D. Parking	$0			
	E. Landscape Allowance	$50,000			
3	**Inflation Factor to Midpoint of Construction**		$906,300	4%	inflation rate
	Subtotal - Hard Costs		**$15,862,500**	1.5	years to midpoint
SOFT COSTS				*73%*	
4	**Architectural & Engineering Fees**		$1,196,500	8%	base rate
5	**Project Contingency**		$912,800		
	A. Hard Costs (Construction)	*$793,100*		5%	hard cost contingency
	B. Soft Costs (Design)	*$119,700*		10%	soft cost contingency
5	**Furniture, Fixtures & Equipment**		$1,038,900		
6	**Fees and Other Expenses**		$1,014,900		
	Additional Architectural & Engineering Service	*$119,700*			
	Testing Fees, Surveys , Etc.	*$75,000*			
	Local Fees & Permits	*$0*			
	Direct Project Expenses	*$50,000*			
	Project Consulting & Management	*$770,200*		4%	consulting rate
7	**Operations**		$357,100		
	Start-Up Expenses (Pre-Opening salaries & mar	*$282,100*			
	Operating Reserve	*$75,000*			
8	**Finance Related Expenses**		$1,432,900		
	Construction Period Interest	*$611,500*		5.0%	interest rate
	Debt Issuance Fees	*$203,800*		1%	financing fee percentage
	Credit Insurance	*$617,600*		3%	fee
	Subtotal - Soft Costs		**$5,953,100**	*27%*	
Total Project Costs			**$21,815,600**	16	months to construct
				45%	average outstanding balance

Section 09

This page intentionally blank

FINANCIAL MODEL

The development budget currently sets the COST of the project at $21.8 million. A detailed financial model was created to determine the VALUE of the facility i.e. how much net operating income it can generate.

The financial model incorporated many operating expenses such as:

- Maintenance, administrative and marketing costs
- Utilities and insurance costs
- Replacement costs
- Personnel costs

The financial model also balanced many revenue streams such as:

- student fees
- faculty and staff voluntary memberships
- alumni memberships
- neighboring community memberships (set to 0)
- locker, guest pass, camp, rental, vending, program charges

Two key variables affecting the model are:

- **Interest Rate**: This is the rate the borrower must pay on funds loaned to finance the construction of the facility. With all other variables being equal, the higher the interest rate, the higher the student fee would need to be.

*For the purpose of the current analysis, a value of **5%** was used.*

- **Debt Coverage Ratio (DCR):** This reflects to what extent the VALUE needs to exceed the COST. A 1.0 DCR suggests that a project would only need to generate sufficient funds to equal the debt service due. A 1.5 DCR suggests that a project would need to generate 1.5 times the funds actually needed to meet the debt service commitment. The higher the DCR, the greater the requirement to generate a positive net operating income. This is an industry standard benchmark which measures an income producing property's ability to cover debt payments. It is calculated by dividing the gross operating income less expenses (or Net Operating Income), by the property's annual debt service. Annual debt service equals the annual total of all interest and principal paid for all loans on a property. With all other variables being equal, the higher the DCR (i.e., the more conservative the investment), the higher the student fee would need to be.

  For the purpose of the current analysis, a value of 1.2 was used but will need to be strongly argued for with the System.

STUDENT FEE

An existing Recreation Facility Fee is charged to all students at a rate of $2.73 per credit hour. The majority of this fee is currently allocated toward existing recreation and wellness programming at Mark Twain while a small portion ($100,000) is used to pay down existing debt on the Mark Twain Center. It is expected that the programming portion of the fee would be transferred to support the operations of the Wellness Center.

More than the amount from the existing Recreation Facility Fee however will be needed to make the project viable. The fee per credit hour will need to increase and a policy on how to increase the fee was discussed raising the following options:

- Instituting a **flat** student fee would reflect how every student has the same access and privileges in the facility but would also result in those with very few credit hours paying a proportionally large fee.
- Instituting a **direct per credit hour** policy would result in those with high credit hours paying a large fee while those with few credits could use the same facility with the same privileges while paying a much lower fee.
- Instituting a **minimum and maximum cap** on the credit hours considered in the fee calculation would result in some balance between the range of student loads

The following fee sensitivity chart shows the required total fee per credit hour needed depending on a policy scenario and debt coverage ratio. The amount current being paid is shown above as a reference to gauge the extent of any increase.

The recommended fee policy is the “maximum 9 credits minimum 3 credits” (9/3) scenario. Assuming a 1.2 debt coverage ratio this would mean a total fee of $12.46/credit hour and therefore:

- A 12 credit student would pay $135.00/semester or approximately $34/month for full use of the Wellness Center, representing an increase of $102.24 in their cost of education per semester.
- A 9 credit student (the University average) would also pay $135.00/semester or approximately $34/month for full use of the Wellness Center, representing an increase of $107.70 in their cost of education per semester.
- A 6 credit student would pay $90.00/semester or approximately $22.50/month, representing an increase of $73.62 in their cost of education per semester.
- A 3 credit student would pay $45.00/semester or approximately $11/month, representing an increase of $36.81 in their cost of education per semester.

If the debt coverage ratio is pushed as high as 1.5, then the credit hour fee may go up by $2.33, and the cost of education per semester will go up by approximately $7 to $20 depending on credit load.

UMSL Wellness Facility Student Fee Sensitivity Analysis
15 years to midpoint of construction
16 months of construction
$100,000 transferred back to Mark Twain's debt every year
FT employees: 209 (230) at $315/year membership
PT employees: 739 (55) at $315/year membership
Alumni: 250 at 1.25 x employee rate ($394/year; $32/month)
2007 enrollment: 9,656 undergraduate, 2,750 graduate

	Annual growth	*$2.75*	*$32.76*	*$30.08*	*$27.30*	*$24.57*	*$21.84*	*$19.11*	*$16.38*	*$13.65*	*$10.92*	*$8.19*	*$5.46*	*$2.73*	
			$/h	12	11	10	9	8	7	6	5	4	3	2	1
9 d mns, 3 d min	5% 12 coverage	total	$13.00	$133.00	$135.00	$135.00	$133.00	$120.00	$105.00	$90.00	$75.00	$60.00	$45.00	$15.00	$43.00
9 d mns, 3 d min	5% 15 coverage	total	$17.33	$155.97	$155.97	$155.97	$155.97	$138.64	$121.31	$103.98	$86.65	$69.32	$51.99	$51.99	$51.99
flat	5% 12 coverage	total		$107.00	$107.00	$107.00	$107.00	$107.00	$107.00	$107.00	$107.00	$107.00	$107.00	$107.00	$107.00
flat	5% 15 coverage	total		$123.50	$123.50	$123.50	$123.50	$123.50	$123.50	$123.50	$123.50	$123.50	$123.50	$123.50	$123.50
12 d mns, 3 d min	5% 12 coverage	total	$12.46	$149.52	$137.06	$124.60	$112.14	$99.68	$87.22	$74.76	$62.30	$49.84	$37.38	$37.38	$37.38
12 d mns, 3 d min	5% 15 coverage	total	$14.38	$172.56	$158.18	$143.80	$129.42	$115.04	$100.66	$86.28	$71.90	$57.52	$43.14	$43.14	$43.14

University of Missouri - St. Louis
FITNESS AND WELLNESS CENTER PROJECT

Cash Flow Summary *Cash Flow Summary*

Option B: Gymnasium and Aquatics Source	Base Year	First Year Factor	Estimated FY07-08	Planned FY08-09	Planned FY09-10	Planned FY10-11	Planned FY11-12	Planned FY12-13	Planned FY13-14	Planned FY14-15	Planned FY15-16	Planned FY16-17
REVENUES												
Student Fee Revenue	$2,651,260	100.00%	$2,651,000	$2,757,000	$2,868,000	$2,983,000	$3,102,000	$3,226,000	$3,355,000	$3,489,000	$3,629,000	$3,774,000
Employee Revenue	$64,536	100.00%	$65,000	$142,000	$169,000	$176,000	$183,000	$190,000	$198,000	$206,000	$214,000	$222,000
Alum Member Revenue:	$82,471	100.00%	$82,000	$112,000	$117,000	$121,000	$126,000	$131,000	$136,000	$142,000	$148,000	$153,000
Community Member Revenue:	$0	100.00%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Activity Fee Transfer to Mark Twain Debt	($100,000)	100.00%	-$100,000	-$100,000	-$100,000	-$100,000	-$100,000	-$100,000	-$100,000	-$100,000	-$100,000	-$100,000
Other Revenue	$109,700	100.00%	$110,000	$135,000	$150,000	$161,000	$173,000	$180,000	$187,000	$194,000	$202,000	$210,000
TOTAL REVENUES	**$2,807,966**		**$2,808,000**	**$3,046,000**	**$3,204,000**	**$3,341,000**	**$3,484,000**	**$3,627,000**	**$3,776,000**	**$3,931,000**	**$4,093,000**	**$4,259,000**
EXPENDITURES												
Personnel Expense:												
Staff Salaries	$266,000	100.00%	$266,000	$266,000	$277,000	$329,000	$339,000	$353,000	$367,000	$382,000	$397,000	$413,000
Full-Time Staff Benefits	$47,880	100.00%	$48,000	$48,000	$50,000	$59,000	$61,000	$63,000	$66,000	$69,000	$72,000	$75,000
Full-Time Staff Payroll Taxes	$23,940	100.00%	$24,000	$24,000	$25,000	$30,000	$31,000	$32,000	$33,000	$34,000	$35,000	$36,000
Part-Time Staff Payroll	$200,200	100.00%	$200,000	$200,000	$208,000	$217,000	$225,000	$234,000	$243,000	$253,000	$263,000	$274,000
Part-Time Staff Payroll Taxes	$18,018	100.00%	$18,000	$18,000	$19,000	$19,000	$20,000	$21,000	$22,000	$23,000	$24,000	$25,000
Subtotal	$556,038		$556,000	$556,000	$579,000	$654,000	$676,000	$703,000	$731,000	$761,000	$791,000	$823,000
Operating Expenses (Maintenance and Repairs):												
Maintenance	$25,520	100.00%	$26,000	$82,000	$85,000	$88,000	$92,000	$96,000	$100,000	$104,000	$108,000	$112,000
Janitorial Contract	$138,609	100.00%	$139,000	$145,000	$151,000	$157,000	$163,000	$170,000	$177,000	$184,000	$191,000	$199,000
Facility Repairs	$36,962	100.00%	$37,000	$38,000	$40,000	$42,000	$44,000	$46,000	$48,000	$50,000	$52,000	$54,000
Part-Time Staff Payroll	$54,288	100.00%	$54,000	$54,000	$56,000	$59,000	$61,000	$64,000	$67,000	$70,000	$73,000	$76,000
Part-Time Staff Payroll Taxes	$4,886	200.00%	$10,000	$5,000	$5,000	$5,000	$5,000	$6,000	$6,000	$6,000	$6,000	$6,000
Subtotal	$260,265		$266,000	$324,000	$337,000	$351,000	$365,000	$382,000	$398,000	$414,000	$430,000	$447,000
Operating Expenses (Other):												
Administrative & Marketing (stabilized)	$41,635	100.00%	$42,000	$57,000	$59,000	$61,000	$63,000	$66,000	$69,000	$72,000	$75,000	$78,000
Utilities	$207,913	100.00%	$208,000	$216,000	$225,000	$234,000	$243,000	$253,000	$263,000	$274,000	$285,000	$296,000
Insurance & Other	$53,595	100.00%	$54,000	$56,000	$58,000	$60,000	$62,000	$64,000	$67,000	$70,000	$73,000	$76,000
Miscellaneous Expenses	$25,000	100.00%	$25,000	$26,000	$27,000	$28,000	$29,000	$30,000	$31,000	$32,000	$33,000	$34,000
Sports Equipment Repairs	$25,000	100.00%	$25,000	$26,000	$27,000	$28,000	$29,000	$30,000	$31,000	$32,000	$33,000	$34,000
Management Fee	$80,000	100.00%	$80,000	$83,000	$86,000	$89,000	$93,000	$97,000	$101,000	$105,000	$109,000	$113,000
Subtotal	$433,143		$434,000	$464,000	$482,000	$500,000	$519,000	$540,000	$562,000	$585,000	$608,000	$631,000
Subtotal Expenditures	**$1,249,446**		**$1,256,000**	**$1,344,000**	**$1,398,000**	**$1,505,000**	**$1,560,000**	**$1,625,000**	**$1,691,000**	**$1,760,000**	**$1,829,000**	**$1,901,000**
cost/SF			***$13.59***	***$14.54***	***$15.13***	***$16.29***	***$16.88***	***$17.59***	***$18.30***	***$19.05***	***$19.79***	***$20.57***
Debt Service	$1,092,405		$1,092,405	$1,421,250	$1,421,250	$1,421,250	$1,421,250	$1,421,250	$1,421,250	$1,421,250	$1,421,250	$1,421,250
Capital Pool for M & R	$75,000		75,000	0	0	0	0	0	0	0	0	0
Subtotal Transfers	**$1,167,405**		**$1,167,405**	**$1,421,250**	**$1,421,250**	**$1,421,250**	**$1,421,250**	**$1,421,250**	**$1,421,250**	**$1,421,250**	**$1,421,250**	**$1,421,250**
TOTAL EXPENDITURES & TRANSFERS	**$2,416,851**		**$2,423,405**	**$2,765,250**	**$2,819,250**	**$2,926,250**	**$2,981,250**	**$3,046,250**	**$3,112,250**	**$3,181,250**	**$3,250,250**	**$3,322,250**
NET GAIN/(LOSS)	**$391,115**		**$384,595**	**$280,750**	**$384,750**	**$414,750**	**$502,750**	**$580,750**	**$663,750**	**$749,750**	**$842,750**	**$936,750**
DEBT COVERAGE RATIO	**1.43**		**1.42**	**1.20**	**1.27**	**1.29**	**1.35**	**1.41**	**1.47**	**1.53**	**1.59**	**1.66**
Operating & Replacement Reserve Beginning Balance	$75,000		$75,000	$472,960	$784,376	$1,217,964	$1,703,980	$2,304,498	$3,014,991	$3,846,084	$4,806,882	$5,911,045
Interest on Reserves	5.00%		$13,365	$30,667	$48,838	$71,267	$97,768	$129,744	$167,343	$211,048	$261,413	$318,971
Operating & Replacement Reserve Ending Balance			$472,960	$784,376	$1,217,964	$1,703,980	$2,304,498	$3,014,991	$3,846,084	$4,806,882	$5,911,045	$7,166,765
Required Allocation for Maintenance & Repair (1.5% of Facility Replacement Cost)			$327,722									
Total Expenditures on M&R and Capital Pool			$341,000	$324,000	$337,000	$351,000	$365,000	$382,000	$398,000	$414,000	$430,000	$447,000

Section 10

This page intentionally blank

Preliminary Timeline

UMSL - Wellness Center

Brailsford & Dunlavey