

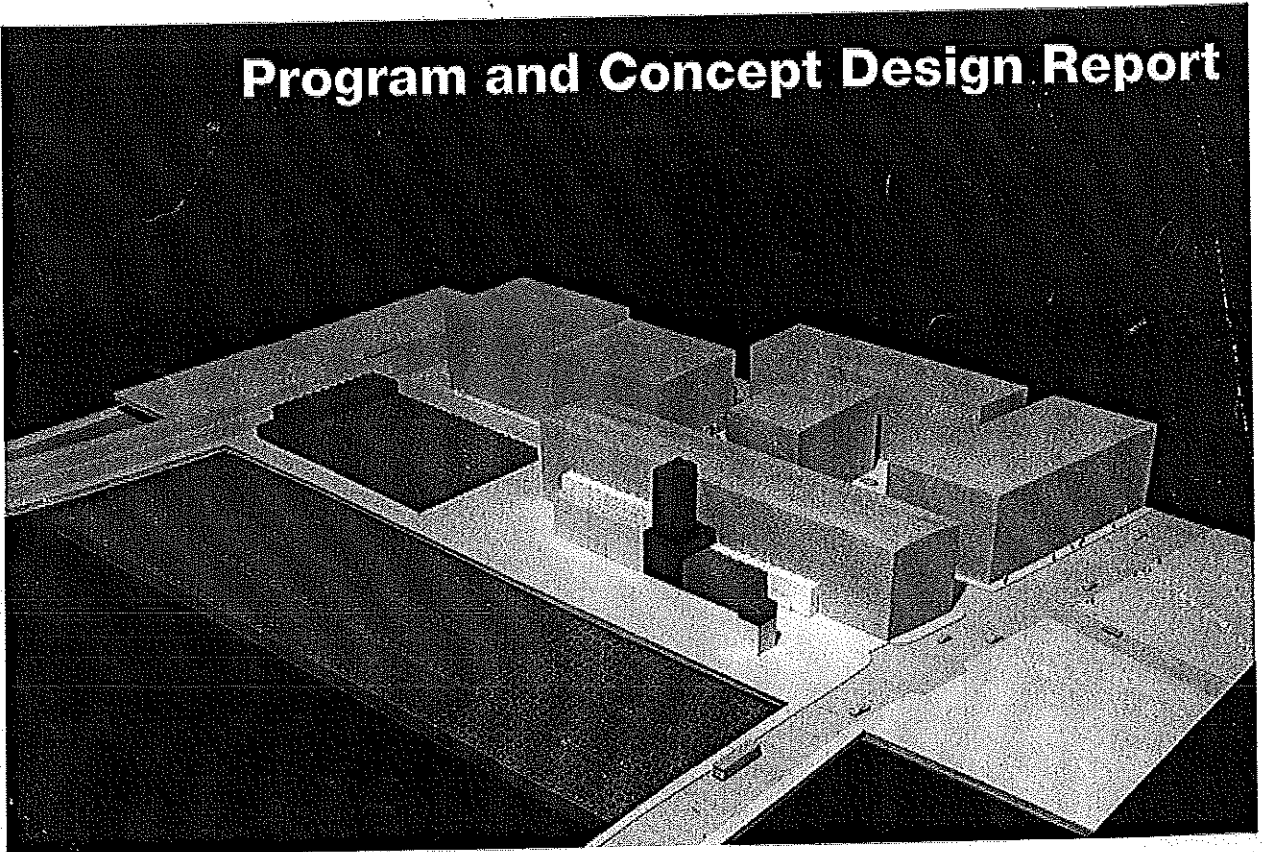


## **Boston Children's Museum**

Renovation and Additions

1 July 2004

### **Program and Concept Design Report**



**Cambridge Seven Associates, Inc.**

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## 1 Introduction

This interim report presents the results of the first tasks in the programming and concept design phase for the Boston Children's Museum. The new BCM program calls for an addition of approximately 20,000 sf, increasing the existing building from 155,000 sf to 174,500 sf. While the exhibit gallery space for the new BCM remains the same as in the existing, the space for the public Museum experience grows 5,300 sf from 64,300 sf to 69,600 sf.

The proposed new space is added on three levels on the Wharf face of the existing building. The added space will greatly enhance the visitor perception, from the initial entry experience through the complete exhibit journey. Organized along an internal street and second level "bridge," the new spaces will include the "Adventure Center," a Changing Exhibit Gallery, and a new Entry Lobby experience. Way-finding & orientation spaces, overlook opportunities and resting places, along with improved support services will be created throughout the new and existing building spaces.

Complementing this new space, about 132,000 sf of the existing facility will be reconfigured and/or renovated to provide the functional support for the overall concept. The functional relationships of various program elements were determined in a series of programming and concept alternative workshops along with staff surveys and interviews to discuss particular program needs and requirements. Detailed lists of the resulting program spaces are included in a separate section of this report, along with summaries of the staff feedback notes.

The concept development builds upon the Master Plan idea of consolidating Museum functions at the lower levels and tenant functions at the upper levels of the building. While a variety of approaches were investigated, a consensus was developed around a single direction for advancement into Schematic Design. With conceptual cost estimating and modeling added to the process, the design team was able to develop realistic scenarios for alternative layouts. The agreed upon concept direction (Scheme 'I') includes all of the program elements envisioned in the Master Plan.

When tested against the goals of the Master Plan, the concept direction accomplishes the main goals of the original vision for the project. The Concept Design has been developed to include features that will:

- Create compelling reasons for visiting and varied opportunities for learning through exhibitions, theater, and art studios
- 'Bridge' the waterfront into a campus of indoor/outdoor venues that attract a multicultural audience and provides safe access to the water's edge
- Consolidate/renovate exhibits on fewer floors
- Extract the circulation from the exhibit halls
- Include a new travelling exhibitions gallery
- Enhance and increase tenant space
- Develop entries that are easier to find
- Provide a group entrance with storage and orientation space
- Create a new, light-filled multifunctional lobby as the new hub of improved visitor amenities
- Improve orientation, ticketing, & visit planning
- Give the central lobby dramatic water views and clearly present the variety of activities available inside and outside the Museum
- Create an iconic 'Adventure Center' that will make a visual statement about the Museum
- Provide a new food and retail space with healthy food options and windows or doors opening out onto the waterfront
- Provide renovated space to house permanent exhibits, studios, and classrooms, upgraded staff space, and a KidStage on the first floor
- Provide expanded capacity to reach 20% more teachers
- Significantly increase visitor amenities -- improved visitor reception and restrooms, space to bundle and unbundle children; easier flow through the building
- Provide flexible space for civic celebrations, community gatherings, and events
- Create opportunities for hands-on arts learning
- Increase the commitment to performing arts through improved theater space
- Create enjoyable and fully accessible waterfront green spaces
- Provide the opportunity for a greater connection to the waterfront

## **2 Existing Condition Plans**

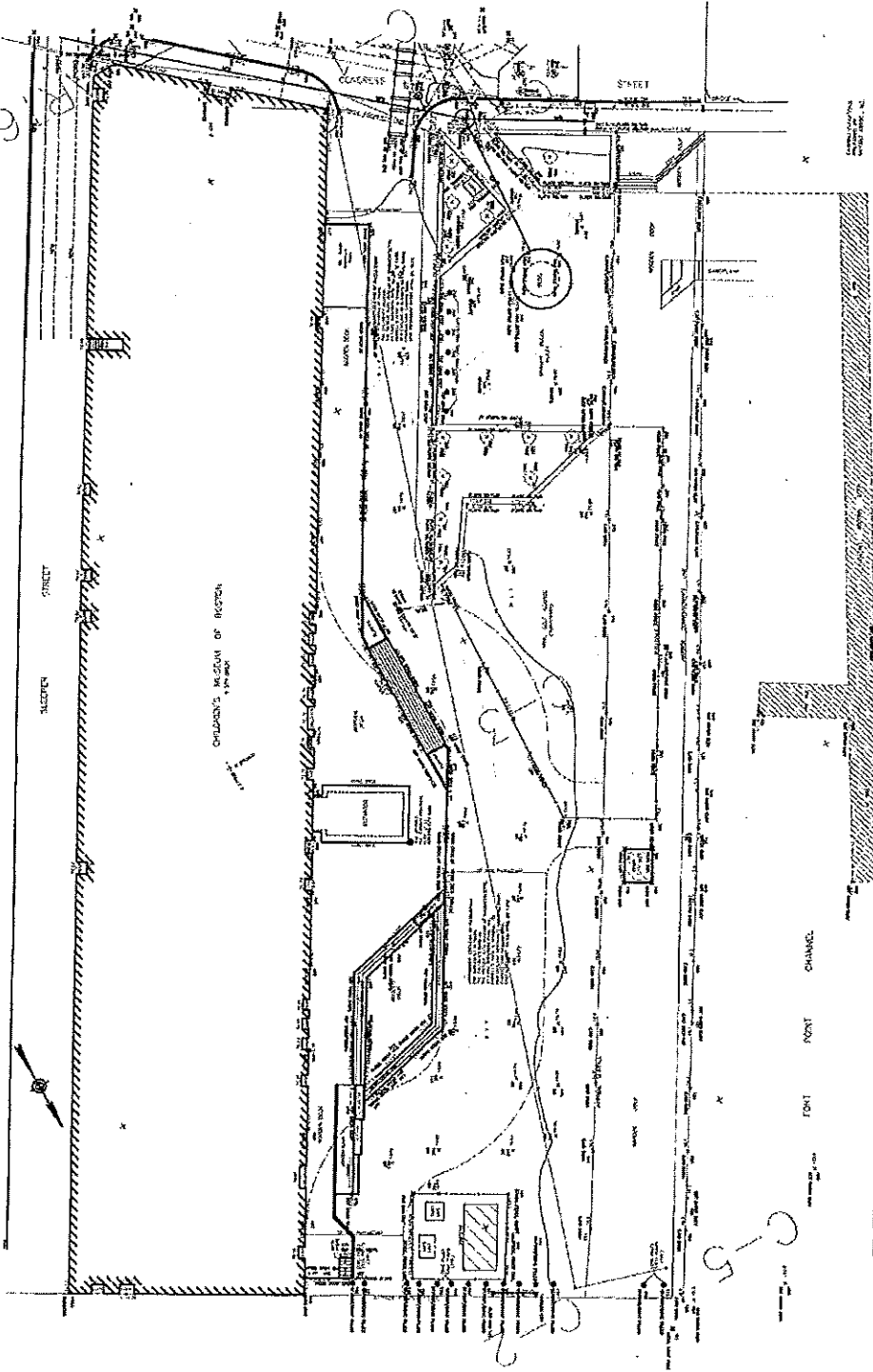
Cambridge Seven Associates began the process with an existing conditions analysis, through the review of the Museum's 2000 Master Plan and a series of guided site inspections of the existing facility. Along with Vanderwell (mechanical, electrical, and plumbing engineers) and Weldlinger (structural engineers), the team visually reviewed existing systems and conditions, and identified the current occupants and uses of the spaces within the Museum.

Existing documentation of the building is inconsistent. The original building documents do not include the numerous alterations done during construction or in the years since the original work. For the concept and schematic phases, approximate plans were created for the building, including CAD files that represent a compilation of the original drawings and those subsequent projects that we can locate.

It is apparent that there are still discrepancies regarding the length and position of the building, and in identifying the final window conditions and configuration. There are still open interpretations for the Chapter 91 setbacks and the line for Chapter 91 measurement, the actual limits of the City and MBTA property, as well as the 30' railroad easement that we have been told is not operative.

Nonetheless, the Existing Condition Plans that follow are fine for this level of detail, and they form the basis for the existing program area tabulation. They also provide a good reference when comparing the proposed concept with the existing situation, tracking down the program elements as they move around the Wharf.

Boston Children's Museum  
Programming and Concept Design



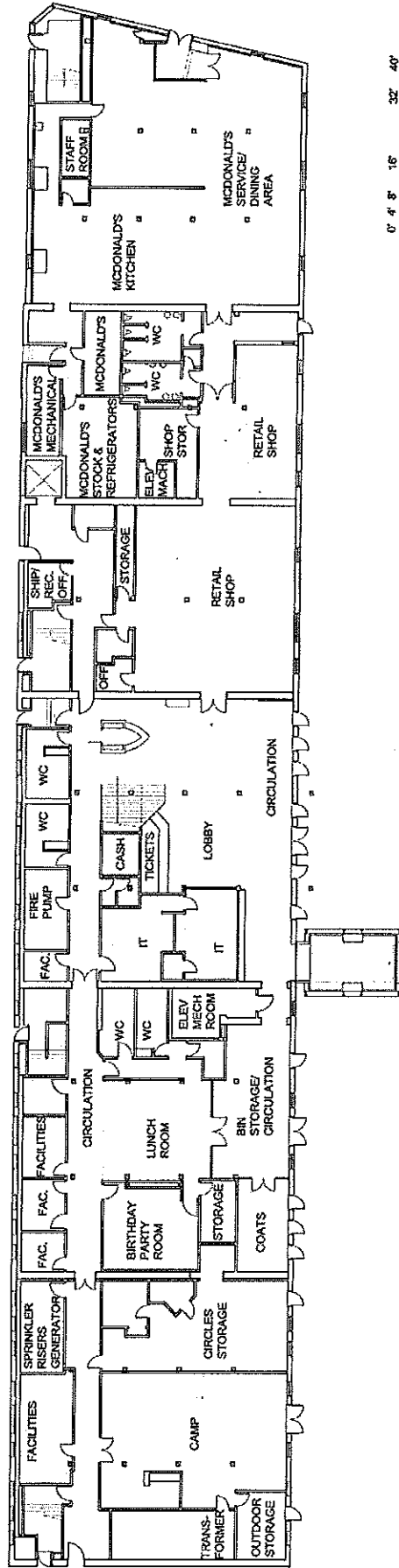
FRANK D. GERRY & ASSOCIATES, INC.  
SCHWARTZ/SILVER ARCHITECTS, INC.

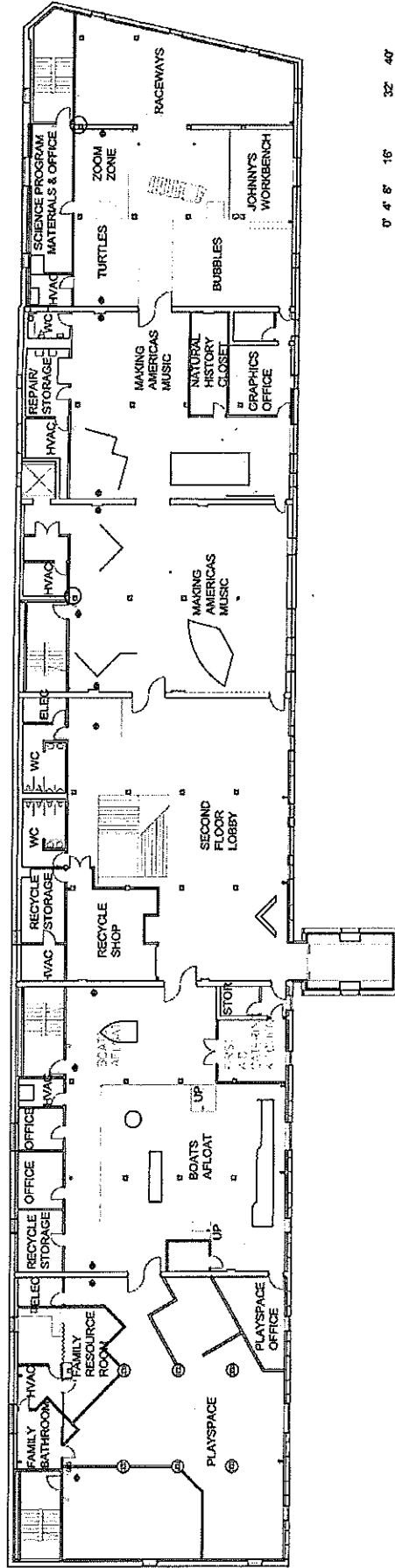
THE CHILDREN'S MUSEUM

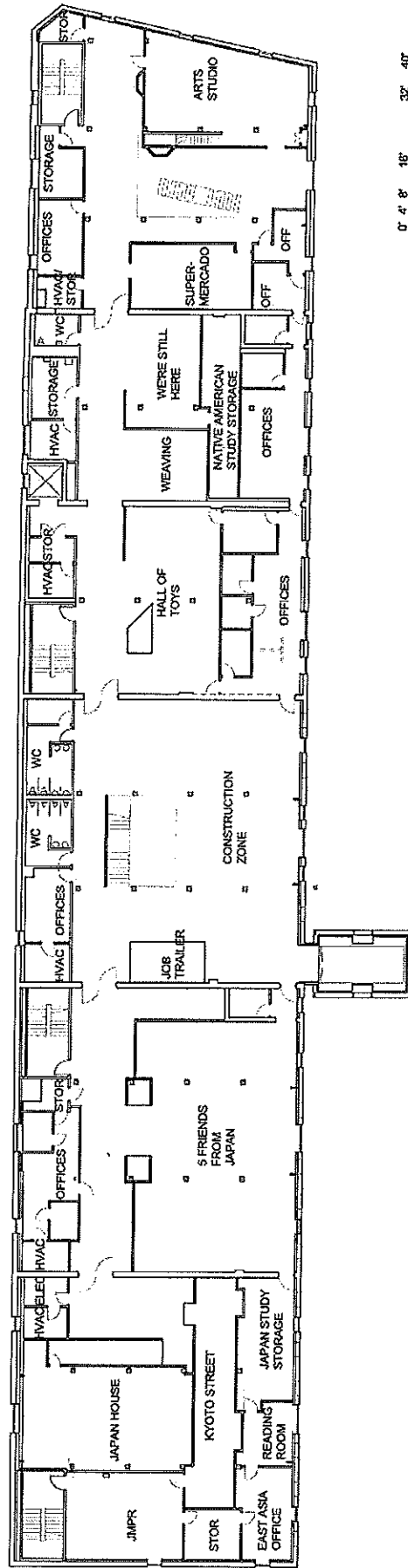
**Boston Children's Museum**  
Cambridge Seven Associates, Inc.  
1 July 2004

**Existing Site Plan**

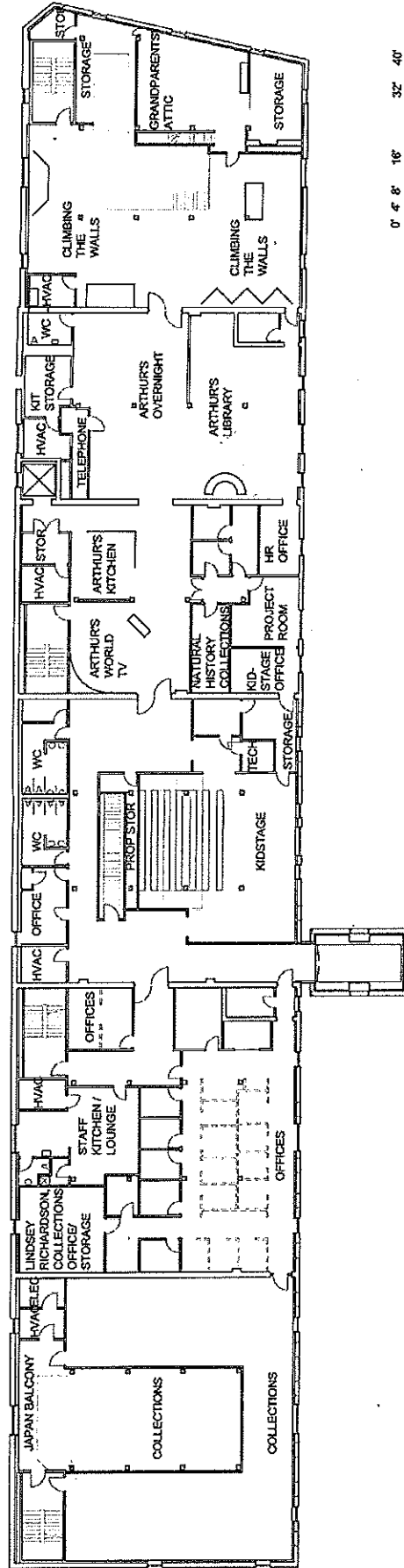
**Boston Children's Museum**

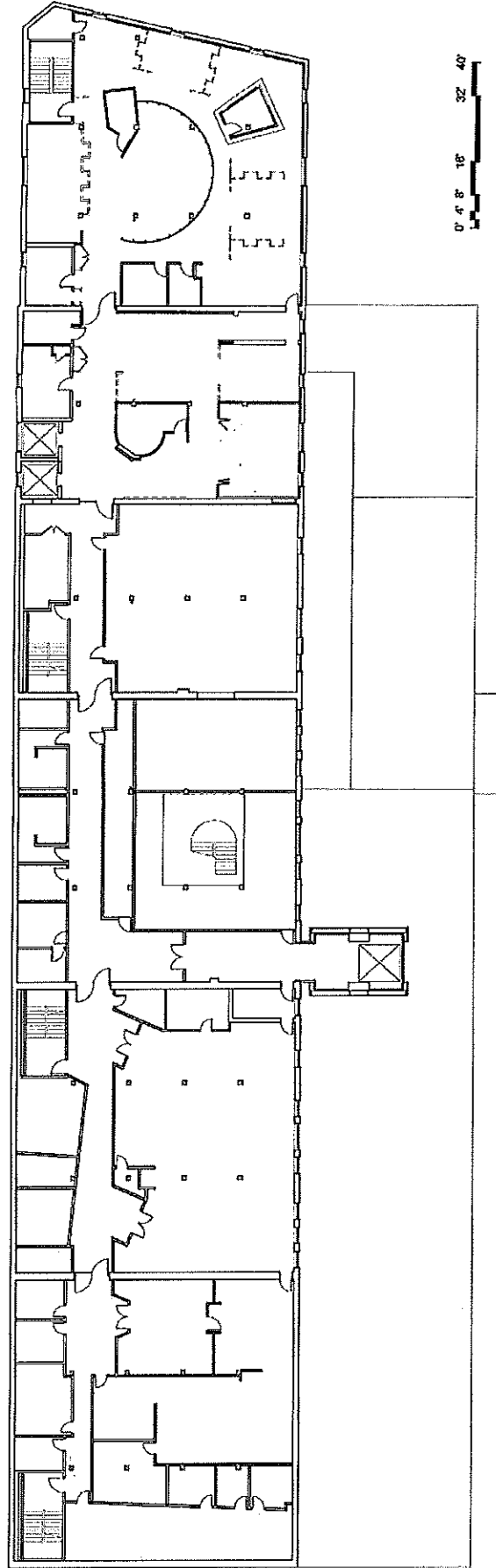


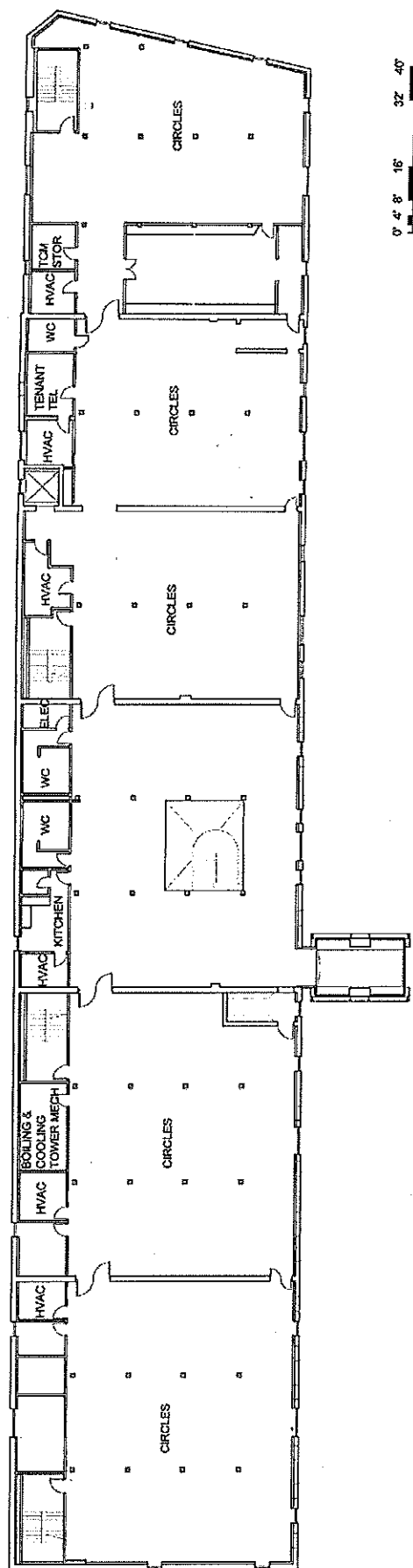












### **3 Program Areas**

Because there was no specific program beyond the general area requirements of the master plan, a series of workshops with the five primary user groups were held, as well as a staff survey and individual meetings, to develop a needs assessment. This compilation is reflected in the program listing that follows, the developed plans in Section 5, and the staff interview comments in Section 6.

The team also attended the initial overall exhibit brainstorming retreat, to understand the future gallery needs. Because the Adventure Center is to be a key element in the new construction, we also joined in the two sessions to date with the Museum and its exhibit design consultants regarding future exhibit options that could influence the architecture. First and second level connections, lobby vistas, and internal levels have been considered as a result.

The following spreadsheets outline the existing spaces in the new building, as well as proposed new spaces. The program areas are net areas, and are keyed to show the floor where they are currently or proposed to be located. Existing space in the building is shown in column 1, with the new program in column 3. The area differences are shown in column 5.

This program does not represent the full total area envisioned in the Master Plan of 27,000 sf, nor does it incorporate the full list of space developed in the needs assessment, which would have been closer to 30,000 sf. The program was prepared in parallel with the budget estimating process, lead by Shawmut (documented separately), and includes only those areas that the client/design team agreed were necessary to meet the expansion vision as well as the budget.

The building gross area in this plan grows from 154,904 gsf to 174,511 gsf, an increase of 19,608 gsf. The Museum itself also grows overall, with the public and back of house net area expanding from 86,799 nsf to 91,112 nsf, for an increase of 4,313 nsf.

**Boston Children's Museum**  
Program and Concept Design

<b>Program Summary</b>	<b>Existing</b>	<b>Key</b>	<b>Scheme "I"</b>		
<b>Name</b>	<b>Net Area</b>	<b>FL</b>	<b>SF/Space</b>	<b>FL</b>	<b>Diff.</b>
<b>Public Areas</b>					
Exhibits Second floor	18,886	2	21,872		2,986
Exhibit Circulation - 2nd Floor	2,374	2	2,770		396
Exhibits Third Floor	6,929	3	11,762		4,833
Exhibit Circulation - Exh 3rd Floor	5,292	3	4,282		-1,010
Exhibits Fourth Floor	2,317	4	0		-2,317
Exhibit Circulation - 4th Floor	3,082	4	0		-3,082
Exhibit Galleries Subtotal	38,879		40,685		1,806
Harcourt Teacher Leadership Center	1,880		1,880		0
Lobby Spaces (Support)	13,197		17,172		3,974
Museum Store	3,000		2,091		-909
Food Service	4,860		4,599		-262
Public Toilets	2,456		3,155		699
<b>Public Areas Subtotal</b>	<b>64,273</b>		<b>69,582</b>		<b>5,309</b>
<b>Administrative Offices</b>					
Administration	544		1,090		546
Marketing	532		412		-120
Development	414		378		-36
Finance	371		423		52
Human Resources	409		463		54
Information Systems	666		339		-327
Exhibits	950		1,148		198
Facilities	850		1,043		193
Programs	2,455		1,925		-529
Misc. Office Space -- Meeting Rooms	132		588		456
Misc. Office Space -- Circulation	1,900		2,215		314
Misc. Office Space -- Storage	880		539		-341
Misc. Office Space -- Staff Spaces	899		442		-456
<b>Administrative Offices Subtotal</b>	<b>11,002</b>		<b>11,006</b>		<b>4</b>
<b>Operations</b>					
Collections	5,371		5,523		151
Loading Dock	0		0		0
Operations MEP/FP	3,437		4,157		720
Janitors' Closets	19		19		0
Operations Storage	1,037		612		-425
Kidstage Space	614		213		-401
Tenant Storage	1,046		0		-1,046
<b>Operations Subtotal</b>	<b>11,525</b>		<b>10,524</b>		<b>-1,000</b>
<b>Museum Subtotal (Net)</b>	<b>86,799</b>		<b>91,112</b>		<b>4,313</b>
<b>Rental Space</b>					
Tenant Lobby			1,445		1,445
Tenant Lobby Elevator			173		173
Tenant Space Fourth Floor			15,689		15,689
Tenant Space Fifth Floor	18,881		18,881		0
Tenant Space Sixth Floor	22,865		22,865		0
Subtotal Tenant Space	41,546		58,853		17,307
<b>Museum Total (Net)</b>	<b>128,345</b>		<b>149,966</b>		<b>21,620</b>
<b>Gross Area</b>					
First Floor	25,840		35,615		9,775
Second Floor	25,795		30,459		4,664
Third Floor	25,795		30,964		5,169
Fourth Floor	25,789		25,789		0
Fifth Floor	25,894		25,894		0
Sixth Floor	25,789		25,789		0
<b>Gross Total</b>	<b>154,904</b>		<b>174,511</b>		<b>19,608</b>

**Boston Children's Museum**  
Program and Concept Design

Preliminary Program Name	Existing Net Area	Key FL	Scheme "I" SF/Space	FL	Diff.
<b>Public Areas</b>					
<b>Exhibit Galleries</b>					
Room # Second floor					
200 Smith Family Playspace ✓	3,141	2	3,141	2	0
204 Family Resource Room ✓	438	2	438	2	0
215 Second Floor Lobby	2,817	2	0		-2,817
238-241 Making America's Music	3,518	2	0		-3,518
2002 Adventure Center Space- 2nd Flr ?	0	2	1,355	2	1,355
2003 Construction Zone	2,548	3	2,731	2	182
2004 Arthur	2,431	2	2,602	2	170
2005 Plaza/Function Space	0		3,741	2	3,741
2008 Catering Kitchen	249	2	192	2	-57
207 Boats Afloat-Pump room	74	2	74	2	0
2007 Boats Afloat	2,449	2	4,006	2	1,557
2008 Art Storage	0		93	2	93
2009 Studio A, B	869	3	1,201	2	332
2010 Art Storage	0		59	2	59
2011 Art Zone	0		2,140	2	2,140
2012 Recycle Storage	351	2	100	2	-251
Subtotal Exhibits Second floor	18,886		21,872		2,986
2001 Circulation - Exh 2nd Floor	2,374	2	2,770	2	396
Subtotal	21,260		24,642		3,382
<b>Third Floor</b>					
300 Japanese House ✓	1,058	3	1,058	3	0
301 JMPR ✓	603	3	603	3	0
304 Japan Reading Room ✓	177	3	177	3	0
315 5 Friends from Japan	2,389	3	0		-2,389
324 Hall of toys	1,044	3	0		-1,044
335 Weaving	352	3	0		-352
336 We're Still Here	501	3	0		-501
344 Supermercado	452	3	0		-452
353 Puppets	354	3	0		-354
3063 Culture Gallery	0		3,935	3	3,935
3064 Boston Black	0		2,993	3	2,993
3002 Changing Exhibits	0		2,997	3	2,997
Subtotal Exhibits Third Floor	6,929		11,762		4,833
306, 3001					
3065, 3066 Circulation - Exh 3rd Floor	5,292	3	4,282		-1,010
Subtotal	12,221		16,044		3,822
<b>Fourth Floor</b>					
471, 472 Climbing the Walls	1,704	4	0		-1,704
467 Grandparents' Attic	612	4	0		-612
Subtotal Exhibits Fourth Floor	2,317	4	0		-2,317
435, 473 Circulation - Exh 4th Floor	3,082	4	0		-3,082
Subtotal	5,398		0		-5,398
<b>Exhibit Galleries Subtotal</b>	<b>38,879</b>		<b>40,685</b>		<b>1,806</b>

*Adedore  
Cecilia  
this floor  
too?*

**Boston Children's Museum**  
Program and Concept Design

Preliminary Program		Existing	Key	Scheme "I"		
Name		Net Area	FL	SF/Space	FL	Diff.
<b>Harcourt Teacher Leadership Center</b>						
505 Seminar Room		2,414	5	2,414	5	0
515 Kits Workshop		497	5	497	5	0
516 Kits Studio		438	5	438	5	0
517 Library		946	5	946	5	0
Subtotal	✓	1,880		1,880		0
<b>Lobby Spaces (Support)</b>						
117 Lunch Room		658	1	0		-658
121 Circus Tickets		61	1	0		-61
128 Accounting		37	1	0	1	-37
1006 Adventure Center- 1st floor	✓	0		1,675	1	1,675
1007 Lobby		619	1	1,250	1	632
1009 Queing		0		680	1	680
1010 Tickets		0		250	1	250
1011 Ticket Circulation		0		82	1	82
1012 Cash		92	1	88	1	-4
1013 Safe		24	1	88	1	63
1014 Security Office (Boat)		75	1	88	1	13
1015 Information		0		94	1	94
1018 Birthday Party Room		458	1	421	1	-36
1019 Coat Room		282	1	274	1	-7
1023 Kidstage	?	1,542	4	957	1	-584
1028 Recycle Shop	?	504	2	587	1	83
1025 Science Playground	?	2,762	2	2,256	1	-506
1030 Camp		1,454	1	1,326	1	-129
109, 156, 161						
1002, 1022						
1042 Circulation, Bln Storage - Lobby 1st Flr	?	4,632	1	6,708	1	2,076
1001, 1008, 1016 Vestibules				348	1	348
Subtotal		13,197		17,172		3,974
<b>Museum Store</b>						
1038 Office	?	65	1	112	1	47
1039 Storage		329	1	195	1	-134
1040 Retail Shop	?	2,607	1	1,785	1	-822
Subtotal		3,000		2,091		-909
<b>Food Service</b>						
<b>McDonalds</b>						
149 Service/ Dining Area		2,361	1			-2,361
148 Kitchen		1,294	1			-1,294
150 Office		42	1			-42
151 Staff Room		98	1			-96
145 Mechanical		181	1			-181
146 Circulation		162	1			-162
152 Entry		96	1	96	1	0
147 Storage Room (?)		183	1			-183
153 Storage Closet		12	1			-12
144 Stock/Refrigeration		435	1			-435
1032 Food Service #1	?			389	1	389
1033 Food #2 Storage	?			75	1	75
1034 Food #2 Storage				59	1	59
1035 Food Service #2				709	1	709
1029 Dining				1,338	1	1,338
1036 Dining				1,452	1	1,452
1037 Food Circulation				480	1	480
Subtotal		4,860		4,599		-262

**Boston Children's Museum**  
Program and Concept Design

Preliminary Program Name	Existing Net Area	Key FL	Scheme "I" SF/Space	FL	Diff.
<b>Public Toilets</b>					
118 Mens' Restroom	137	1	137	1	0
119 Womens' Restroom	126	1	126	1	0
124 Restroom	166	1	166	1	0
125 Restroom	179	1	179	1	0
142 Restroom	160	1	160	1	0
143 Restroom	219	1	219	1	0
1005 Mens' Restroom	?		309	1	309
1004 Womens' Restroom	?		310	1	310
202 Family Bathroom	176	2	176	2	0
219 Restroom	173	2	173	2	0
220 Restroom	176	2	176	2	0
231 Restroom	67	2	67	2	0
320 Restroom	176	3	176	3	0
321 Restroom	180	3	176	3	-4
340 Restroom	82	3	82	3	0
3017 New unisex Restroom	?		84	3	84
438 Restroom	176	4	176	4	0
439 Restroom	184	4	184	4	0
464 Restroom	81	4	81	4	0
Subtotal	2,456		3,155		699
<b>Public Areas Subtotal</b>	<b>64,273</b>		<b>69,582</b>		<b>5,309</b>
<b>Administrative Offices</b>					
<b>Administration</b>					
3059 Lou Casagrande, President/CEO	165	4	359	3	194
3058 Erin Wirpsa, Exec Asst	46	4	60	3	14
3056 Nell Gordon, COO	81	4	259	3	178
3040 Debbie Sinay, SR VP Inst Advancement	69	4	161	3	92
3043 Karen Ross, Dev Admin Assoc	45	4	54	3	9
3038 John Riordan, VP Visitor Services	86	3	143	3	57
3042 Kendra Amaral, Dir Planing, Research	52	4	54	3	2
Subtotal	544		1,080		546
<b>Marketing</b>					
3017 Charlayne Murrel Smith, VP Ext Relations	74	4	142	3	68
3011 Hayat Prentice, Admin Assoc.	49	4	54	3	5
1028 Rick Stockwood, Public Relations, Mgr	65	4	54	3	-11
3030 Catherine Batsford, Marketng Dir.	49	4	54	3	5
3003 Brian Bergeron, Sr. Graphics Arts Mgr.	295	2	54	3	-241
3005 Jen Bennett, Graphic Designer	??	??	54	3	54
Subtotal	532		412		-120
<b>Development</b>					
3031 Gina Federico, Capital Campaign Dir	199	4	54	3	-145
3033 TBD, Capital Campaign Researcher	"	"	54	3	54
3035 Melissa Antenucci, Corp Giving Sr. Mgr	49	4	54	3	5
3037 Valerie Cribbins, Sr. Grant Mgr.	48	4	54	3	6
3034 Cynthia Donovan, Membership Mgr	52	4	54	3	2
3032 Christina Williams, Membership Coord	23	4	54	3	31
3029 TBD, Individual Giving Dir	43	4	54	3	11
Subtotal	414		378		-36



**Boston Children's Museum**  
Program and Concept Design

Preliminary Program Name	Existing Net Area	Key FL	Scheme "I" SF/Space	FL	Diff.
<b>Finance</b>					
3054 Amy Auerbach, CFO	69	4	207	3	138
3051 Chris Dierkes, Controller	75	4	36	3	-39
3053 Office	227	4	144	3	-82
▪ Tanya Armstead, Sr. AP Clerk	"	"	"	3	
▪ Marinette Hoy, Accr Assoc.	"	"	"	3	
▪ Alex Wen, Asst. Controller	"	"	"	3	
3050 Kevin Lamont, Acct. Clerk/ Func. Coord.	???		36	3	36
Subtotal	371		423		52
<b>Human Resources</b>					
3039 Jane Barry, VP HR	161	4	463	3	302
3015 Kathy Willis, HR Generalist	71	4		3	-71
▪ Aylin Kentkur, HR Generalist	73	4		3	-73
▪ Circulation	104	4		3	-104
Subtotal	409		463		54
<b>Information Systems</b>					
3014 Chuck Eisenhardt, Info Systems	332	1	137	3	-195
▪ Mo Haddam, Network Admin	"	"	"	3	
130 Network Closet	31	1	31	1	0
3041 IT Server room	303	1	172	3	-132
Subtotal	666		339		-327
<b>Exhibits</b>					
3018 Gail Ringel, VP Exhibits	69	4	138	3	69
3007 John Spalvins, Design Director			54	3	54
Michael Shervanian, D & P Technician					0
George Marincavage, Exh/Graphic Des.					0
TBD, Exhibit Tech					0
404 Lindsay Richardson, Collections Mgr.	420	4	420	3	0
3002 Stacia Pathlakis, Proj. Mgr.	43	4	54	3	11
3004 Amy Proctor, Project Super	61	4	54	3	-7
3055 Leslie Swartz, VP Prog Dev	76	4	145	3	70
303 Willamarie Moore, East Asia Prog Mgr	283	3	283	3	0
▪ Akemi Chayama, Japan Prog Ed	"	"			
▪ Gail Wang, Chinese Studies, Ed	"	"			
Subtotal	950		1,148		198
<b>Facilities</b>					
112 David Roth, Facilities Director	158	1	158	1	0
103 Gerard Welch, Repairs Contractor	353	1	353	1	0
111 Kenny Jackson, Building Mgr	133	1	133	1	0
▪ Howard Bornstein, Maintenance Super	"	"			
1017 Paul Fest, Switchboard Operator	110	1	166		56
113 Reshant McWilliams, Security Super	95	1	95	1	0
▪ Kevin Lamont	"	"			
Sean Kerns, Building Clerk					0
137 Spare Facilities Office Space			137	1	137
Subtotal	850		1,043		193

*Exhibit  
Seant?*

**Boston Children's Museum**  
Program and Concept Design

Preliminary Program Name	Existing Net Area	Key FL	Scheme "I" SF/Space	FL	Diff.
<b>Programs</b>					
Ginny Zanger, VP Teachers Center					
Ewa Goodman, Assoc. Project Mgr.					
Judy Battat, Native Amer. Proj Mgr.					
Susan Steinway, Teacher Ctr Librarian					
Vincent Livoyl, Library Asst					
Tim Porter, Sr. Project Mgr.					
Kate Marcinek, After School Ed.					
Juli Browning, Kits Rental Mgr.					
Rachel Rosenthal, Kits Asst.					
Kate Marcinek, Kits Asst					
Sheila Ryan, Kindergarten Mgr.					
Jeri Robinson, VP Early Education					
Kacy Hughes, EC Proj. Mgr.					
Karen Sheaffer, Family Childcare Proj. Coord.					
Camp on the Channel Counselors			0		
Overnight Teachers			0		
Kate Norris, Kidstage Super					
201 Playspace Office	260	2	260	2	
1025 Science Exhibit Office			105	1	105
1026 Science Exhibit Storage	0		164	1	164
2013 Lisa O'Brien, artsEduc/Recycle Shop Mgr	56	3	113	2	-57
2014 Chris D'Angelo, Recycle Materials Coord.	151	2	114	2	-37
3006 Dottie Merrill, Sci. Prog. Dir.	79	3	54	3	-25
3008 Tim Porter, Science Prog	370	2	54	3	-316
3009 Alissa Daniels Science Prog, Mgr	"	"	54	3	54
3010 Ann Marie Stephan, Playspace/ EC Prog. M	111	2	54	3	-57
3012 Nancy Henriquez, Overnight/Camp Educat	198	3	36	3	-162
3013 Kathleen Baker, Overnight/ Camp Mgr	"	"	36	3	36
3020 Chris Coche, EC Educator			54	3	54
3021 Ellen Thompson, Education/Prog. Mgr	64	3	54	3	-10
3022 Megan Dickerson Cultural Program Ed	46	3	54	3	8
3024 Luis Otero, Birthday Party Coord	126	3	54	3	-72
3025 Almee Lebrun, Group Reservationist	54	3	54	3	
3026 Joan Halter, Functions Mgr.	130	3	54	3	-76
3027 Kelly Baldwin, Music Prog, Educator	"	"	54	3	54
3036 Bridget Matros, Arts Prog Ed	"	"	54	3	54
3044 Molly Kenah, Comm. Prog/ Partnership Ed	279	2	54	3	-225
3046 Joanne Rizzi, Comm. Prog/Partnership Dir	70		54	3	-16
3048 Alan Elefon, staff Mgr.	190	3	54	3	-136
3049 David Marino, Visitor Experience Mgr. ?			54	3	54
3052 Annawon Weedon, Native American Ed			36	3	36
3066 Locker Room			198		198
Visitor Services Coord. (3)	70	3			-70
Cashiers (5)					
Exhibit Interpretors (25)	201	3			-201
Cashiers (3)					
Teen Ambassadors (6)					
<b>Subtotal of Programs' Office Space</b>	<b>2,455</b>		<b>1,925</b>		<b>-529</b>

**Boston Children's Museum**  
Program and Concept Design

Preliminary Program Name	Existing Net Area	Key FL	Scheme "I" SF/Space	FL	Diff.
Misc. Office Space					
331 Meeting Room	132	3			-132
3016 Meeting Room			234	3	234
3019 Meeting Room			147	3	147
3057 Executive Meeting Room			207	3	207
Subtotal Meeting Rooms	132		588		456
325 Office Circulation	373	3			-373
347 Office Circulation	214	3			-214
3061 Office Circulation			1,587	3	1,587
3062 Office Circulation			628	3	628
428 Office Circulation	371	4	0		-371
453 Office Circulation	68	4	0		-68
465 Office Circulation	843	4	0		-843
467 Office Circulation	32	4	0		-32
Subtotal of Office Circulation	1,900		2,215		314
333 Office Storage	66	3	66	3	0
343 Office Storage	155	3	155	3	0
3027 Office Storage			76	3	76
3045 Swing Desk	49	4	54	3	5
3047 Swing Desk			54	3	54
3060 Office Storage			80	3	80
3023 Office Storage			54	3	54
426 Office Closet Storage	81	4			-81
457 Admin Files Storage	82	4			-82
463 Kit Storage	157	4			-157
459 Storage	69	4			-69
469 Storage	223	4			-223
Subtotal of Office Storage	880		539		-341
348 Xerox Room	72	3			-72
3001 Lunch/ Staff Lounge	374	4	442		68
430 Staff Kitchen	132	4			-132
431 Staff Shower	34	4			-34
432 Staff Restroom	41	4			-41
448 Project Room	246	4			-246
Subtotal of Staff Spaces	899		442		-456
Administrative Offices Subtotal	11,002		11,006		4
Operations					
Collections					
226 Natural History Closet	228	2			-228
305 East Asia Study Storage	404	3	404	3	0
337 Native American Study Storage	363	3			-363
400 Collections	2,642	4	3,577		935
401 Collections	1,542	4	1,542		0
446 Natural History Collections Storage	192	4			-192
Subtotal	5,371		5,523		151
Loading Dock					
Dock					
1017 Receiving Area/ Office				1	0
Subtotal	0		0		0

**Boston Children's Museum**  
Program and Concept Design

Preliminary Program Name	Existing Net Area	Key FL	Scheme "I" SF/Space	FL	Diff.
<b>Operations MEP/FP</b>					
1003 Mechanical	0		655	1	655
1007 Elevator (existing str w/ new cab)	0		173	1	173
1043 Sprinkler System, Risers, Telephone Trunk	55	1	55	1	0
203 Mechanical	94	2	94	2	0
214 Mechanical	75	2	75	2	0
217 Mechanical	95	2	95	2	0
223 Mechanical	89	2	89	2	0
229 Mechanical	121	2			-121
236 Mechanical	80	2	80	2	0
307 Mechanical	78	3	78	2	0
309 Mechanical	82	3	82	2	0
318 Mechanical	99	3	99	3	0
332 Mechanical	89	3	89	3	0
338 Mechanical	107	3	98	3	-10
341 Mechanical / Storage	84	3	84	3	0
402 Mechanical	76	4	76	4	0
433 Mechanical	79	4	79	4	0
436 Mechanical	95	4	95	4	0
462 Mechanical	98	4			
466 Mechanical	84	4	84	4	0
205 Electrical	76	2	76	2	0
221 Electrical	63	2	63	2	0
308 Electrical	74	3	74	3	0
322 Electrical	65	3	65	3	0
403 Electrical	76	4	76	4	0
440 Electrical	59	4	59	4	0
100 Transformer	387	1	387	1	0
107 Sprinkler Risers, Generator, Paint Stor.	237	1	237	1	0
108 Paint Storage	42	1			-42
110 Cleaning Materials	101	1	101	1	0
120 Elevator Mech. Room	204	1	204	1	0
122 Heat Pump/ Facility Storage	77	1	77	1	0
123 Fire Pump	208	1	208	1	0
134 Heat Pump/ Facility Storage	64	1	0	1	-64
137 HVAC/Facility (old Receiving Office)			110	1	110
141 Elevator Machine Room	79	1	79	1	0
1031 HVAC			116	1	116
224 Cleaning Materials	66	2	66	2	0
Subtotal	3,437		4,157		720
<b>Janitors' Closets</b>					
159 JC	19	1	19	1	0
Subtotal	19		19		0
<b>Operations Storage</b>					
101 Outdoor Storage	197	1	197	1	0
115 Storage	129	1			-129
209 Storage	67	2	67	2	0
230 Repair/ Storage Room	159	2			-159
228 Storage	70	2			-70
302 Exhibit Storage	163	3	163	3	0
313 Storage	59	3	59	3	0
316 Storage	67	3			-67
354 D & P Storage	63	3			-63
3067 Finance Storage			63	3	63
470 Storage	63	4	63	4	0
Subtotal	1,037		612		-425

**Boston Children's Museum**  
Program and Concept Design

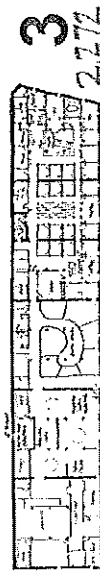
<b>Preliminary Program Name</b>	<b>Existing Net Area</b>	<b>Key FL</b>	<b>Scheme "I" SF/Space</b>	<b>FL</b>	<b>Diff.</b>
<b>Kidstage Space</b>					
1021 Prop Storage	119	4	213	1	94
443 Kidstage Tech Booth	57	4	0		-57
444 Kidstage Backstage	164	4	0		-164
445 Kidstage Dressing Room	98	4	0		-98
447 Kidstage Office	176	4	0		-176
Subtotal	614		213		-401
					18
<b>Tenant Storage</b>					
104 Circles Storage	851	1	0		-851
105 Circles Storage	133	1	0		-133
106 Circles Storage	62	1	0		-62
	1,046		0		-1,046
<b>Operations Subtotal</b>	<b>11,525</b>		<b>10,524</b>		<b>-1,000</b>
<b>Museum Total (Net)</b>	<b>86,799</b>		<b>91,112</b>		<b>4,313</b>
<b>Rental Space</b>					
1041 Tenant Lobby			1,445		1,445
1044 Tenant Lobby Elevator			173		173
Tenant Space Fourth Floor			16,689		16,689
Tenant Space Fifth Floor	18,681		18,681		0
Tenant Space Sixth Floor	22,865		22,865		0
Subtotal Tenant Space	41,546		58,853		17,307
<b>Museum Total (Net)</b>	<b>128,345</b>		<b>149,966</b>		<b>21,620</b>

## **4 Alternative Schemes**

During the course of the conceptual design phase, several alternatives were investigated. Schemes A-C represented plans closer to the needs assessment findings and the master plan, but at 27,000 sf to 30,000 sf they proved too expensive for the budget. Incrementally, the team developed 11 variations, modifying the size of the spaces provided, the number of stories, and the deletion of some program areas seen as less critical.

Schemes D-K represent, in rough order towards the least costly approaches, our attempt to reach the proposed budget without compromising the vision. Each step reduced area, and reconfigured the remaining spaces. Every alternative was critically reviewed by the full building committee, and the team discussed the possible impact on the mission and the goals for this project.

Eventually, Scheme I was seen as the most promising scheme for further schematic development, as J & K appeared to sacrifice too much of the original intent of the project. The various schemes are presented here for reference, documenting paths not taken, as we all move forward to the next level of detail.

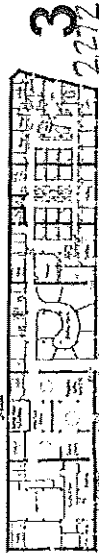


TOTAL AREA NEW = 30,856 SF

### A 'BALCONY' SCHEME

Museum Program and Adjacencies

CAMBRIDGE SEVEN ASSOCIATES, INC.

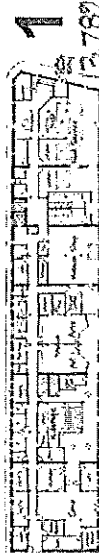


TOTAL AREA NEW = 31,328 SF

### B 'BRIDGE' SCHEME

Museum Program and Adjacencies

CAMBRIDGE SEVEN ASSOCIATES, INC.

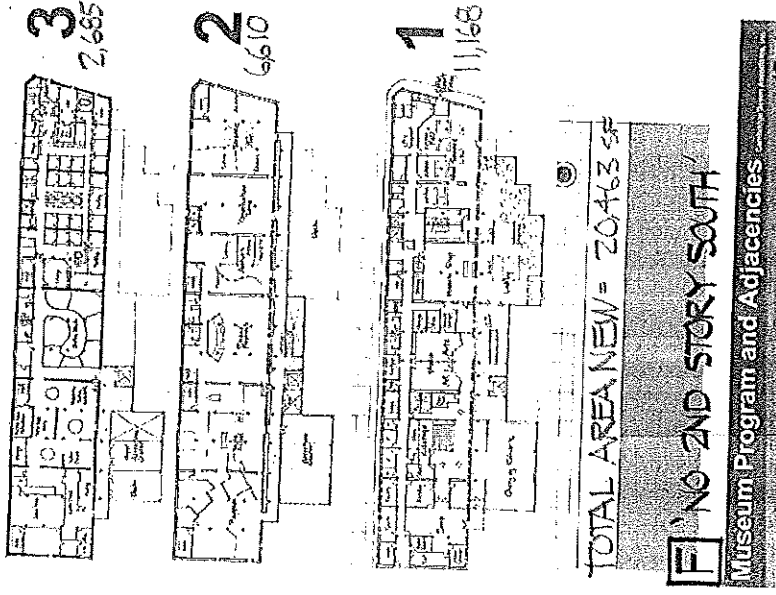
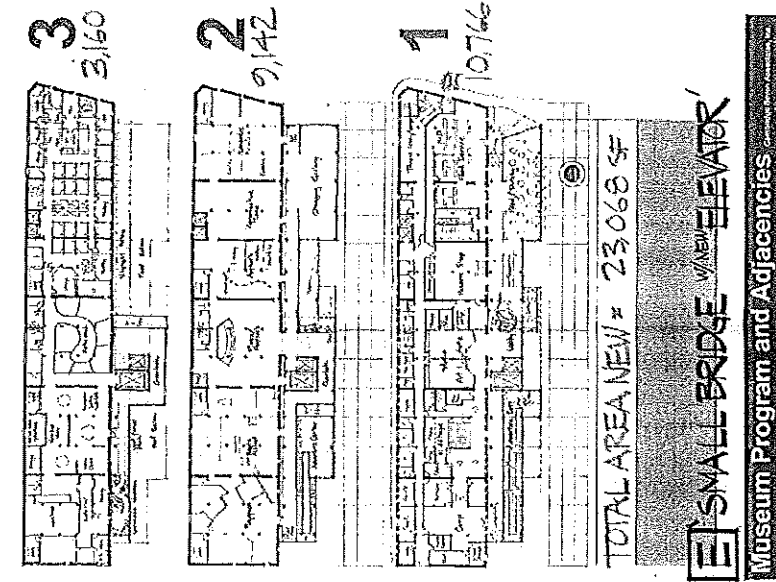
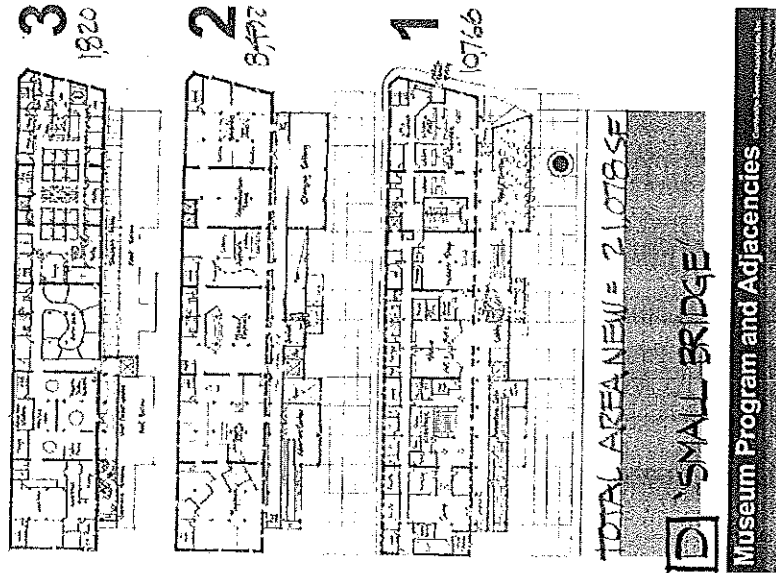


TOTAL AREA NEW = 27,557 SF

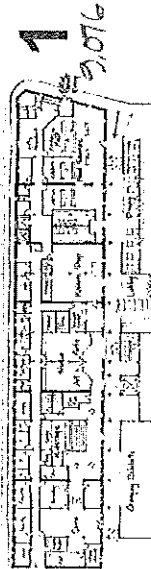
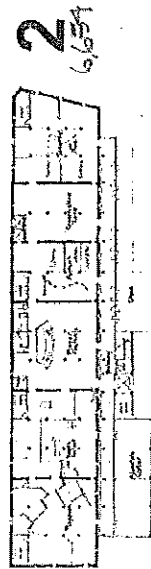
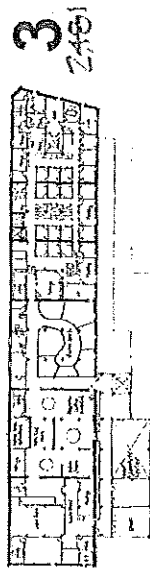
### C 'BALCONY VARIATION'

Museum Program and Adjacencies

CAMBRIDGE SEVEN ASSOCIATES, INC.



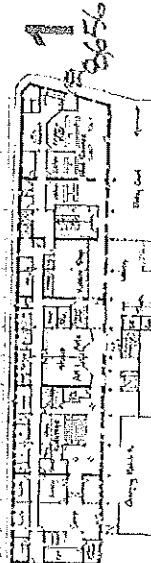
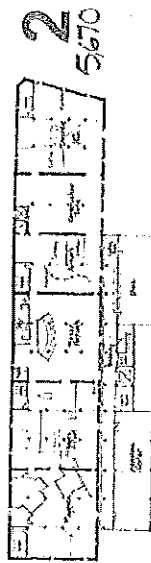
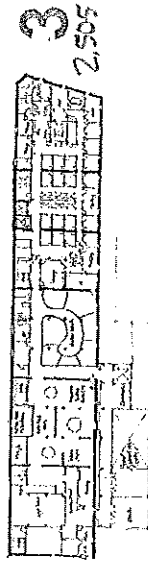




TOTAL AREA NEW = 18,211 SF

**G** 'SMALL FOOD/DINING'

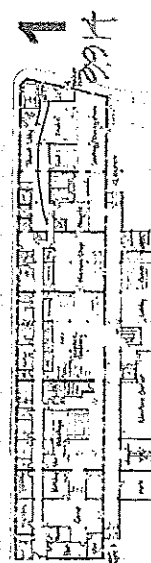
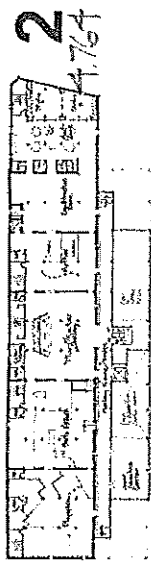
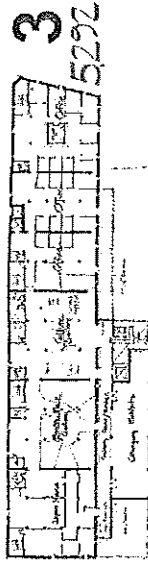
Museum Program and Adjacencies



TOTAL AREA NEW = 16,831 SF

**H** 'NO FOOD/DINING'

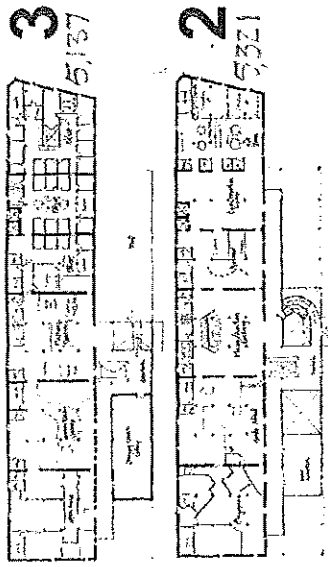
Museum Program and Adjacencies



TOTAL AREA NEW = 9,970 SF

**I** 'SHORT SPINE'

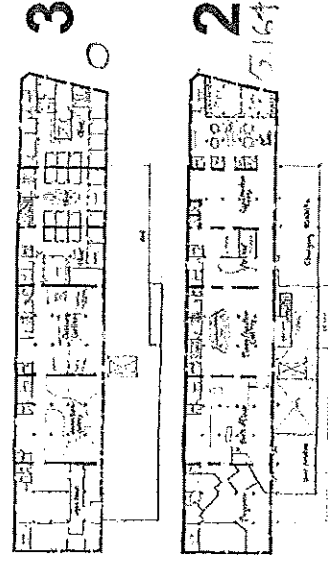
Museum Program and Adjacencies



TOTAL AREA NEW = 18,820 SF

[J] SHORT LOBBY

Museum Program and Adjacencies



TOTAL AREA NEW = 11,885 SF

[K] NO BALCONY

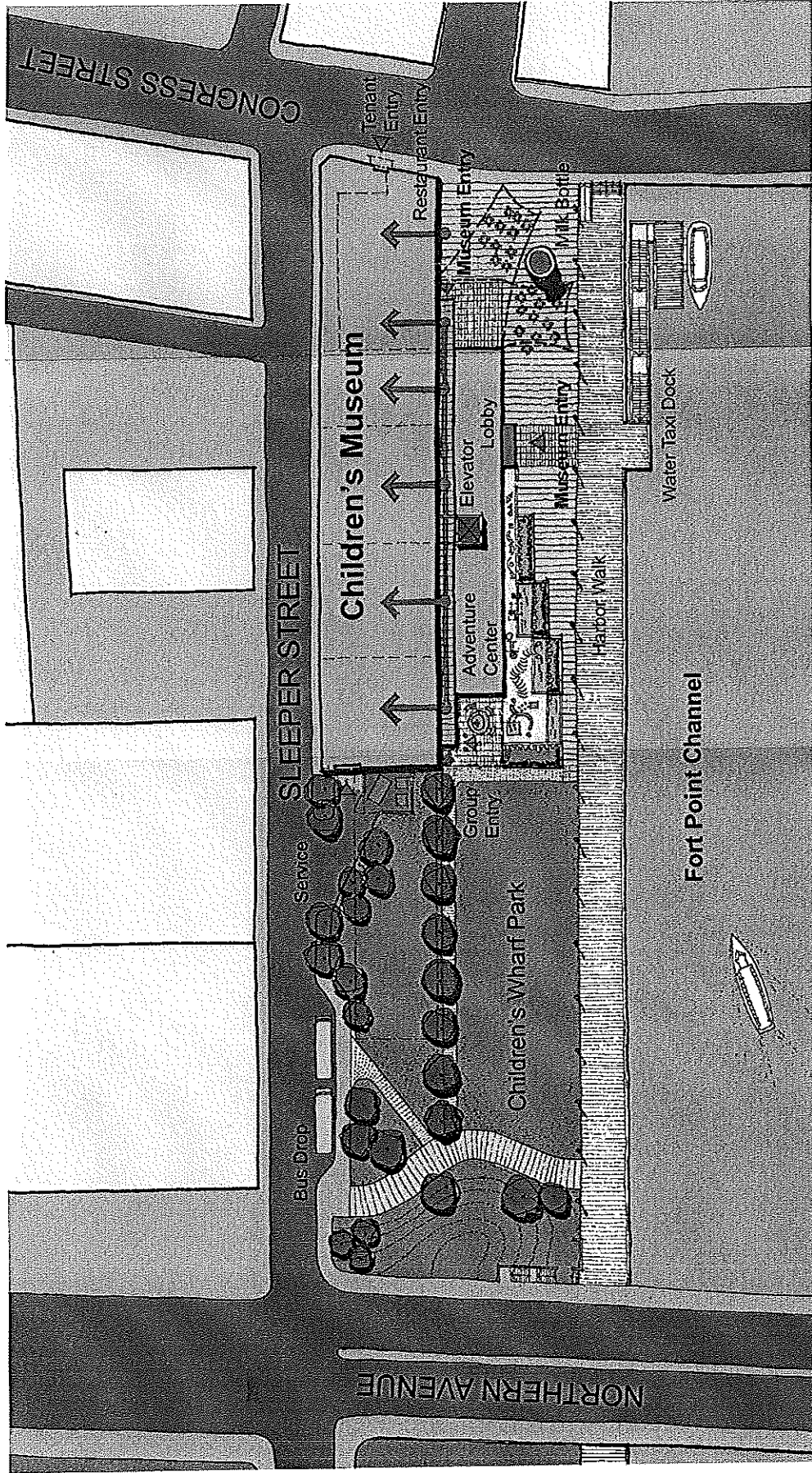
Museum Program and Adjacencies

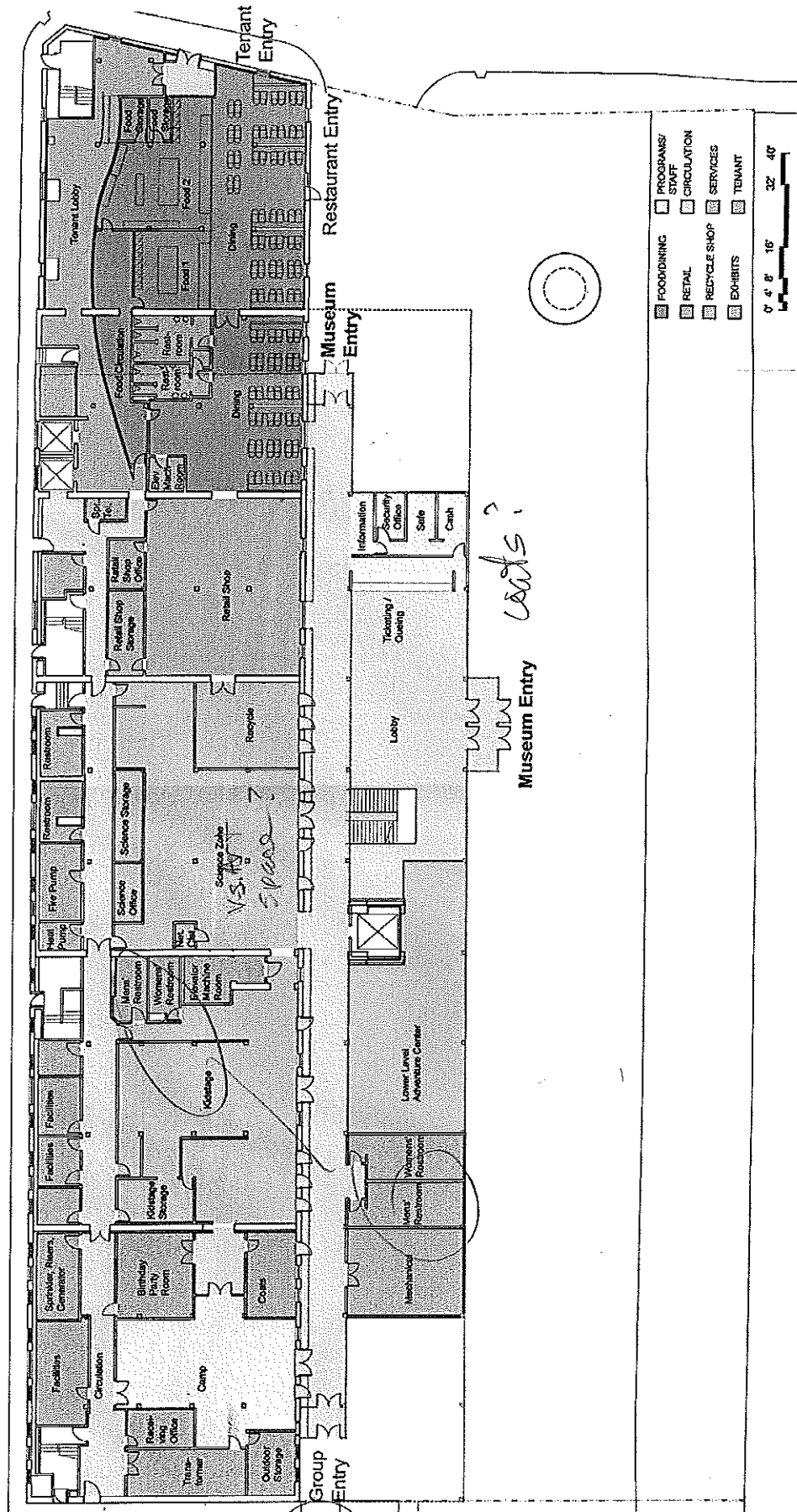
## **5 Concept Plans**

The following plans represent the beginning Schematic Design development of the option originally identified as Scheme I. They still include the internal "bridge" circulation in the addition, seen by all involved as critical to reconfiguring the way the Museum works and allowing visitors to perceive the wealth of experiences within. The new addition also includes increased lobby space, the Adventure Center, vertical circulation, a new queue and ticketing location, and a changing exhibits gallery. Within the building, several galleries have been relocated, while others have been removed. New spaces have been created on all levels, which can be seen on the drawings.

While ordinarily the concept phase would have been done with "bubble diagrams," it was seen as necessary to move the plans into a schematic design level of detail to better understand the impact of existing conditions and to help the users better visualize the spaces proposed. Further, because the costing exercise became so critical and needed more detail to be effective, the plans were prepared and refined. The site plan was developed as well, but at this point it merely serves to illustrate the current park designed by the MBTA next door and to help locate the expansion on the greater Children's Wharf property.

While the plans are further along in detail and refinement, they are not yet truly "designed." They meet the functional needs of the Museum, and now have the appropriate adjacencies to make the Museum operate far more smoothly, with less stress on the visiting public. At the same time, building massing and elevation studies need to take place as we finish schematic design, and much more thought needs to go into the materials and the location of window walls and solid surfaces. These plans, which are well on their way to an exciting new front door experience and revitalized wharf building, and will take shape in the coming few weeks.

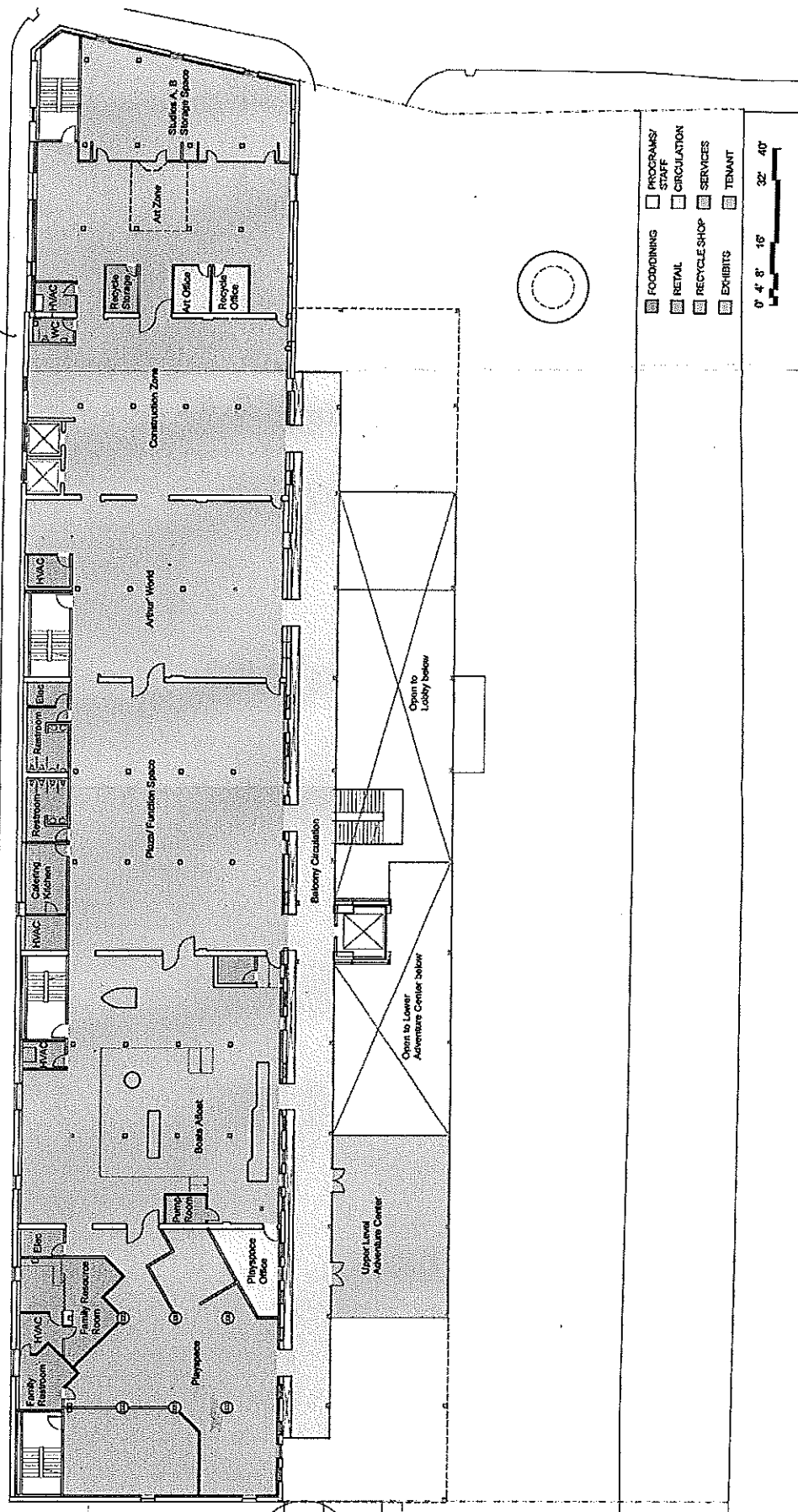






*usable family  
recreation*

Boston Children's Museum  
Programming and Concept Design



**Boston Children's Museum**  
Cambridge Savon Associates, Inc.

1 July 2004

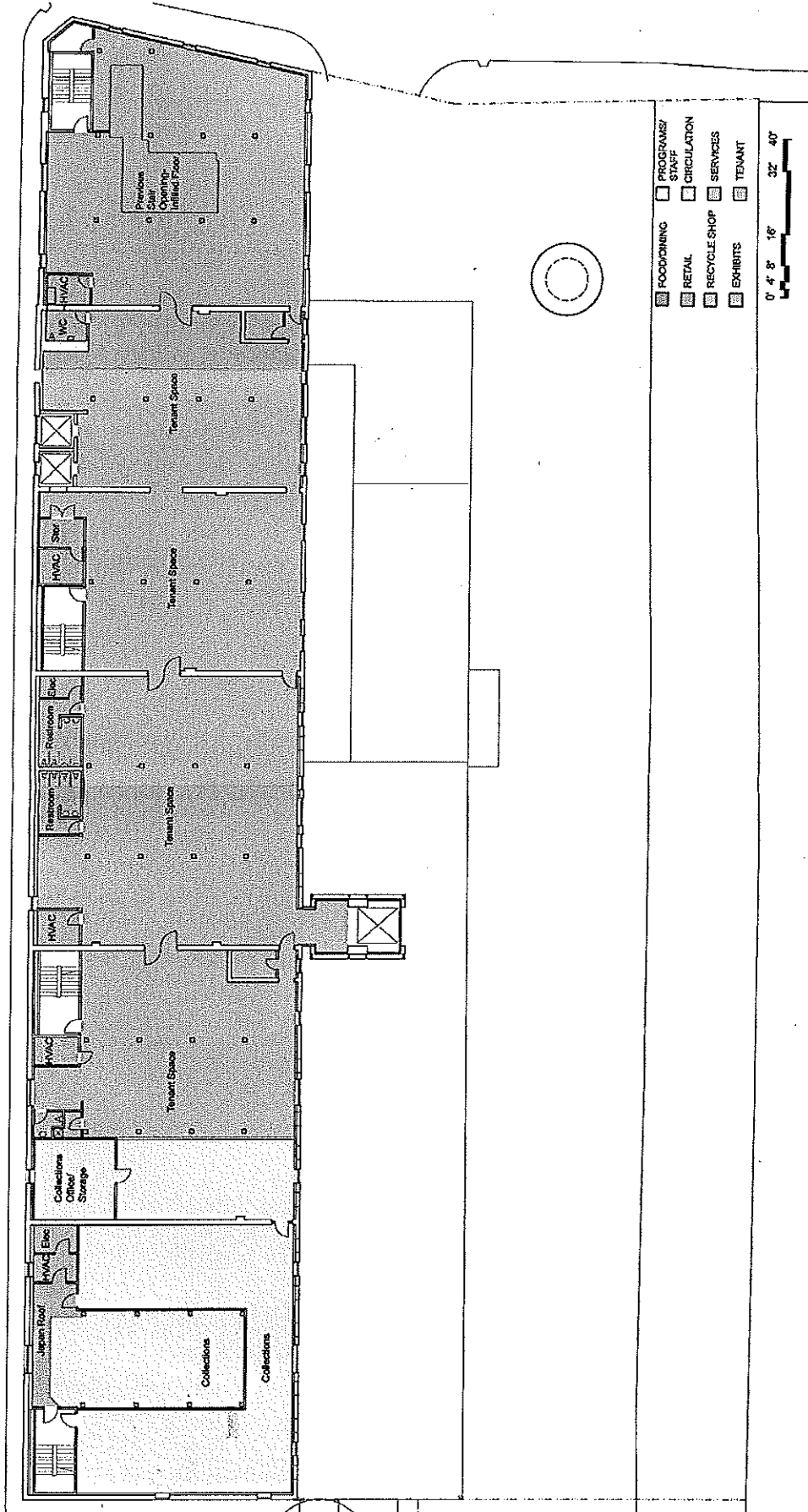
## Proposed Level 2

access. bled  
Squidby section. =

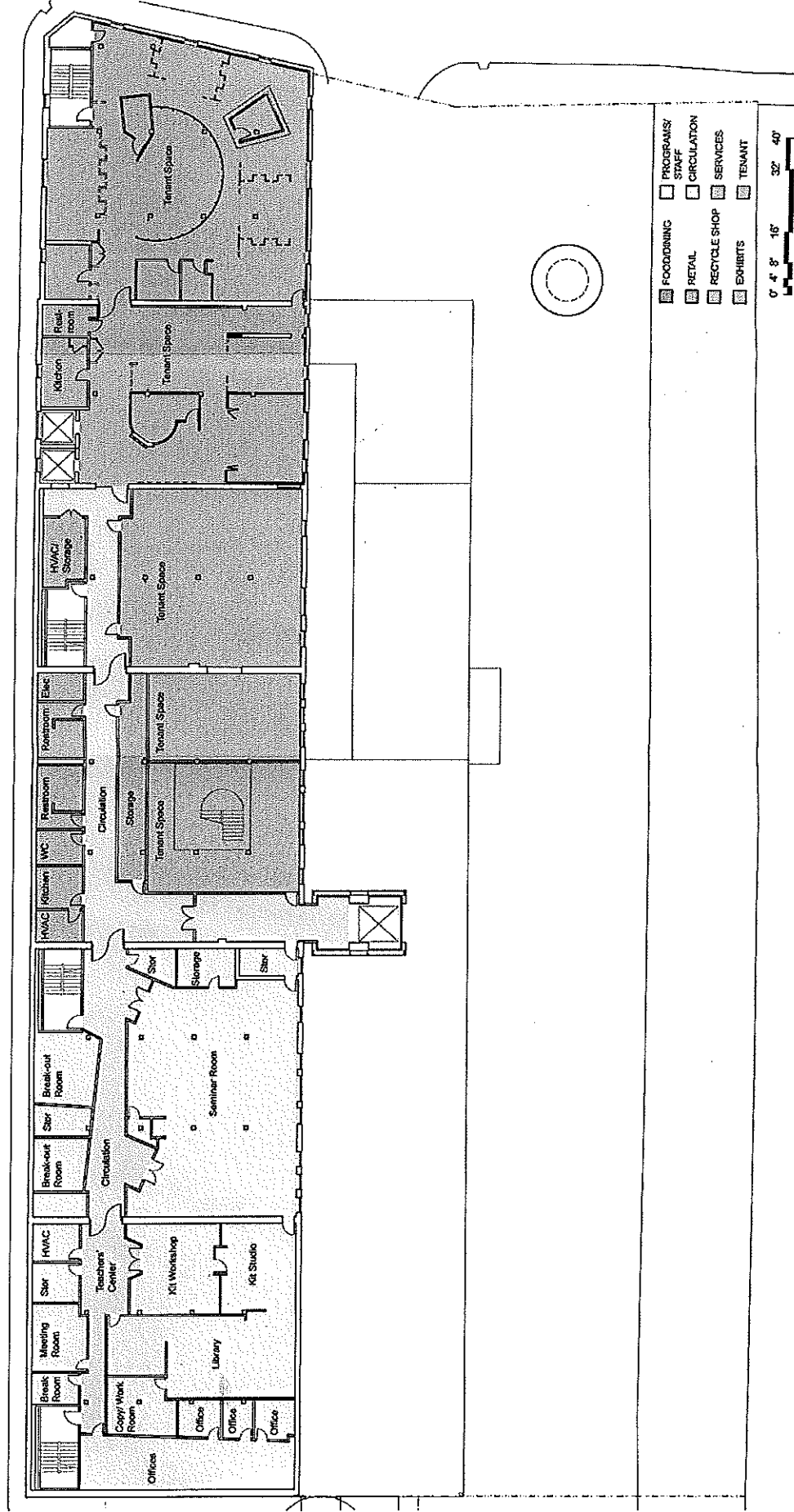


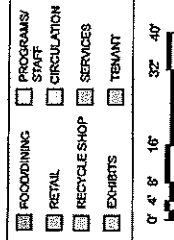
Cambridge Seven Associates, Inc.  
1 July 2004

30









## 6 Staff Interview Comments and Meeting Notes

### Notes from Interviews with Museum Staff

#### Consistent comments

- Storage space seems to be needed by every department.
- The lobby has poor circulation, poor orientation, and is too small.
- The restrooms need to be bigger, better, and brighter.
- Wayfinding throughout the Museum needs to be improved.
- The large elevators are nice, but painfully slow. They need to be faster.
- All of the senior staff need private offices. Several need to meet with 4 or 5 people in their office.
- Workspaces throughout are needed.

*Comments from the five interview groups and their surveys follow below.*

#### Visitor Experience Group

14 April 2004

#### Discussion

- Discussion focused on floor staff, lobby, visitor experience throughout the exhibits.
- ? — ▪ Need a centrally located first-aid room that isn't used for other purposes.
- ? — ▪ Lobby needs to be re-worked. People need to get their bearings before getting in line. Lobby needs an orientation space.
- Visitors can't see the elevators from ticketing area.
- The three ticketing stations aren't enough on peak days.
- Ticketing process is long—a lot of data is collected.
- Cash from ticket sales is carried through the public space.
- Admissions needs storage for brochures, maps, etc., at the ticketing desk.
- ? — ▪ Coatroom and lockers are in an awkward location. Coatroom has direct access to outside.
- It would be great to have a members' desk.
- Would like to locate specific snacking areas in the Museum, near restrooms.
- ? — ▪ Would like more family restrooms and more diaper changing areas.
- Group reservations dept. needs a more private area. Staff is constantly on the phone.
- ? — ▪ Need better bin storage for groups and overall better lobby set-up for groups.

#### Additional Comments in Surveys

- Wayfinding needs to be improved.
- Lunchroom should be larger.
- Elevator is too slow, and it breaks down often.
- Larger staff lounge and more lockers for EIs
- First and second floor lobbies do not work well.
- An area for reuniting with lost children would be helpful.

## Notes from Interviews with Museum Staff

### Exhibits and Collections Group

14 April 2004

#### Discussion

Building design needs to foster a culture where everyone feels comfortable.

#### *Art Studio and Recycle Shop*

- 2- Would like a physical connection/adjacency between Art Studio and Recycle Shop.
- Built-in storage is needed for the Art Studio.
- Storage is also needed for Recycle Shop.
- Would like to be able to divide the Art Studio space into two smaller zones, so they can be programmed separately.

#### *Exhibit Design, Fabrication, and Installation*

- 2- Delivery/loading dock is a big problem.
- 2- Need a 12 x 20' space for on-site repair shop.
- 2- Paint storage area (12 x 16 or 8 x 12') is also needed.
- Large freight elevator with access to the changing exhibit gallery is needed.
- Project managers need more storage and workspace near their desks.
- 2- More supply closets for traveling exhibits are needed.
- Exhibits and programs could share a conference or work room.

#### *KidStage*

- The current size is inadequate for 15 actors.
- Visitors can try on costumes when the theater is dark.
- Its current location creates a circulation bottleneck.
- Needs more storage, a green room, a larger dressing room, an office for staff, better access to the laundry facilities, stroller parking.
- Kidstage has noise issues. Performances can be loud.
- Current bench seating is preferable. Stage is 100% accessible.
- People like to watch rehearsals, but stage needs a way that visitors can come and go without disruption.
- New stage should not have a steep rake.

#### *Collections (50,000 items)*

- Main collections room on 4<sup>th</sup> floor is climate controlled. The other four study storage areas do not have sophisticated controls.
- 2- The main room shouldn't move. Would like an adjacent research room.
- 2- Natural history collections need to remain separate. They will be culled and decreased by 50%.
- 2- Native American study storage is in the correct amount of space, but a better configuration is needed.
- 2- Japan study storage could increase in size.
- Kitchen should not be next to Collections.

#### *Additional Comments in Surveys*

- Clearer signage is needed, including maps near stairs and elevator.
- The lobby is a nightmare.
- More storage is needed by everyone!
- 2- PlaySpace needs more exhibit space. It is often too crowded. Needs more stroller parking.
- 2- Family resource room needs to be larger.

### Notes from Interviews with Museum Staff

- PlaySpace needs more storage, especially next to the Messy Sensory area.
- The infant area in PlaySpace doesn't have enough heat. Office in PlaySpace isn't heated.
- Johnny's Workbench needs a massive face lift.
- 2- ■ Most managers want to keep their offices near their exhibits.
- A science lab is needed.
- Open performance space is needed. Second floor lobby is far from ideal.
- 2- ■ Will the health/fitness theme extend to facilities for the staff?
- 1- ■ Need to determine if the Museum wants to expand its live animal collection.
- 2- ■ Exhibits dept. needs more storage space for drawings and exhibit materials, and it needs staging space for installing new exhibits.

### Events Group

15 April 2004

#### Discussion

- The Museum has created a niche for "corporate family events." When the convention center opens, TCM will be well positioned for more events.
- An updated catering kitchen is needed. It could also be located near the birthday party room. Otherwise, the birthday party room needs to have its own sink and refrigerator.
- 2- ■ There are conflicts when groups renting the Museum want to start their event at 5 p.m., because there isn't any time for set up. This narrows the potential market to those who can start their events at a later hour.
- In good weather, the Museum can also put up a tent in front. Access to electricity, water, etc., is needed outside.
- The Museum can accommodate 1200 people throughout the building for an event. They have a hard time accommodating more than 200 people in one exhibit.
- They can set up 13 tables of 8 (104) in the 2<sup>nd</sup> floor lobby.
- KidStage can also accommodate 100 people with bistro-style seating and dancing on the flat stage.
- When the tables are put away in the Art Studio, it also becomes a space that can be rented.
- Early Childhood sponsors events in the evenings several times a year. They also hold a lot of teacher workshops.
- Currently, the tables from the Teacher's Center are used for functions.
- Often, a bar is put in the large elevator.
- New eating areas should have flexible seating.

#### Additional Comments in Surveys

- The Birthday party space should remain on the first floor. Ideally, there would be two adjacent spaces (with a retractable wall) so that two parties could be held simultaneously (with 30-35 people each).
- Birthday party room should have a private entry—visitors shouldn't have to walk through the lunch room. The room should also have a place for coats and strollers. Windows would be nice.
- 2- 1- ■ An open space where 200 people could wine, dine, and dance all together would be great.
- 1- ■ All four Early Childhood staff should have offices in one area (near PlaySpace)

## Notes from Interviews with Museum Staff

### Administration and Operations Group

15 April 2004

*Museum archives*

#### Discussion

- In the administration wing, the adjacencies are correct, but more space is needed.
- Lou needs to either have an office that's large enough to hold private meetings and lunches or an adjacent meeting room that would hold 12 people (with a door into Lou's office)
- Lou also needs direct access to his administrative assistant, a reception/waiting area, a window, space for a private fax, printer, etc., and a confidential file area, for Board minutes, letters, etc. (about 20-30 sf)
- Additional storage is needed for other confidential files, such as development and business files, bank records, human resource files (in a separate area).
- ?- ▪ Human Resources should be located in an area that is separated from the administrative wing to preserve the privacy of staff.
- ?- ▪ The graphic design office/staff media lab on the second floor should be located near the development office.
- The IT department should also move to the third floor.
- Workspaces where a team could set up operations for a specific time period would be helpful. The Museum would sacrifice the size of private offices for more team workspaces.
- Departments that need more privacy are development, communications, and business.
- ?- ▪ John Reardon's office should move into the administrative wing.
- Facilities department should stay on the first floor. It needs 1900 square feet.
- Most deliveries to the Museum are for the retail shop. Others are travelling exhibits and food.
- Peter Kuttner wrote many notes directly on the plans about the sizes of departments.

#### Additional Comments in Surveys

- ?- ▪ More natural light is desired.
- Board meetings require a space that can hold between 20 and 100 people.
- Arranging meetings in the Teacher's Center can be logistically difficult because of its remote location.
- Graphics department is currently 2 flights away from copier or laser printer.
- The offices desperately need soundproofing from the exhibits.
- Human resources ideally would like a separate room that is only used for interviews, to hold up to 4 people. It could be located near the business office (but still separate). Its location needs to be in a more quiet area of the Museum.
- Wayfinding is a huge challenge in the Museum.
- ?- ▪ Very poor flow exists between the stock area and the front of the building to the dumpster.
- Office areas should be combined to foster communication and avoid back-tracking through exhibits.
- The 5<sup>th</sup> floor is not part of the PA/paging system, which can cause problems.

## Notes from Interviews with Museum Staff

### Education and Programs Group

16 April 2004

#### Discussion

- The Teacher Center works very well. It needs more storage space and workspace for prep work.
- Overnights (200-250 kids) register in the Teacher Center. Their belongings are stored in bins here, and kept here until they leave on Saturday morning. Therefore, the Teacher Center can't have any other programs on Saturday mornings because the large space is filled with kids and their belongings.
- ?-▪ Early Childhood does half its work in the Museum (PlaySpace) and half as evening programs. The four staff are split between the Teacher Center and PlaySpace. They would all like to be together near PlaySpace.
- The Teacher Center and Collections should try to integrate more.
- Collections has applied for a large grant for equipment. They will learn this summer if they received the grant.
- The two large conference rooms in the Teacher Center have poor temperature controls.
- They would like to be able to sub-divide the large conference rooms again, so that they could have up to four groups in the space.
- They would like water (sinks) in all of the conference rooms and classrooms.
- ?-▪ Access to the Teacher Center is a big problem. There aren't any stairs that can be used between the fifth floor and the rest of the Museum. People have to use one of the two elevators. Another stair or elevator would be great.
- ?-▪ Programs staff want to be near their exhibits, especially at educator & low-level manager level.
- Noise through the floors is bad. At the Teacher Center, they can hear the tenants upstairs often.
- ?-▪ The staff in the Teacher Center feel anxious about possibly being further isolated from the rest of the Museum staff when everyone (except 5<sup>th</sup> floor staff) is moved down to the third floor.
- ?-▪ The staff of the Teacher Center would prefer to move down to be closer to the rest of the Museum staff after the expansion and renovation.
- Museum teaching kits are stored in three places in the Museum and on Magazine Street
- Museum floor kits are usually stored in closets near their exhibits. Some, however, are stored on another floor.
- Large-scale, public festivals are held about 10 times each year. They bring about 3000 people into the building. Special events at festivals range from small-scale, hands-on exhibits in the galleries, to performances for 250-300 people several times a day. Many of these performances are interactive.
- Festivals foster publicity in the Globe. They are scheduled mostly from Fall through Spring in order to entice more people to come to the Museum in the off-season.
- ?-▪ There is a need for an "open performance space" for festivals, as well as a greenroom for performers, and a room for volunteers. KidStage is too small. It only holds about 140 people.
- ?-▪ The set-up of the Japanese house, Asia collections, Asia Classroom, and staff offices works great.
- ?-▪ The times when Camp on the Channel, school groups, and overnights are in the building do not overlap. They could share a space.
- School groups come from October through early June. They schedule two blocks: the first is 4 buses that arrive at 10 a.m. with up to 200 children. The groups have a 2-hour program and then often stay for lunch. Meanwhile, the second group of 4 buses (200 children) arrives at 11:30 a.m.
- Camp groups come in July. They are also greeted, and they use the bins for storage.
- The Museum as a whole, except for festivals, does not use volunteers on a daily basis. They do not have a volunteer coordinator.
- They would like a music studio, science lab, more physical gathering space in the exhibits.

## **Notes from Interviews with Museum Staff**

### **Additional Comments in Surveys**

- The Native American exhibit needs an office with storage and a shared meeting space.
- Storage is needed throughout the Museum to accommodate materials used in workshops in the exhibits.
- Huge traffic flow problems occur when performances are taking place in the 2<sup>nd</sup> floor lobby.
- 7 c ▪ A Music Studio would be an enclosed, sound controlled space for music programs that could hold about 30 people at tables or 40-50 people in chairs. The space could be used for workshops as well as a performance space.
- 1 ▪ Because the Teacher Center is on the 5<sup>th</sup> floor, it is not as visible to teachers as it was when it was on a lower floor. Also, teachers who do use the TC sometimes don't connect well with the rest of the Museum.

### **IT Department: Chuck Eisenhardt**

9 June 2004

#### **Discussion**

- Gigabit network: equipped with copper wiring
- Existing: 4 legs (third floor north, south, fourth, fifth floors). Existing is more than adequate for current and future needs (Playspace currently has 4 drops for office space.)
- Equipment room needs to host 9 servers. They could reduce space if racks are utilized (4 racks).
- Current office space is 270 sf, which is for 2 people, desks, and storage. No meeting space is needed. Room could be minimized, if adequate storage was provided. Large open room (as now) is preferred. Size is adequate.
- Security is critical for both office and server room.
- Server room: currently has an independent heat pump, separate from the structural bay's heat pump, as well as AC controlled. It is not currently on a generator (it should be).
- There is no fire suppression system. It does have an annunciator tied to the Fire Dept. to allow the room to shutdown independently (this happened as recently as last summer). Server room can be separated from IT office and general office space, but it should be located nearby. It is not used for long periods of time, but generally 20+ times per day.
- Nine (9) double-height network switches (rack mount) would be 6 to 7 feet tall. (Currently in half height racks)
- Ideally, there would be a new wiring plan, laid wire, terminated at both ends, as concentrated as possible.
- Current network is not hurting too badly. BCM is upgrading two servers this year due to Microsoft Server licenses. Otherwise, current equipment will be reused (aside from obvious moving/rewiring).
- Server room: Wide area T1 comes into Sprinkler room from Sleeper Street. It consists of 2-x-5' plywood with boxes, small rack with telephone.
- 300' copper connection (max limit from end to end)
- If at all possible, reuse existing network closet (in proposed Science Area) or move closer to sprinkler closet where it comes in from Sleeper Street. If we rotate the existing elevator door 90 degrees, we could potentially move the network closet so that it would block the existing door, since we know it would be empty on all six floors from the previous elevator lobbies.



## **Notes from Interviews with Museum Staff**

### **Human Resources Department: Jane Barry**

9 June 2004

#### **Discussion**

- HR needs to be separate from business area (absolutely necessary)
- Privacy is needed to deal with confidential issues. (Need visual and acoustic privacy)
- High volume interviews: BCM hires 67 people per year.
- DCR-type meeting room needed for group
- Cluster needs to have the following functions:
  - Director's Office: 3-4 files, desk, chairs/table for 4
  - Staff Office #1: desk/chairs, 2 files
  - Staff Office #2: desk/chairs, 2 files
  - Temporary Staff Office for peak seasonal hiring: desk/chairs
  - Secure Records Room: 8-10 files
  - Prospective employees application fill-out area: desk/chair
  - Group Interview Space: table/chairs for 6-8

## Meeting Notes

29 April 2004

### Site Issues

- Grade change between Congress Street and the boardwalk side must be resolved
- We want to retain at least 15' between the building and the edge of the site
- So far 20-25' off of Harbor Walk is acceptable, 45' set back from water. Approx= 49' from water. 55' high limit 20' in back up to Sleeper Street
- Bottle-necking at bridges: concern of movement.
- Sleeper Street: loading issue. Residents across the street are big vocal opponents.
- Suggestion of making Sleeper Street one lane. Add green space, allow for pull in space. Neighbors would probably approve.
- Loading is a daily activity.
- Moving of Milk Bottle will emphasize front door access.

### Lobby

- Lobby: Visitor Information Service—central location.
- Shop: reduce size in public unpaid space.
- Front desk: incorporate cash room and storage w/front counter ticket space under stairs.
- Queuing of admissions line.
- Like to have ticket/admission directly in front of you when you walk in, better orientation
- First Aid in front of lobby, intentionally in centralized location
- Locker room area for VIS—not yet identified, possibly back wall on 1<sup>st</sup> floor behind food
- Arts Studio becomes a display space with some exhibit area in front. Front door location is more advantageous than natural light at this point. It could possibly be moved to second floor. Natural light versus togetherness with Kidstage, Recycle, etc., would potentially have to be answered by Arts.
- Investigate light shafts for Arts Studio to get light internally.
- Switch Recycle and Visitor Info Service so Recycle is in the free zone.
- We have eliminated the "CVS" tenant space
- Back hallway for circulation w/offices, storage along Sleeper Street
- Elevator machine room is missing in the scheme. Current acoustics problems are due to this room.

### Restrooms

- Bathrooms for camp are needed. New bathrooms need to be addressed, and evenly distributed throughout, and very visible—right in the lobby! McDonalds area bathrooms are in a good location.
- Family friendly bathrooms/suites: family oasis with couch, quiet space, next to accessible restrooms.

### Dining Area

- Exterior doors in dining area to open onto boardwalk to provides exterior seating in good weather.
- Service wall for dining area along end of space with storage and serving options. 60" 8 tops = 200 people sitting. Decorative exhibits can be put in each corner and possibly one in the center.

### Kidstage

- Faced towards Sleeper Street as back of stage. Allows for public viewing from main circulation.
- Kidstage needs a dedicated green room.
- Kidstage could be sloped down. ADA issues apply. Important to keep 200 seats (ideally 250), prefer to keep aisles on both sides. Nice to keep open as an exhibit so it is viewable when there are no performances.

## **Meeting Notes**

29 April 2004

### **Family room**

- Family room space: "living room," kitchenette area next to bathroom. Possibly move laundry there, too. All family waiting areas should be concentrated around the bathrooms.

### **Adventure Center**

- Acoustics are a major issue for the entire Museum. Noise sound bounces down and up. We need to look at open/closed spaces as well as materials.
- Kinesthetic Exhibit design: science, health, etc., in other cultures, possibly climbing center bringing you from second floor of adventure center to third floor roof garden.

### **Galleries**

- Changing Exhibits: need for intermediary wall, rather than put up walls as needed.
- Discussion re building fixed or on an as-needed basis. Flexibility, appropriate place, and money are factors.
- Changing Exhibit Gallery: Ideally 14' ceilings.
- Natural History Collections can't have sunlight access into the Storage viewing closets.
- Second floor 5' wide "back hallway" is required as a means of egress. Science bays can be filled in more in the middle where there is currently circulation. In addition we can remove the current stair, but keep the double height space to increase the square footage.
- We will look into opening up more existing windows on Sleeper Street to bring more natural light into exhibit spaces. BCM sees opening up the Sleeper Street windows as a main principle for design.
- Old fire entrances in masonry walls can be left open; much more flexible depending on exhibit layout
- Cultural Center allows for Japan, Boston Black, (3) "We're still here" sized and (3) kiosk size exhibits.
- Office block allows for 3 suites: Admin, HR, exhibit/IT/lounge...
- Third floor garden: Japanese and urban park
- Third floor still seems like a ghetto. Extending the Adventure Center to third floor may cost too much.

### **Vertical Circulation**

- At the previous meeting the Teacher Center voiced concerns over not having public access to the rest of the Museum.
- We will be adding an elevator, adding internal stair and ramp, as well as bringing down exhibits to 1,2,3. This will drastically reduce the elevator load, and should encourage leaving big elevator access to all 6 floors
- New elevator is \$150,000 (25,000 per floor)
- Unsure if existing elevator is up to code (accessible controls, etc)
- New tenant elevator would be hole-less hydraulic
- Kid powered elevator costs approx \$250,000

### **Tenant Spaces**

- We need to test the non-McDonalds food court idea. Is this viable? These schemes have the tenants sharing the McDonalds door. McDonalds uses it as a way of pulling people in. This is contrary to the type of tenant they are hoping to attract.
- Needs separate retail and office entrances.

**Meeting Notes**

29 April 2004

**Balcony vs. Bridge schemes**

- Schemes A and B are mix and match-able. They are for comparison only, not for a vote one way or another. We'd prefer to put money into exhibits not architecture. B is more dramatic than "A" but also more money
- Balcony/bridge design will be addressed as we get into more "architecture," i.e., overlook area, and spaces for circulation to congregate. Brick wall, new columns will incorporate signs, light posts, etc., marking each bldg, like "Sesame Street."

**C7A current issues**

- Structural engineering
- Elevator
- Elevator machine room
- Sprinkler riser room is in our new "corridor"

## Meeting Notes

13 May 2004

### First floor—Existing Building Issues

- OR Science? ?
- ? • Double elevators on first floor—should they both open towards tenant space? 75,000 sf of rental spaces is a lot with only one elevator.
  - The "jog" in the back hallway is the existing sprinkler riser room. We'd like to move this, but it would be very costly.
  - We'd advise staff card system for internal stairs, as well as keyed access elevators. This will be a big improvement on vertical circulation for staff and tenants.
  - We propose using camp, birthday rooms as green room, set design for Kidstage, additionally Camp could use the birthday room if extra space is needed.
  - ? • Discussed swapping Kidstage and Arts studios. This would allow more flexibility and spill over space with the lobby. There are relationships to think about here: Kidstage: Birthday, Camp and Arts: Recycle.
  - Kidstage capacity issues need to be addressed. We can move seating all the way to the column bays to increase capacity.
  - Some kind of accordion doors along the back of Kidstage would allow it to open up for passersby to see.
  - There is concern about the dead zone in the lobby in front door spaces.
  - ? • Could we swap Arts and Sciences?
  - We recommend that Arts Studio not be near Kidstage. Arts Studio is the most contradictory space, wanting both central location and northern light, etc.
  - We need to decide what kind of atmosphere we want to create in the lobby/alley.
  - ? • The first floor exhibits become like retail space, they are selling themselves.
  - All of the first floor exhibits will now have to be staffed fulltime, which then incurs larger budget fees.
  - Existing elevator machine room is next to proposed Kidstage location. Currently it is very loud. With a new elevator cab, as well as more insulation, this should not be a problem next to a stage.
  - Moving Kidstage to center bay would also work on an event basis, either open space or tiered seating for lectern style. Bench style seating needs to be easily removed.
  - If we were to blow out any brick, it would ideally be in the center bay, as it has the most door openings now anyway. Potentially, if we were to do this on the second floor, we could do it on the first as well.

### First Floor—Proposed Addition Issues

- allow for future structure floors 4-6
- Structural Engineer: fewer piles close to the building. Clear space to exterior wall = deeper floor sections, but we have possibility for higher ceiling heights in new area.
  - Adventure Center could be completely closed in this scheme to address the noise issues.
  - Opening things towards back wall on second floor is nice but we still need to put back in the back of house items.
  - C7A needs to do a window inventory.
  - Shawmut will be doing a pricing estimate on window replacement/repair.

### Food Service/Dining/Changing Exhibits

- Food Service, Dining, Changing exhibits are all interrelated to each other.
- Can we assess lobby and dining size based on actual need? It is now kind of random (under changing exhibits, to seat 300)
- Changing Exhibits: a few strategies for partial walls, good idea for flexibility and money concerns.
- ? • Opacity/closed to exterior and also interior first floor lobby space.
- Issues to debate: backing stuff up to walls, fastening to walls, protection from sunlight. Heat gain is an issue, also place for signage. Natural light in traveling exhibits is very hard to address.

## **Meeting Notes**

13 May 2004

- Views into lobby and towards water both have nice sight lines, but needs to be addressed as to how it affects interior spaces. There are currently views in every other space, which in itself is a good argument to not have them in the changing exhibits gallery, too.
- There is a theory that shows ratios of spaces to people: The bigger the space, the more people will come
- C7A: we use 20sf/person for sitting, 12-15sf/person for standing
- TCM: 10sf/person, which is 30 people in the dining area standing
- We are doing this for the Museum first. How many family visitors will we ever have sitting at one point?
- We are also "selling" seats to the food vendors so that factors in to minimum number of seats.
- What about the second floor as a dining area space?

### **Third Floor**

- Third floor: remove stair in between second and third floors.
- Noise issue! Also potential smoke control issue. We will probably put glass in above half wall to keep connection but control noise.
- Offices for Arts, Science, Kidstage Recycle, Playspaces, Facilities—all stay on their current areas (or slightly moved). The rest of the office space will be on third floor.

### **Construction Estimates**

- Foundation will cost \$1 million
- Elevator is very expensive
- Circulation is critical to be brought outside of existing building.
- The milk bottle is very close. \$100,000 to move it!
- New addition is low and long. This is a good opportunity for a "wow" thing to be above, hanging off of existing, etc.

### **Adventure Center**

- AC designs: Incorporate landings of ramps with exhibit designs to make it more interactive.
- Ramping: we need a minimum of 150' ramp at (30' run max) @ 2.5' rise intervals, so 3 or 4 slabs (plus first and second floors).
- Visuals: master plan, use it as a base to update, renew. TCM will write up narrative about upcoming convergence with Hands On.
- Comparative narrative, then floor by floor plans. Avoid design but make it a step above bubble diagrams.
- Children's Wharf needs to be emphasized in site plan and narrative
  1. Photos of all three models.
  2. 3 floors of plans, exactly as presented today, minus office staff's names.
  3. 6 floors (modeled after master plan layout) basically just insert our three floors and update with colors. This will be three pages: existing, master plan, proposed.
  4. Site plan: show master plan proposal dotted in to show contrast to proposed.

**Meeting Notes**

13 May 2004

- Shawmut priced a 27,700 sf project. Today we are down to 26,300. Steps in the right direction but will need a big cut. Looking at \$350/sf. Comes down to approx 4 million dollar difference right now.
- Programming priorities:
  1. 2-story circulation pulled out of existing building. Making two new things at either end is not worth it.
  2. Need a new "big thing"
  3. Changing Exhibits Gallery. This can never get below 2000sf
  4. Lobby. Enough space is critical for wayfinding and orientation.
  5. Food Service. We could go down to 2500 sf (same as changing exhibits).
- We are building 4-5 "big things"
- David Marino – 1<sup>st</sup> floor location
- Visitor Info services: 25 part-time workers still need to be located. Preferably near John Riordan, but more important to be near Elefson

## Meeting Notes

20 May 2004

### Presentation of Schemes D through H

- "C": 26,000 sf Previous (A, B)= 30,000sf
- Changing Exhibits and Adventure Center both move down from 4,000 to 2,500-3,000 sf
- "E": Adding New elevator (3 floors only). This would remove the retrofitting fee for existing elevator cab. It does add square footage for circulation around elevator.
- If we brought only one science exhibit down we could use some space for lobby spillover. Lobby would then exist both in and out of the brick. We can push Arts up to plaza space on the second floor
- The more the lobby moves back into the building, you don't have the second story feeling of larger spaces/sightlines to Adventure Center (although you do get some more square footage).
- "F": Dining—one story Changing Exhibits—first, Adventure Center second, third.
- Concern about trading off—how much lobby do we really need for 450,000 people? Retail? Is there a formula? What about camp? Food service? Are there spaces that can be reduced?
- The exhibits can be circular, but by moving circulation to the inside and having a Main Street, we take space from every single bay. This also gives better orientation, visual cues. So cost savings on square footage is actually taken from existing exhibit space.
- The balcony is not a maze.
- Can we combine G and C (basically small food/dining, move Adventure Center to second/third)?
- What about changing exhibits in third floor? Then Adventure Center is first, second.
- We could put changing exhibits into Boston Black space, except it has columns, which was a major reason for putting the changing exhibits into new space.
- "Bigger G/H": similar to "C" but move Changing Exhibits to third. Food becomes smaller, then reduce lobby, but push Museum Shop and bath areas.
- Remember we are planning to build less square footage than exists now. It is more efficient but something to keep in mind.
- "Quasi H"—no dining plus small lobby.
- What does this do to the architecture? We have not addressed this yet. If we take out balcony (like H), but maybe add into the Adventure Center, we may be able to add more space (i.e.; one and a half times what was removed) due to cost per foot of certain areas. Removing pilings is a large cost cutting option.
- Foundation is \$110/sf.
- We could put smaller piles onto H to keep the balcony all the way to the last bay.
- Original pricing was done on A (27,700 sf)
- G gets us to budget; F trimmed down a bit may be at budget; H is under budget. All of the other schemes just make the parts smaller, but H makes a real statement. If this is pursued, the new can add back onto it.
- "H": half scheme. We don't want to bother building half a scheme.
- F: can we raise the ceiling over the dining area to get a sense of expansion and make visual connection to the balcony?
- We want a larger lobby space. We need to keep stair in the paid area.
- Nell does not like shed roofs.
- We are looking at a "G-ish" scheme, with a larger lobby and Changing Exhibits moved to third, which removes any amount of light into Japanese Exhibit.
- We need stairs up to the third floor to connect to Japan, Boston Black, etc.
- Possibly move Boston Black. There is a buffer between Boston Black and Japanese House. Culture Area is a good in between, serves as spillover space from both and good transition.
- Modifying Boston Black is probably better than moving.
- Most visitors aren't linear in their path of movement or thought process.



**Meeting Notes**

20 May 2004

**Things to remember**

- Circulation hallway
- What about pulling circulation back (construction/science), except where are we moving Arts?
- Neil: G/H
- Take H. Put Changing exhibit on third floor. Then add circulation for the entire second floor, minus one bay. This will become "I"
- We will develop "I," then get pricing and use that for the model (we can't pay for "C")
- There is a large premium for stepping of Adventure Center. Ratio of exhibit: circulation space is concerning (especially in D, E)
- Exhibit info will come from Hands On.

**Overriding themes to remember**

- To be able to see the Adventure Center from the lobby
- Remember, we are planning to build less square footage than exists now. It is more efficient, but something to keep in mind.
- The lobby and support spaces need to be able to accommodate larger crowds.
- Lobby stair needs to extend up to the third floor.
- We can't cantilever off of existing building. Balcony must be free standing.

## **Meeting Notes**

1 June 2004

Review of Cost Analysis of Scheme "I" Space by space breakdown

## **Third Floor**

### **Japanese House**

- We are removing an existing large window and leaving a hole in the wall into the reading room. There is a step up into the Japan House; otherwise this is a basic patch-and-putty around the opening.

### **Boston Black**

- The large window enters right into the Beauty Salon. Some amount of money is included in the exhibit budget; so the construction costs include bricks, steels, trim work, etc.
- We can assume that exhibit money will include the blade signage.
- We are also assuming no new lighting or HVAC for Japan House, Boston Black, or Culture Gallery

### **Culture Gallery**

- Infill stair opening in floor. Currently Construction Zone is pretty open.
- Center bays will require some saw cuts and steel lintels.

### **Existing Bathrooms**

- \$150,000 is allocated to renovate bathrooms (demo, new ceramic tile floors, walls, new act, lighting, Corian counters, fixtures, toilet partitions, etc.).
- This can be pushed back to Phase 2.

### **Demo**

- BCM will take out what they want first and store in order to move to new location.
- Most spaces don't have ceilings; demolition work will be minimal for Shawmut.

### **Third Floor Offices**

- These are planned at \$52/sf currently, which is a medium range for office space finishes.
- Priced layout has 28 enclosed offices with wood doors, etc.
- Actual layout will be much more open with lesser finishes, plan for \$40/sf.

### **Third Floor Circulation**

- Costs include existing stair upgrades, new lighting, paint.
- We should assume only code-required improvements in these spaces.

## **Second Floor**

### **Playspace**

- Minimal interruption. New bridge entrance, block existing opening.
- This can be as simple as a half wall.

### **Boats Afloat**

- Water pump tank—built-up floor, needs to be cutout 6' in length to allow bridge to enter.
- Some money will be needed for ramp.
- Museum will have to move float tank, potentially to the existing First aid/Catering kitchen area.
- Back of Boats Afloat will need some new lighting, minor finishing.
- This is a space that is worth investing in.

## **Meeting Notes**

1 June 2004

### **Plaza**

- Taking down Recycle; fill in stairs in floor. This is basically just a big empty space.
- No new HVAC or lighting. There will be some paint and flooring.
- The stage could be removed for cost reasons and just a closet could be built, so there is backdrop for the space while shading the catering kitchen and bathrooms.

### **Catering Kitchen**

- Ideally they would like 20x20 space.
- Needs water and electrical.

### **Arthur/Construction Zone**

- Cleaning out existing, moving in exhibits, fixing floors, assume carpet price for now (\$27/sy). Floor finishes for all new areas can be determined soon.

### **Arts**

- In existing raceways wall and area to be gutted.
- Divisible partition in Arts, glass wall in front, doesn't necessarily need glass doors.
- Current estimate: \$100 k is probably fairly accurate.

## **First Floor**

### **Camp**

- Stays. No major new HVAC, lighting, etc.

### **Birthday Room**

- This room moves into Circles Storage—minimal amount of demolition.
- Existing coat room has a lot of existing glass. New space will have hard walls, dropped ceilings, and needs to have a sink.

### **Kidstage**

- \$16,000 allocated right now for stage. We want a flat, accessible stage area—nothing built out.
- Seating will be built up to allow viewing.
- We can probably reuse the existing lighting.

### **First Floor Circulation**

- Keep as much as possible of existing.
- No need for major overhaul for back of house/non public/service space.

### **Recycle Shop**

- New build out. Glass partition is good for visibility.
- Currently just has an overhead-colling door that is closed after hours. That would be fine for proposed.
- There is also the option of moving Recycle to within Science Area to allow for a small dining area.

### **Museum Shop**

- We are reducing its overall size.
- The Shop will have to move its counter, etc.

## **Meeting Notes**

1 June 2004

### **McDonalds**

- Will require essentially entirely new space, even if we are only moving them slightly.
- Much of the equipment may need to be replaced or buy smaller size to accommodate new layout.
- Current back of McDonalds is in proposed new tenant lobby; therefore, it is impossible to keep McDonalds exactly as it.

### **MEP**

- Heat pumps: (18) are allocated at 3500/each. This is equal to half the existing in the building.
- HVAC: 3 new units on existing building roof. 2 units on first floor in mechanical space, plus cooling tower.
- New electric generator—replacement of existing.
- Also replace every electrical panel. This is part of Vanderwell's recommended life safety upgrade (also ease of controls). Some of these may be reduced with a code consultant's input.

### **Miscellaneous**

- New museum elevator: \$290,000 is allocated, this includes elevator machine room.
- Elevator rep quote: \$30,000 to remove existing, \$25,000 for each floor.
- We'd like a quote on how much it would be to revamp the existing elevator
- Skylight: Take out the half over the lobby side. Keep half adjacent to changing exhibits gallery.
- \$180,000 is allocated to repoint and seal existing masonry that will become interior space. This is something we want to keep, as it will become very public circulation space.
- 3<sup>rd</sup> floor – 4' parapet allocated with metal panel. This could be pushed to Phase Two, but most of it needs to be set up now.
- Receiving Dock is not allocated in this pricing exercise.
- Moving transformer is part of Phase 2.
- Pricing is based on using concrete roofs to brace structure.

## **7 Schedule**

The attached schedule was developed at the outset of work, and serves to illustrate the four tracks that the team followed in parallel to assure that this initial phase went quickly, but with each track well integrated.

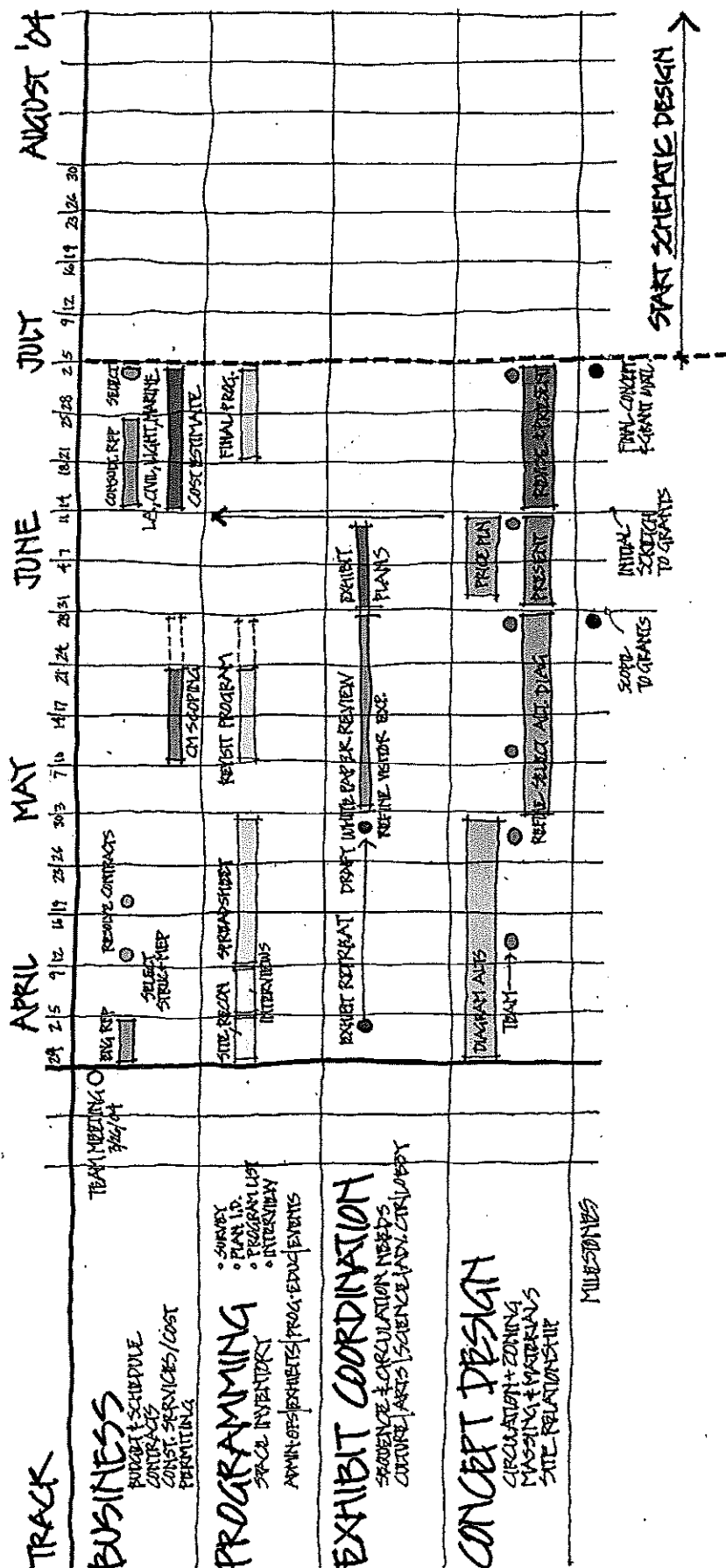
Business sessions focused on the budget and the pricing of building options, as well as the growth of the consulting team through the interviewing and hiring of the remainder of the legal and engineering team, now nearing completion. Code, Civil, and Landscape consultants will be added next.

Programming involved the numerous interviews with individuals and teams, which by necessity continued throughout the process. After the needs assessment phase, different elements of the desired program were prioritized for inclusion, space and budget permitting.

Exhibit coordination was handled through joining the early brainstorming sessions and through reviews by key exhibit staff. The different exhibit groups within the Museum developed criteria that might impact architecture, and specific areas of the building were designated for future gallery use.

Concept design began before the analysis and needs assessment exercises had been completed, to determine the scope of the obvious budget discrepancy. By pricing early, the subsequent iterations of design options were able to make strategic changes to test the cost parameters.

This report marks the completion of the Programming and Concept Design phase, although in the end the planning process has overlapped with the early stages of Schematic Design, now underway. The remaining stages of work for the Design Team then include the further evolution of the project in Design Development, refined construction details in the Contract Documents phase, and finally Construction Administration, while the addition and renovation are being built, over the next two years.



## **8 Engineering System Descriptions**

The final section in this report outlines in simple terms the engineering impacts on the Boston Children's Museum project, as we understand it to date. As noted earlier, the base building engineers, with Vanderweil for mechanical, electrical, and plumbing engineering and Weidlinger for structural engineering, have had an opportunity to tour the site and to review the partial collection of existing documents.

The drawings so far have been relatively diagrammatic (schematic), and there have been no detailed surveys, specific borings, or testing to date. However, the engineers' review does provide a higher level of confidence for the budgeting exercise. They reviewed the same concept schemes being evaluated by Shawmut, and they provided their observations as part of the pricing effort. The team has met to develop system alternatives for cost and energy efficiency, and those discussions form the basis for the system outlines that follow.

## **Boston Children's Museum Renovation and Addition Conceptual Structural Description**

### **1. Superstructure**

The new addition to the Children's Museum shall be of structural steel frame construction. The floor system shall be 2 hour rated construction consisting of 3" galvanized composite deck with 3¼ in. lightweight concrete topping reinforced with welded wire fabric reinforcement, supported on composite structural steel members. The structural steel beams, girders, and columns will have required rated cementitious spray on fire proofing. The structural addition shall be designed as an independent structure, in accordance with the Massachusetts State Building Code, providing expansion joints at the face of existing buildings to meet the seismic code requirements.

The columns will be set back a minimum of 10 feet from the face of existing building in order to avoid any conflict with the existing foundation.

The structural system for the roof shall be designed to accommodate the vegetative roof, if required.

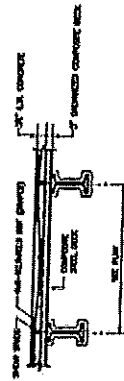
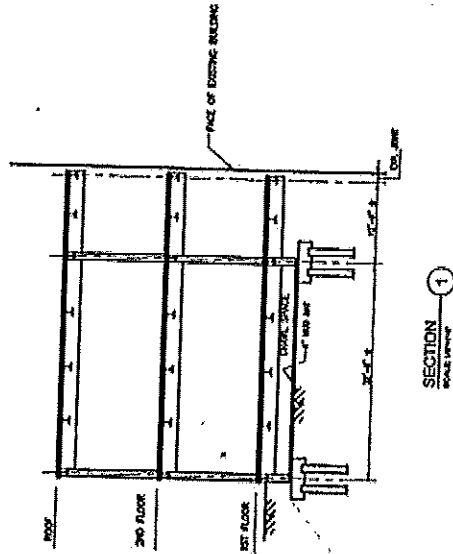
The lateral bracing system shall be Moment Resisting Frames in both directions to provide design flexibility of the exhibit spaces. The economy for cantilevered girders at each column line could be achieved by shop welding girders to the column and shipping in one piece to eliminate field welding and erection of fewer pieces.

### **2. Foundations**

The new addition is anticipated to be supported on deep foundations consisting of pre-cast pre-stressed piles or steel piles bearing on glacial till. Crawl space below the ground floor will have a 4" mud mat.

The typical structural framing scheme is shown in sketches SK-1.





### FLOOR CONSTRUCTION

[illegible]

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CHILDREN'S MUSEUM EXPANSION

TYPICAL BAY --- PLAN & SECTION

[illegible]

SK-1

# Boston Children's Museum

Boston · MA

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## HVAC System Review MEP/FP General Systems Description

July 1, 2004

RGV Job No. 22595.00

### Team Members:

Darryl Galletti  
Dan Cooke  
John Apostolopoulos



**Vanderweil Engineers, Inc.**

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274 Summer Street Boston, MA 02210



## H V A C   S y s t e m   R e v i e w

R.G. Vanderweil Engineers, Inc.

The purpose of this document is to summarize the HVAC systems planned for the new addition and existing building at the Boston Children's Museum.

Schemes 1-4, as listed below, were developed by Vanderweil Engineers and discussed with Cambridge Seven Associates on May 26th. Further discussions were held between Vanderweil and Shawmut Construction on May 28<sup>th</sup>, at which time it was determined that Shawmut would develop cost estimates based on Scheme 4, and the related work associated with the total replacement of the existing Boller Plant. All schemes are utilizing the existing cooling tower.

**Scheme 1:      3 new Air Handling Units on existing roof. New heat pumps for the new addition.**

Replace the 4 existing rooftop units providing outside air to the existing building with 3 new units. These new units are required to meet the requirements of current codes. The new units will distribute conditioned outside air through 6 risers to the existing mechanical rooms on floors 1-6. Outside air ducts will then be extended across the ceilings on floors 1-3 to a total of 8 new horizontal heat pumps serving the floor space created by the new addition. The 18 existing vertical heat pumps serving floors 1-3 are to be replaced. The 18 existing vertical heat pumps serving floors 4-6 are to remain.

**Scheme 2:      Enlarge existing mechanical rooms. Replace all existing heat pumps and add new for the new addition**

Remove the 4 existing rooftop units providing outside air to the existing building. Enlarge the 36 existing mechanical rooms and replace the 36 existing vertical heat pumps with larger units. The heat pumps on floors 4-6 would be sized to condition the existing floor space as well as the outside air required for ventilation. The heat pumps on floors 1-3 would be sized to condition the existing floor space, the floor space created by the new addition, and the outside air required for ventilation. Outside air is to be brought into each mechanical room through an intake louver at the perimeter wall facing Sleeper Street.

**Scheme 3:      2 new Air Handling Units on new roof and 3 new Air Handling Units on existing roof. Maintain all existing heat pumps in the existing building.**

Replace the 4 existing rooftop units providing outside air to the existing building with 3 new units similar to Scheme 1. Distribute conditioned outside air through 6 risers to the existing mechanical rooms on floors 1-6. The 36 existing vertical heat pumps serving the existing floor space on floors 1-6 are to remain. Provide 2 new rooftop units on the roof of the new addition and distribute conditioned air to VAV terminals serving the new floor space on floors 1-3. Utilize existing cooling tower for the new air handling units.

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## Memorandum

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**Scheme 4:** 3 new Air Handling Units on existing roof and 2 new Air Handling Units in mechanical room at base of new addition. Maintain all existing heat pumps in the existing building.

Replace the 4 existing rooftop units providing outside air to the existing building with 3 new units. Distribute conditioned outside air through 6 risers to the existing mechanical rooms on floors 1-6. The 36 existing vertical heat pumps serving the existing floor space on floors 1-6 are to remain. Provide 2 new air handling units in a mechanical room on the ground floor of the new addition and distribute conditioned air to VAV terminals serving the new floor space on floors 1-3. Outside air is to be brought into the new mechanical room through an intake louver at the perimeter wall facing Northern Ave. Utilize existing cooling tower for the new air handling units.

**Boiler Plant:** Replace existing boiler plant. This work needs to be done with all schemes .

Replace the existing boiler plant located on 6<sup>th</sup> floor with a new boiler plant. Enlarge the existing space as required for the new plant. The new boiler plant will serve the building water-source heat pump system as well as a new baseboard radiation system in the new addition.

## 1.1 CONCEPTUAL HVAC SYSTEM DESCRIPTION

- A. Replace the 4 existing rooftop units providing outside air to the existing building with 3 new 7,500 CFM air-cooled units with gas heat. Distribute conditioned outside air through 6 risers to the existing mechanical rooms on floors 1-6. The 36 existing vertical heat pumps serving the existing floor space on floors 1-6 are to remain. Provide 2 new 20,000 CFM water-cooled air handling units in a mechanical room on the ground floor of the new addition and distribute conditioned air to VAV terminals serving supply air diffusers in the new floor space on floors 1-3. Outside air is to be brought into the new mechanical room through an intake louver at the perimeter wall facing Northern Ave. Condenser water is to be provided by existing building cooling tower.
- B. Replace existing 12,000 MBH gas-fired boiler plant located on 6<sup>th</sup> floor with a new 2,000 MBH boiler plant located in a mechanical room on the ground floor of the new addition. The new boiler plant will serve the existing building water-source heat pump system as well as a new baseboard radiation system in the new addition.
- C. One 24" x 24" and one 24" x 12" welded kitchen exhaust duct riser from the 1<sup>st</sup> floor to the roof will be provided for future use by food service vendor.
- D. All high-rise stairwells shall be provided with stair pressurization systems. Outside air will be brought in at the roof level by roof mounted, constant volume supply fans, and delivered to the stairwells by dedicated supply risers. Registers will penetrate the stairwell every second floor to evenly distribute the supply air throughout the stairwell. An automatic control relief damper will modulate to maintain a minimum pressure in each egress stairwell, according to code requirements.
- E. A new Direct Digital Control (DDC) System will be provided to monitor and control all new HVAC components. In addition, the HVAC equipment in the existing building will be interconnected, monitored and controlled by the new DDC System.
- F. New toilet rooms will be exhausted through exhaust duct risers to roof mounted fans.

## 1.1 FIRE PROTECTION SYSTEM DESCRIPTION

- A. At this time, there is insufficient data regarding the available water supply to accurately determine actual fire pump requirements. For the purposes of concept design, a new electric, 1000 gallon, 75 horsepower, electric fire pump with a reduced voltage solid state with integral automatic transfer switch will be required to replace the existing pumping system.
- B. The existing standpipe system will remain in place. The system is supplying both the standpipes and the automatic sprinkler system. The new standpipe system shall provide the most remote hose outlet with 500 gpm @ 100psi.
- C. The new addition will require the existing combination standpipe system to be extended to the new stair. The new combination standpipe will be a 6" riser, 3" sprinkler, with 2-1/2" FDV at each floor landing.
- D. As required by the state building code, the proposed structure must be sprinklered throughout in accordance with NFPA 13. The existing sprinkler system is fed by the combination standpipe system, with a floor control valve assembly at each interconnection point. Floor control valve assemblies include a supervised control valve, pressure gauge, flow switch, inspector's test station and check valve (where interconnecting standpipes).
- E. Areas to be Protected with Wet Automatic Sprinklers
  - 1. In general, all conditioned interior spaces as required by NFPA 13.
  - 2. All common areas, etc; Ordinary Group I Hazard
  - 3. Storage Areas; Ordinary Group II Hazard
- F. Areas where sprinkler protection will be omitted as allowed by applicable codes and standards
  - 1. Properly rated noncombustible mechanical shafts
  - 2. Noncombustible elevator hoistways
  - 3. Properly rated main electrical switch-gear room(s)

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## 1.1 PLUMBING SYSTEM DESCRIPTION

- A. Cold water for the new addition will be extended from the existing water service. The system will then be split into separate potable and non-potable water systems. The potable water system will serve the new toilet areas, water coolers and renovated food court facility. The non-potable water system will serve make up water for the mechanical systems.
- B. Electric storage type water heaters located above ceiling in each toilet room will generate the potable hot water system. A Hot water system for the food court will not be provided under this design. Typical practice calls for food court tenants to provide their own hot water generation equipment.
- C. Central interior waste collection systems will be provided. A hard piped sanitary waste and vent system will service the toilet rooms, water coolers, kitchenette and floor drains in the toilets and mechanical rooms. Outfall will drain to the municipal network on Sleeper Street.
- D. Central interior kitchen waste collection systems will be provided. A hard piped kitchen waste and vent system will service the proposed food court restaurant equipment and floor drains. The Kitchen waste will be piped separately from other interior waste systems. Outfall will drain to the exterior grease trap.
- E. An interior roof drainage system will be provided for the new addition. Leaders will run at the top floor ceiling to pipe chases and will be piped separately from other interior waste systems. Outfall will drain to the exterior storm drainage system on Sleeper Street.
- F. Natural gas for the new addition will be extended from the existing gas service. The capacity of the existing service, gas meter and pressure reducing station will have to be reviewed by the utility company.
- G. Plumbing fixtures such as toilets, lavatories, janitors sinks, water coolers, etc. including those for handicapped use will be provided for the new addition. New plumbing fixtures such as toilets, lavatories, water coolers, etc. including new piping and fixture supports will be provided for the renovated areas. Existing toilets on floors 4-6 will remain as is.

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## 1.1 CONCEPTUAL ELECTRICAL SYSTEM DESCRIPTION

- A. Power for the new addition will be extended from the existing 2000 amp 277/480 volt electric service. A new electric room will be located in the new addition and contain distribution equipment both 277/480 and 120/208 to serve lighting, mechanical and miscellaneous power. Transformers for general power will be dry type 480-120/208V 3 phase, four wire. Modifications will be done to the existing distribution system and equipment as required for the renovations to the existing museum. At this time it is assumed that the existing pad mounted transformer will remain in its present location.
- B. A new life safety generator and automatic transfer switch will be provided to replace the existing generator. The new life safety generator will be rated 400 KW and will back feed existing life safety loads and serve all new life safety loads such as the fire pump, new elevator, stair pressurization fans, life safety lighting for the new addition etc. The new transfer switch and associated emergency distribution equipment will be located in a new dedicated 2 hour rated electric closet. The new life safety generator will be located in its own weatherproof enclosure on grade exterior to the building.
- C. The existing fire alarm system will be upgraded throughout the building to meet current City of Boston High Rise Codes and ADA requirements. The system will be modified/replaced/upgraded as required and will be extended into the new building.
- D. New lighting systems will be provided for the new addition and renovated areas in the existing museum all as designed by the selected lighting consultant/architect. Lighting will be controlled by a central lighting control system all as in compliance with the requirements of the Mass Energy Code. Egress routes shall be marked with internally illuminated exit signs connected to the emergency electrical system. Dimming systems will be provided as required by the lighting design team. Miscellaneous power and convenience power will be provide as required. All new mechanical equipment will be served with 480 volt three phase power.
- E. Security system requirements will be coordinated with the museum consultant and all empty conduits, junction boxes, 120 volt power etc. will be provided as required. Empty conduits and junction boxes will be provided for Telephone/data outlets as required. All telephone/data wiring will be provided by others.