RSMeans

Building Construction Cost Data

55th Annual Edition

1997

How the Book Is Built: An Overview

A Powerful Construction Tool

You have in your hands one of the most powerful construction tools available today. A successful project is built on the foundation of an accurate and dependable estimate. This book will enable you to construct just such an estimate.

For the casual user the book is designed to be:

- quickly and easily understood so you can get right to your estimate
- filled with valuable information so you can understand the necessary factors that go into the cost estimate

For the regular user, the book is designed to be:

- a handy desk reference that can be quickly referred to for key costs
- a comprehensive, fully reliable source of current construction costs and productivity rates, so you'll be prepared to estimate any project
- a source book for preliminary project cost, product selections, and alternate materials and methods

To meet all of these requirements we have organized the book into the following clearly defined sections.

Quick Start

This one-page section (see following page) can quickly get you started on your estimate.

How To Use the Book: The Details

This section contains an in-depth explanation of how the book is arranged . . . and how you can use it to determine a reliable construction cost estimate. It includes information about how we develop our cost figures and how to completely prepare your estimate.

Unit Price Section

All cost data has been divided into the 16 divisions according to the MasterFormat system of classification and numbering as developed by the Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC). For a listing of these divisions and an outline of their subdivisions, see the Unit Price Section Table of Contents.

Estimating tips are included at the beginning of each division.

Division 17: Quick Project Estimates: In addition to the 16 Unit Price Divisions there is a S.F. (Square Foot) and C.F. (Cubic Foot) Cost Division, Division 17. It contains costs for 58 different building types that allow you to make a rough estimate for the overall cost of a project or its major components.

Reference Section

This section includes information on Reference Numbers, Change Orders, Crew Listings, Historical Cost Indexes, City Cost Indexes, Location Factors and a listing of Abbreviations. It is visually identified by a vertical gray bar on the edge of pages.

Reference Numbers: At the beginning of selected major classifications in the Unit Price Section are "reference numbers" shown in bold squares. These numbers refer you to related information in the Reference Section.

In this section, you'll find reference tables, explanations, and estimating information that support how we develop the unit price data. Also included are alternate pricing methods, technical data, and estimating procedures, along with information on design and economy in construction. You'll also find helpful tips on what to expect and what to avoid when estimating and constructing your project.

It is recommended that you refer to the Reference Section if a "reference number" appears within the major classification you are estimating.

Change Orders: This section includes information on the factors that influence the pricing of change orders.

Crew Listings: This section lists all the crews referenced in the book. For the purposes of this book, a crew is composed of more than one trade classification and/or the addition of power equipment to any trade classification. Power equipment is included in the cost of the crew. Costs are shown both with bare labor rates and with the installing contractor's overhead and profit added. For each, the total crew cost per eight-hour day and the composite cost per labor-hour are listed.

Historical Cost Indexes: These indexes provide you with data to adjust construction costs over time. If you know costs for a project completed in the past, you can use these indexes to calculate a rough estimate of what it would cost to construct the same project today.

City Cost Indexes: Obviously, costs vary depending on the regional economy. You can adjust the "national average" costs in this book to over 930 locations throughout the U.S. and Canada by using the data in this section. How to use information is included.

NEW: Location Factors, to quickly adjust the data to over 930 zip code areas, have been added.

Abbreviations: A listing of abbreviations used throughout this book, along with the terms they represent, is included.

Index

A comprehensive listing of all terms and subjects in this book to help you find what you need quickly when you are not sure where it falls in MasterFormat.

The Scope of This Book

This book is designed to be as comprehensive and as easy to use as possible. To that end we have made certain assumptions and limited its scope in three key ways:

1. We have established material prices based on a "national average."
2. We have computed labor costs based on a 30-city "national average" of union wage rates.
3. We have targeted the data for projects of a certain size range.

For a more detailed explanation of how the cost data is developed, see "How To Use the Book: The Details."

Project Size

This book is aimed primarily at commercial and industrial projects costing $1,000,000 and up, or large multi-family housing projects. Costs are primarily for new construction or major renovation of buildings rather than repairs or minor alterations.

With reasonable exercise of judgment the figures can be used for any building work. *For civil engineering structures such as bridges, dams, highways, or the like, please refer to* ***Means Heavy Construction Cost Data.***

Division 17
Square Foot & Cubic Foot Costs

Estimating Tips

- The cost figures in Division 17 were derived from more than 10,200 projects contained in the Means database of completed construction projects, and include the contractor's overhead and profit, but do not generally include architectural fees or land costs. The figures have been adjusted to January of the current year. New projects are added to our files each year, and projects over ten years old are discarded. For this reason, certain costs may not show a uniform annual progression. In no case are all subdivisions of a project listed.
- These projects were located throughout the U.S. and reflect a tremendous variation in square foot (S.F.) and cubic foot (C.F.) costs. This is due to differences, not only in labor and material costs, but also in individual owners' requirements. For instance, a bank in a large city would have different features than one in a rural area. This is true of all the different types of buildings analyzed. Therefore, caution should be exercised when using Division 17 costs. For example, for court houses, costs in the database are local court house costs and will not apply to the larger, more elaborate federal court houses. As a general rule, the projects in the 1/4 column do not include any site work or equipment, while the projects in the 3/4 column may include both equipment and site work. The median figures do not generally include site work.
- None of the figures "go with" any others. All individual cost items were computed and tabulated separately. Thus the sum of the median figures for Plumbing, HVAC and Electrical will not normally total up to the total Mechanical and Electrical costs arrived at by separate analysis and tabulation of the projects.
- Each building was analyzed as to total and component costs and percentages. The figures were arranged in ascending order with the results tabulated as shown. The 1/4 column shows that 25% of the projects had lower costs, 75% higher. The 3/4 column shows that 75% of the projects had lower costs, 25% had higher. The median column shows that 50% of the projects had lower costs, 50% had higher.
- There are two times when square foot costs are useful. The first is in the conceptual stage when no details are available. Then square foot costs make a useful starting point. The second is after the bids are in and the costs can be worked back into their appropriate units for information purposes. As soon as details become available in the project design, the square foot approach should be discontinued and the project priced as to its particular components. When more precision is required or for estimating the replacement cost of specific buildings, the current edition of *Means Square Foot Costs* should be used.
- In using the figures in Division 17, it is recommended that the median column be used for preliminary figures if no additional information is available. The median figures, when multiplied by the total city construction cost index figures (see City Cost Indexes) and then multiplied by the project size modifier in Reference Number R171-100, should present a fairly accurate base figure, which would then have to be adjusted in view of the estimator's experience, local economic conditions, code requirements and the owner's particular requirements. There is no need to factor the percentage figures, as these should remain constant from city to city. All tabulations mentioning air conditioning had at least partial air conditioning.
- The editors of this book would greatly appreciate receiving cost figures on one or more of your recent projects which would then be included in the averages for next year. All cost figures received will be kept confidential except that they will be averaged with other similar projects to arrive at S.F. and C.F. cost figures for next year's book. See the last page of the book for details and the discount available for submitting one or more of your projects.

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171 000 | S.F. & C.F. Costs

				UNIT	UNIT COSTS 1/4	UNIT COSTS MEDIAN	UNIT COSTS 3/4	% OF TOTAL 1/4	% OF TOTAL MEDIAN	% OF TOTAL 3/4	
520	3100	Total: Mechanical & Electrical	R171 -100	S.F.	33.60	44.40	59.65	29.21%	30.10%	31.10%	520
530	0010	**LIBRARIES**	R171 -100	S.F.	72.40	90.90	116				530
	0020	Total project costs		C.F.	5.10	6.25	8.10				
	0500	Masonry		S.F.	4.08	9.10	15.70	5.80%	9.50%	11.90%	
	1800	Equipment			1.05	2.80	4.43	1.20%	2.80%	4.80%	
	2720	Plumbing			2.89	4.06	5.50	3.60%	4.90%	5.70%	
	2770	Heating, ventilating, air conditioning			6.20	10.45	13.60	7.90%	11%	12.80%	
	2900	Electrical			7.35	9.70	12.20	8.30%	11%	12.10%	
	3100	Total: Mechanical & Electrical			21.15	28.91	36.25	18.90%	25.30%	27.60%	
550	0010	**MEDICAL CLINICS**	R171 -100	S.F.	71.05	86.95	109				550
	0020	Total project costs		C.F.	5.34	6.80	9.10				
	1800	Equipment		S.F.	1.92	4.04	6.45	1.80%	5.20%	7.40%	
	2720	Plumbing			4.80	6.65	8.90	6.10%	8.40%	10%	
	2770	Heating, ventilating, air conditioning			5.87	7.40	10.85	6.70%	9%	11.30%	
	2900	Electrical			6.10	8.55	11.25	8.10%	11.50%	12.20%	
	3100	Total: Mechanical & Electrical			18.75	26.40	36.90	22%	27.60%	34.30%	
	3500	See also division 117-001									
570	0010	**MEDICAL OFFICES**	R171 -100	S.F.	65.90	81.70	101				570
	0020	Total project costs		C.F.	5	6.90	9.20				
	1800	Equipment		S.F.	2.21	4.37	6.25	3%	5.80%	7.20%	
	2720	Plumbing			3.70	5.70	7.75	5.60%	6.80%	8.60%	
	2770	Heating, ventilating, air conditioning			4.47	6.55	8.50	6.10%	8%	9.70%	
	2900	Electrical			5.25	7.70	10.60	7.60%	9.80%	11.40%	
	3100	Total: Mechanical & Electrical			13	18.65	27.75	18.50%	22%	24.90%	
590	0010	**MOTELS**	R171 -100	S.F.	42.90	62.60	80.70				590
	0020	Total project costs		C.F.	3.68	5.20	8.50				
	2720	Plumbing		S.F.	4.28	5.45	6.50	9.40%	10.50%	12.50%	
	2770	Heating, ventilating, air conditioning			2.61	3.89	7	5.60%	5.60%	10%	
	2900	Electrical			3.99	5.10	6.65	7.10%	8.20%	10.40%	
	3100	Total: Mechanical & Electrical			13.55	17	29.15	18.50%	21%	24.40%	
	5000										
	9000	Per rental unit, total cost		Unit	21,500	32,300	44,200				
	9500	Total: Mechanical & Electrical		"	4,200	6,300	7,400				
600	0010	**NURSING HOMES**	R171 -100	S.F.	63.65	84	103				600
	0020	Total project costs		C.F.	5.20	6.70	9.05				
	1800	Equipment		S.F.	2.13	3.64	4.57	2.40%	3.70%	6%	
	2720	Plumbing			6	7.60	10.55	9.30%	10.60%	14.10%	
	2770	Heating, ventilating, air conditioning			5.95	8.25	10.55	9.20%	11.40%	11.80%	
	2900	Electrical			6.55	8.25	11	9.70%	11%	13%	
	3100	Total: Mechanical & Electrical			15.65	21.90	32.05	26%	29.90%	30.50%	
	3200										
	9000	Per bed or person, total cost		Bed	27,500	33,800	45,100				
610	0010	**OFFICES** Low Rise (1 to 4 story)	R171 -100	S.F.	53.50	68.30	90.75				610
	0020	Total project costs		C.F.	3.87	5.40	7.35				
	0100	Site work		S.F.	4.03	6.90	10.65	5.30%	9.60%	14%	
	0500	Masonry			1.86	4.35	8.20	2.90%	5.70%	8.60%	
	1800	Equipment			.67	1.21	3.33	1.10%	1.50%	3.90%	
	2720	Plumbing			2.04	3.08	4.39	3.60%	4.50%	6%	
	2770	Heating, ventilating, air conditioning			4.40	6.10	9	7.20%	10.50%	11.90%	
	2900	Electrical			4.53	6.25	8.75	7.40%	9.50%	11.10%	
	3100	Total: Mechanical & Electrical			10.65	14.80	21.65	18%	21.80%	26.50%	
620	0010	**OFFICES** Mid Rise (5 to 10 story)	R171 -100	S.F.	59.15	72.35	98.15				620
	0020	Total project costs		C.F.	4.13	5.34	7.55				
	2720	Plumbing		S.F.	1.81	2.77	3.98	2.80%	3.70%	4.50%	
	2770	Heating, ventilating, air conditioning			4.48	6.40	10.25	7.60%	9.30%	11%	

See R171-100 and City Cost Indexes in the Reference Section

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				UNIT	UNIT COSTS 1/4	UNIT COSTS MEDIAN	UNIT COSTS 3/4	% OF TOTAL 1/4	% OF TOTAL MEDIAN	% OF TOTAL 3/4	
620	2900	Electrical	R171 -100	S.F.	4.39	5.60	8.50	6.50%	8.20%	10%	620
		Total: Mechanical & Electrical			11.20	14.30	28.35	17.90%	22.30%	29.90%	
630	0010	**OFFICES** High Rise (11 to 20 story)	R171 -100	S.F.	71.40	91.60	113				630
	0020	Total project costs		C.F.	4.56	6.45	9.20				
	2900	Electrical		S.F.	3.65	5.25	8	5.80%	7%	10.50%	
	3100	Total: Mechanical & Electrical		"	13.35	17.05	31.35	15.40%	17%	34.10%	
640	0010	**POLICE STATIONS**	R171 -100	S.F.	87.20	114	144				640
	0020	Total project costs		C.F.	6.95	8.50	11.65				
	0500	Masonry		S.F.	10.15	15	18.10	7.80%	10.60%	11.30%	
	1800	Equipment			1.41	6.10	9.75	2.10%	5.20%	9.80%	
	2720	Plumbing			4.86	7.85	10.95	5.60%	6.90%	11.30%	
	2770	Heating, ventilating, air conditioning			7.60	10.10	13.70	7%	10.70%	12%	
	2900	Electrical			9.50	14.20	15	9.70%	11.90%	14.90%	
	3100	Total: Mechanical & Electrical			30.20	36.10	50.50	25.10%	31.30%	36.40%	
650	0010	**POST OFFICES**	R171 -100	S.F.	68.05	84.40	106				650
	0020	Total project costs		C.F.	4.05	5.25	6.30				
	2720	Plumbing		S.F.	3.09	3.97	4.84	4.40%	5.50%	5.60%	
	2770	Heating, ventilating, air conditioning			4.84	5.95	6.65	7%	8.30%	10.20%	
	2900	Electrical			5.65	8	9.25	7.20%	9.70%	11%	
	3100	Total: Mechanical & Electrical			16.40	19.25	24.50	18.60%	20.40%	22.30%	
660	0010	**POWER PLANTS**	R171 -100	S.F.	477	645	1,160				660
	0020	Total project costs		C.F.	13.10	26.55	61.20				
	2900	Electrical		S.F.	33.65	71.45	107	9.50%	12.80%	18.40%	
	8100	Total: Mechanical & Electrical		"	75.50	163	365	28.80%	32.50%	52.60%	
670	0010	**RELIGIOUS EDUCATION**	R171 -100	S.F.	54.10	70.70	81.85				670
	0020	Total project costs		C.F.	3.13	4.40	5.70				
	2720	Plumbing		S.F.	2.30	3.35	4.60	4.30%	5.40%	8.40%	
	2770	Heating, ventilating, air conditioning			5.40	6.10	6.70	9.70%	10%	11.80%	
	2900	Electrical			4.39	5.60	7.65	7.90%	9.10%	10.30%	
	3100	Total: Mechanical & Electrical			11.35	19.75	23.45	17.60%	20.50%	22%	
690	0010	**RESEARCH** Laboratories and Facilities	R171 -100	S.F.	82.75	119	173				690
	0020	Total project costs		C.F.	6.25	10.35	13.95				
	1800	Equipment		S.F.	3.68	7.35	17.65	1.60%	5.20%	9.30%	
	2720	Plumbing			8.30	10.85	17.35	7.30%	9.20%	13.30%	
	2770	Heating, ventilating, air conditioning			7.45	25.35	29.80	7.20%	16.50%	17.50%	
	2900	Electrical			9.55	16	27.35	9.50%	12%	15.80%	
	3100	Total: Mechanical & Electrical			22	41.75	79.85	23.90%	35.60%	41.70%	
700	0010	**RESTAURANTS**	R171 -100	S.F.	79.70	102	134				700
	0020	Total project costs		C.F.	6.65	8.85	11.60				
	1800	Equipment		S.F.	4.77	12.75	19.25	6.10%	13.40%	15.60%	
	2720	Plumbing			6.40	7.95	11	6.10%	8.30%	9.10%	
	2770	Heating, ventilating, air conditioning			8.40	11.20	14.65	9.40%	12.10%	13%	
	2900	Electrical			8.60	10.60	13.35	8.50%	9.80%	11.60%	
	3100	Total: Mechanical & Electrical			26.58	27.70	35.05	21.10%	24%	29.50%	
	5000										
	9000	Per seat unit, total cost		Seat	2,950	3,930	4,990				
	9500	Total: Mechanical & Electrical		"	619	880	1,160				
720	0010	**RETAIL STORES**	R171 -100	S.F.	37.45	50.10	65.90				720
	0020	Total project costs		C.F.	2.53	3.62	5				
	2720	Plumbing		S.F.	1.36	2.27	3.68	3.20%	4.60%	6.80%	
	2770	Heating, ventilating, air conditioning			2.94	4.02	6.05	6.70%	8.70%	10.10%	
	2900	Electrical			3.35	4.55	6.75	7.30%	9.90%	11.80%	
	3100	Total: Mechanical & Electrical			9	11.50	14.95	17%	21.30%	23.80%	
740	0010	**SCHOOLS** Elementary	R171 -100	S.F.	59.20	73	88				740
	0020	Total project costs		C.F.	4.01	5.15	6.65				
	0500	Masonry		S.F.	5.50	8.65	13.10	7.10%	10.50%	15.20%	
	1800	Equipment			1.87	3.15	5.60	2.50%	4.10%	7.60%	
	2720	Plumbing			3.51	5.05	6.65	5.70%	7.20%	9.30%	
	2730	Heating, ventilating, air conditioning			5.30	8.50	11.75	8.10%	10.80%	15.20%	

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				UNIT	UNIT COSTS 1/4	UNIT COSTS MEDIAN	UNIT COSTS 3/4	% OF TOTAL 1/4	% OF TOTAL MEDIAN	% OF TOTAL 3/4	
740	2900	Electrical	R171 -100	S.F.	5.50	7.05	9	8.40%	10%	11.60%	740
	3100	Total: Mechanical & Electrical			19.10	21.15	29.85	25.30%	28%	30.40%	
	9000	Per pupil, total cost		Ea.	5,900	9,800	31,900				
		Total: Mechanical & Electrical		"	1,975	2,500	10,100				
760	0010	**SCHOOLS** Junior High & Middle	R171 -100	S.F.	60.10	75	87.10				760
	0020	Total project costs		C.F.	3.96	5.25	5.90				
	0500	Masonry		S.F.	6.80	9.05	11.15	8.80%	11.10%	14%	
	1800	Equipment			2.02	3.25	5	2.60%	4.30%	5.90%	
	2720	Plumbing			4.01	4.53	5.90	5.60%	6.90%	8.10%	
	2770	Heating, ventilating, air conditioning			4.61	8.90	12.40	8.70%	12.70%	17.40%	
	2900	Electrical			5.80	7.30	8.80	7.80%	9.40%	10.60%	
	3100	Total: Mechanical & Electrical			16.80	21.10	28	23.30%	25.70%	27.30%	
	9000	Per pupil, total cost		Ea.	7,600	8,700	10,800				
780	0010	**SCHOOLS** Senior High	R171 -100	S.F.	65.95	75.65	104				780
	0020	Total project costs		C.F.	4.20	5.55	7.60				
	1800	Equipment		S.F.	1.73	4.07	6	2.30%	3.70%	5.40%	
	2720	Plumbing			3.36	6.15	10.10	5%	6.90%	12%	
	2770	Heating, ventilating, air conditioning			7.65	8.60	16.40	8.90%	11.60%	15%	
	2900	Electrical			6.45	8.40	14	8.30%	10%	12.40%	
	3100	Total: Mechanical & Electrical			17.45	23	42.90	19.80%	23.40%	27.80%	
	9000	Per pupil, total cost		Ea.	6,200	10,500	15,800				
800	0010	**SCHOOLS** Vocational	R171 -100	S.F.	53	75.30	95.45				800
	0020	Total project costs		C.F.	3.30	4.74	6.55				
	0500	Masonry		S.F.	3.10	7.70	11.85	4%	10.90%	19.80%	
	1800	Equipment		"	1.66	2.30	5.70	2.80%	3.40%	4.60%	
	2720	Plumbing		S.F.	3.46	5.20	7.45	5.30%	7%	8.50%	
	2770	Heating, ventilating, air conditioning			4.90	8.85	14.80	8.80%	11.90%	14.60%	
	2900	Electrical			5.55	7.65	10.70	8.40%	11.40%	13.80%	
	3100	Total: Mechanical & Electrical			14.35	19.20	25.95	21.70%	27.30%	34.70%	
	9000	Per pupil, total cost		Ea.	7,550	19,800	29,600				
830	0010	**SPORTS ARENAS**	R171 -100	S.F.	46.70	62.10	91.10				830
	0020	Total project costs		C.F.	2.52	4.61	5.85				
	2720	Plumbing		S.F.	2.40	4.09	7.50	4.50%	6.30%	9.40%	
	2770	Heating, ventilating, air conditioning			4.93	6.86	8.95	5.80%	10.20%	13.50%	
	2900	Electrical			3.99	6.40	7.90	7.60%	9.90%	12.20%	
	3100	Total: Mechanical & Electrical			12.95	21.40	27.52	13.40%	22.50%	30.80%	
850	0010	**SUPERMARKETS**	R171 -100	S.F.	42.85	50.30	60.15				850
	0020	Total project costs		C.F.	2.44	2.89	4.38				
	2720	Plumbing		S.F.	2.40	3.02	3.54	5.40%	6%	6.90%	
	2770	Heating, ventilating, air conditioning			3.53	4.33	5.15	8.60%	8.60%	9.60%	
	2900	Electrical			5	6.20	7.50	10.40%	12.40%	13.60%	
	3100	Total: Mechanical & Electrical			13.70	15	19.60	18%	24.10%	28.40%	
860	0010	**SWIMMING POOLS**	R171 -100	S.F.	77.20	92.55	162				860
	0020	Total project costs		C.F.	5.70	6.60	7.75				
	2720	Plumbing		S.F.	6.40	7.45	10.45	4.80%	9.60%	12.30%	
	2900	Electrical			5.25	7.30	10.55	7.50%	7.80%	8%	
	3100	Total: Mechanical & Electrical			11.40	24	44.45	17.70%	24.90%	31.60%	
870	0010	**TELEPHONE EXCHANGES**	R171 -100	S.F.	94.10	135	173				870
	0020	Total project costs		C.F.	5.70	8.75	12.65				
	2720	Plumbing		S.F.	3.89	6	8.80	3.90%	5.80%	6.60%	
	2770	Heating, ventilating, air conditioning			7.90	18.20	22.60	11.80%	16%	18.40%	
	2900	Electrical			9.40	14.90	26.80	10.90%	14%	18%	
	3100	Total: Mechanical & Electrical			20.20	27.75	52.65	27.30%	33.40%	35%	
910	0010	**THEATERS**	R171 -100	S.F.	58.05	75.30	110				91
	0020	Total project costs		C.F.	2.68	3.96	5.85				
	2720	Plumbing		S.F.	1.81	2.10	6.30	2.90%	4.70%	6.80%	
	2770	Heating, ventilating, air conditioning			5.65	6.85	8.45	8%	12.20%	13.40%	

See R171-100 and City Cost Indexes in the Reference Sectio

How to Use the City Cost Indexes

What you should know before you begin

Means City Cost Indexes (CCI) are an extremely useful tool to use when you want to compare costs from city to city and region to region.

This publication contains average construction cost indexes for 689 U.S. and Canadian cities covering over 930 three-digit zip code locations.

Keep in mind that a City Cost Index number is a *percentage ratio* of a specific city's cost to the national average cost of the same item at a stated time period.

In other words, these index figures represent relative construction *factors* (or, if you prefer, multipliers) for Material and Installation costs, as well as the weighted average for Total In Place costs for each CSI MasterFormat division. Installation costs include both labor and equipment rental costs.

The 30 City Average Index is the average of 30 major U.S. cities and serves as a National Average.

Index figures for both material and installation are based on the 30 major city average of 100 and represent the cost relationship as of July 1, 1996. The index for each division is computed from representative material and labor quantities for that division. The weighted average for each city is a weighted total of the components listed above it, but does not include relative productivity between trades or cities.

As changes occur in local material prices, labor rates and equipment rental rates, the impact of these changes should be accurately measured by the change in the City Cost Index for each particular city (as compared to the 30 City Average).

Therefore, if you know (or have estimated) building costs in one city today, you can easily convert those costs to expected building costs in another city.

In addition, by using the Historical Cost Index, you can easily convert National Average building costs at a particular time to the approximate building costs for some other time. The City Cost Indexes can then be applied to calculate the costs for a particular city.

Quick Calculations

Location Adjustment Using the City Cost Indexes:

$$\frac{\text{Index for City A}}{\text{Index for City B}} \times \text{Cost in City B} = \text{Cost in City A}$$

Time Adjustment for the National Average Using the Historical Cost Index:

$$\frac{\text{Index for Year A}}{\text{Index for Year B}} \times \text{Cost in Year B} = \text{Cost in Year A}$$

Adjustment from the National Average:

$$\frac{\text{Index for City A}}{100} \times \text{National Average Cost} = \text{Cost in City A}$$

Since each of the other R.S. Means publications contains many different items, any *one* item multiplied by the particular city index may give incorrect results. However, the larger the number of items compiled, the closer the results should be to actual costs for that particular city.

The City Cost Indexes for Canada are calculated using Canadian prices. Therefore, the Canadian indexes can be used to convert U.S. National Averages to local costs in Canadian dollars.

How to use this section

1. Compare costs from city to city.

In using the Means Indexes, remember that an index number is not a fixed number but a *ratio:* It's a percentage ratio of a building component's cost at any stated time to the National Average cost of that same component at the same time period. Put in the form of an equation:

$$\frac{\text{Specific City Cost}}{\text{National Average Cost}} \times 100 = \text{City Index Number}$$

Therefore, when making cost comparisons between cities, do not subtract one city's index number from the index number of another city and read the result as a percentage difference. Instead, divide one city's index number by that of the other city. The resulting number may then be used as a multiplier to calculate cost differences from city to city.

The formula used to find cost differences between cities for the purpose of comparison is as follows:

$$\frac{\text{City A Index}}{\text{City B Index}} \times \text{City B Cost (Known)} = \text{City A Cost (Unknown)}$$

In addition, you can use *Means CCI* to calculate and compare costs division by division between cities using the same basic formula. (Just be sure that you're comparing similar divisions.)

2. Compare a specific city's construction costs with the National Average.

When you're studying construction location feasibility, it's advisable to compare a prospective project's cost index with an index of the National Average cost.

For example, divide the weighted average index of construction costs of a specific city by that of the 30 City Average, which = 100.

$$\frac{\text{City Index}}{100} = \text{\% of National Average}$$

As a result, you get a ratio that indicates the relative cost of construction in that city in comparison with the National Average.

3. Adjust construction cost data based on a National Average.

When you use a source of construction cost data which is based on a National Average (such as *Means cost data publications*), it is necessary to adjust those costs to a specific location.

$$\frac{\text{City Index}}{100} \times \text{"Book" Cost Based on National Average Costs} = \text{City Cost (Unknown)}$$

4. When applying the City Cost Indexes to demolition projects, use the appropriate division installation index. For example, for removal of existing doors and windows, use the Division 8 index.

What you might like to know about how we developed the Indexes

To create a reliable index, R.S. Means researched the building type most often constructed in the United States and Canada. Because it was concluded that no one type of building completely represented the building construction industry, nine different types of buildings were combined to create a composite model.

The exact material, labor and equipment quantities are based on detailed analysis of these nine building types, then each quantity is weighted in proportion to expected usage. These various material items, labor hours, and equipment rental rates are thus combined to form a composite building representing as closely as possible the actual usage of materials, labor and equipment used in the North American Building Construction Industry.

The following structures were chosen to make up that composite model:

1. Factory, 1 story
2. Office, 2–4 story
3. Store, Retail
4. Town Hall, 2–3 story
5. High School, 2–3 story
6. Hospital, 4–8 story
7. Garage, Parking
8. Apartment, 1–3 story
9. Hotel/Motel, 2–3 story

For the purposes of ensuring the timeliness of the data, the components of the index for the composite model have been streamlined. They currently consist of:

- specific quantities of 66 commonly used construction materials;
- specific labor-hours for 21 building construction trades; and
- specific days of equipment rental for 6 types of construction equipment (normally used to install the 66 material items by the 21 trades.)

A sophisticated computer program handles the updating of all costs for each city on a quarterly basis. Material and equipment price quotations are gathered quarterly from 689 cities in the United States and Canada. These prices and the latest negotiated labor wage rates for 21 different building trades are used to compile the quarterly update of the City Cost Index.

The 30 major U.S. cities used to calculate the National Average are:

Atlanta, GA	Memphis, TN
Baltimore, MD	Milwaukee, WI
Boston, MA	Minneapolis, MN
Buffalo, NY	Nashville, TN
Chicago, IL	New Orleans, LA
Cincinnati, OH	New York, NY
Cleveland, OH	Philadelphia, PA
Columbus, OH	Phoenix, AZ
Dallas, TX	Pittsburgh, PA
Denver, CO	St. Louis, MO
Detroit, MI	San Antonio, TX
Houston, TX	San Diego, CA
Indianapolis, IN	San Francisco, CA
Kansas City, MO	Seattle, WA
Los Angeles, CA	Washington, DC

F.Y.I.: The CSI MasterFormat Divisions

1. General Requirements
2. Site Work
3. Concrete
4. Masonry
5. Metals
6. Wood & Plastics
7. Thermal & Moisture Protection
8. Doors & Windows
9. Finishes
10. Specialties
11. Equipment
12. Furnishings
13. Special Construction
14. Conveying Systems
15. Mechanical
16. Electrical

The information presented in the CCI is organized according to the Construction Specifications Institute (CSI) MasterFormat.

What the CCI does not *indicate*

The weighted average for each city is a total of the components listed above weighted to reflect typical usage, but it does *not* include the productivity variations between trades or cities.

In addition, the CCI cannot take into consideration the following factors:

- managerial efficiency
- competitive conditions
- automation
- restrictive union practices
- an owner's unique requirements

DIVISION		ILLINOIS																	
		BLOOMINGTON			CARBONDALE			CENTRALIA			CHAMPAIGN			CHICAGO			DECATUR		
		617			629			628			618 - 619			606			625		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
2	SITE WORK	90.0	93.5	92.7	100.2	94.3	95.6	100.6	95.0	96.3	99.9	94.5	95.8	84.8	89.9	88.7	83.0	94.5	91.8
031	CONCRETE FORMWORK	79.5	100.8	97.7	92.2	91.5	91.6	95.5	104.7	103.4	89.0	98.4	97.0	103.4	121.5	118.8	100.8	95.6	96.4
032	CONCRETE REINFORCEMENT	99.2	129.3	116.1	99.4	111.3	106.1	99.4	129.2	116.2	99.2	127.0	114.9	98.3	181.1	144.9	93.3	126.5	112.0
033	CAST IN PLACE CONCRETE	97.1	102.4	99.4	90.8	94.1	92.2	91.3	98.6	94.4	112.6	105.1	109.4	102.8	125.3	112.3	99.2	97.1	98.3
3	CONCRETE	89.0	107.0	98.1	81.9	97.4	89.7	82.5	108.2	95.4	100.8	106.4	103.6	95.0	133.0	114.1	90.8	102.3	96.6
4	MASONRY	106.8	103.0	104.4	73.3	95.0	86.8	73.4	112.6	97.8	129.2	100.0	111.0	94.0	121.6	111.2	69.9	101.1	89.3
5	METALS	93.9	112.9	100.9	93.3	116.4	101.8	93.4	124.9	105.0	93.9	110.8	100.1	96.7	124.9	107.1	97.1	110.5	102.0
6	WOOD & PLASTICS	82.1	98.0	90.3	99.4	89.6	94.4	102.9	103.0	103.0	91.8	95.4	93.7	99.9	120.1	110.3	103.0	92.3	97.5
7	THERMAL & MOISTURE PROTECTION	95.9	99.8	97.7	92.0	88.7	90.5	92.1	101.4	96.4	96.7	101.8	99.1	101.9	121.0	110.8	97.1	95.6	96.4
8	DOORS & WINDOWS	92.7	99.5	94.4	88.9	95.5	90.5	88.9	113.1	94.8	93.5	104.9	96.2	105.7	132.1	112.0	99.8	103.1	100.6
092	LATH, PLASTER & GYPSUM BOARD	91.7	97.6	95.5	97.4	88.9	91.9	98.6	102.7	101.3	94.5	94.9	94.8	96.4	120.2	112.0	99.9	91.7	94.5
095	ACOUSTICAL TREATMENT & WOOD FLOORING	82.3	97.6	92.2	82.3	88.9	86.6	82.3	102.7	95.5	82.3	94.9	90.5	81.8	120.2	106.6	88.0	91.7	90.4
096	FLOORING & CARPET	92.5	99.6	94.2	110.2	95.4	106.6	111.6	83.3	104.8	96.0	95.6	95.9	80.8	122.1	90.8	99.9	97.5	99.3
099	PAINTING & WALL COVERINGS	84.3	93.5	89.7	92.3	79.2	84.6	92.3	96.8	94.9	84.3	102.2	94.8	75.1	126.2	105.0	84.3	97.3	91.9
9	FINISHES	87.1	99.3	93.3	91.8	89.9	90.8	92.4	100.0	96.3	89.1	97.8	93.6	82.2	121.3	102.3	91.8	95.8	93.8
10 - 14	TOTAL DIV. 10 - 14	100.0	102.4	100.5	100.0	99.0	99.8	100.0	103.3	100.7	100.0	100.9	100.2	100.0	124.2	105.1	100.0	100.4	100.1
15	MECHANICAL	96.9	104.7	100.3	96.9	95.6	96.3	96.9	98.1	97.4	96.9	95.7	96.4	100.3	117.0	107.6	100.3	95.0	98.0
16	ELECTRICAL	95.0	91.1	92.4	94.4	99.9	98.1	96.6	91.5	93.2	100.3	92.5	95.1	101.2	123.0	115.7	99.5	90.4	93.4
1 - 16	WEIGHTED AVERAGE	94.2	101.1	97.6	91.9	97.4	94.5	92.2	103.0	97.4	98.0	99.2	98.6	97.2	119.9	108.1	95.5	97.7	96.5

DIVISION		ILLINOIS																	
		EAST ST. LOUIS			EFFINGHAM			GALESBURG			JOLIET			KANKAKEE			LA SALLE		
		620 - 622			624			614			604			609			613		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
2	SITE WORK	102.4	95.1	96.8	91.3	94.3	93.6	92.5	93.3	93.1	84.8	89.1	88.1	80.1	88.6	86.7	92.0	93.5	93.2
031	CONCRETE FORMWORK	92.3	104.3	102.5	102.5	96.1	97.0	88.7	99.3	97.7	103.3	122.9	120.1	90.0	109.8	106.9	108.6	97.9	99.5
032	CONCRETE REINFORCEMENT	98.8	129.2	115.9	99.2	127.1	114.9	96.8	126.4	113.5	98.3	162.0	134.1	102.7	147.2	127.7	97.5	139.6	121.2
033	CAST IN PLACE CONCRETE	92.8	109.4	99.8	98.9	85.3	93.1	100.0	94.1	97.5	102.7	120.2	110.1	95.9	110.9	102.2	99.9	102.5	101.0
3	CONCRETE	83.2	111.7	97.6	92.0	98.5	95.3	91.5	102.9	97.2	94.9	128.1	111.7	89.5	116.4	103.1	93.0	107.7	100.4
4	MASONRY	73.5	111.6	97.2	77.4	91.2	86.0	107.0	101.8	103.8	95.2	118.7	109.8	93.6	107.3	102.1	107.0	103.8	105.0
5	METALS	94.5	124.9	105.7	93.9	109.8	99.7	93.9	110.9	100.1	95.0	115.5	102.6	94.3	109.4	99.9	94.0	116.8	102.4
6	WOOD & PLASTICS	95.6	103.0	99.4	106.0	95.4	100.6	91.6	97.6	94.7	100.2	123.0	111.9	91.7	109.4	100.8	112.4	95.7	103.9
7	THERMAL & MOISTURE PROTECTION	92.0	102.7	97.0	96.6	94.6	95.6	96.2	98.6	97.3	101.6	118.7	109.5	100.5	111.5	105.6	96.5	99.3	97.8
8	DOORS & WINDOWS	89.0	109.3	93.9	93.4	104.8	96.1	92.7	97.6	93.9	105.6	129.5	111.4	96.2	116.9	101.2	92.8	99.5	94.4
092	LATH, PLASTER & GYPSUM BOARD	96.3	102.7	100.5	99.2	94.9	96.4	94.5	97.1	96.2	94.1	123.3	113.2	91.2	109.3	103.0	101.5	95.2	97.4
095	ACOUSTICAL TREATMENT & WOOD FLOORING	82.3	102.7	95.5	82.3	94.9	90.5	82.3	97.1	91.9	81.8	123.3	108.6	81.8	109.3	99.6	82.3	95.2	90.7
096	FLOORING & CARPET	108.8	67.4	98.8	101.0	85.1	97.2	95.9	97.4	96.3	80.3	116.5	89.0	77.7	109.3	85.3	103.2	91.7	100.5
099	PAINTING & WALL COVERINGS	92.3	96.8	94.9	84.3	93.6	89.8	84.3	71.5	76.9	72.7	136.2	92.3	72.7	88.2	81.8	84.3	77.1	80.1
9	FINISHES	91.3	96.0	93.7	91.0	93.5	92.3	88.7	95.8	92.3	81.6	119.7	101.1	80.1	106.8	93.8	92.0	93.7	92.9
10 - 14	TOTAL DIV. 10 - 14	100.0	102.9	100.6	100.0	94.8	98.9	100.0	101.9	100.4	100.0	124.3	105.1	100.0	115.2	103.2	100.0	100.8	100.2
15	MECHANICAL	100.2	99.5	99.9	97.0	93.2	95.3	96.9	99.1	97.8	100.5	111.1	105.1	97.1	102.3	99.3	96.9	103.7	99.9
16	ELECTRICAL	95.9	98.0	97.3	96.0	99.9	98.6	96.5	85.4	89.1	100.7	104.6	103.3	92.6	99.1	97.0	91.8	99.1	96.7
1 - 16	WEIGHTED AVERAGE	93.1	104.1	98.4	93.9	97.1	95.4	95.0	97.7	96.3	96.9	113.6	104.9	93.2	105.1	98.9	95.4	102.0	98.6

DIVISION		ILLINOIS																	
		NORTH SUBURBAN			PEORIA			QUINCY			ROCKFORD			ROCK ISLAND			SOUTH SUBURBAN		
		600 - 603			615 - 616			623			610 - 611			612			605		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
2	SITE WORK	84.8	89.0	88.1	91.5	93.5	93.0	90.2	94.0	93.1	91.6	93.9	93.3	90.6	93.0	92.4	84.8	89.0	88.1
031	CONCRETE FORMWORK	103.4	118.0	115.8	98.5	100.4	100.2	99.5	93.8	94.6	103.8	103.4	103.5	91.3	92.9	92.6	103.4	118.0	115.8
032	CONCRETE REINFORCEMENT	98.3	174.8	141.3	93.3	129.3	113.5	97.5	109.3	104.2	93.3	155.8	128.5	96.8	126.3	113.4	98.3	174.8	141.3
033	CAST IN PLACE CONCRETE	102.8	122.4	111.1	97.7	106.1	101.2	99.0	80.7	91.3	99.1	107.7	102.8	97.9	97.0	97.5	102.8	122.4	111.1
3	CONCRETE	95.0	129.1	112.2	90.0	108.1	99.1	91.3	92.6	92.0	91.1	114.9	103.1	90.1	101.0	95.6	95.0	129.1	112.2
4	MASONRY	94.0	118.7	109.3	113.9	103.1	107.2	96.3	87.5	90.8	84.5	107.9	99.1	106.8	95.6	99.9	94.0	118.7	109.3
5	METALS	96.1	119.3	104.6	97.1	112.8	102.9	94.0	104.4	97.8	97.1	122.9	106.6	93.9	110.0	99.8	96.1	119.3	104.6
6	WOOD & PLASTICS	99.9	116.1	108.2	103.0	97.5	100.2	102.8	95.4	99.0	103.0	100.4	101.7	94.4	90.8	92.5	99.9	116.1	108.2
7	THERMAL & MOISTURE PROTECTION	101.9	117.2	109.0	96.9	99.8	98.3	96.5	88.4	92.8	96.8	107.7	101.9	96.2	96.5	96.3	101.9	117.2	109.0
8	DOORS & WINDOWS	105.7	126.5	110.7	99.8	99.2	99.6	94.3	94.6	94.4	99.8	110.0	102.2	92.7	94.0	93.0	105.7	126.5	110.7
092	LATH, PLASTER & GYPSUM BOARD	96.4	116.2	109.4	99.9	97.0	98.0	98.6	94.9	96.2	99.9	100.1	100.0	95.7	90.1	92.0	96.4	116.2	109.4
095	ACOUSTICAL TREATMENT & WOOD FLOORING	81.8	116.2	104.1	88.0	97.0	93.8	82.3	94.9	90.5	88.0	100.1	95.8	82.3	90.1	87.3	81.8	116.2	104.1
096	FLOORING & CARPET	80.8	113.2	88.6	99.9	97.4	99.3	99.9	89.8	97.5	99.9	95.0	98.7	96.8	90.1	95.2	80.8	113.2	88.6
099	PAINTING & WALL COVERINGS	75.1	122.4	102.8	84.3	95.5	90.8	84.3	45.4	61.5	84.3	99.9	93.4	84.3	86.7	85.7	75.1	122.4	102.8
9	FINISHES	82.2	117.0	100.1	91.7	98.8	95.4	90.5	87.9	89.1	91.7	100.5	96.2	89.1	91.2	90.2	82.2	117.0	100.1
10 - 14	TOTAL DIV. 10 - 14	100.0	118.7	103.9	100.0	102.5	100.5	100.0	92.8	98.5	100.0	110.9	102.3	100.0	97.4	99.4	100.0	118.7	103.9
15	MECHANICAL	100.3	112.8	105.8	100.3	100.4	100.3	96.8	94.6	95.8	100.3	100.6	100.4	96.9	97.2	97.0	100.3	112.8	105.8
16	ELECTRICAL	99.9	121.1	114.0	99.5	90.0	93.1	92.0	74.6	80.4	99.5	101.2	100.7	84.3	89.7	87.9	99.9	121.1	114.0
1 - 16	WEIGHTED AVERAGE	97.0	116.4	106.3	97.9	100.2	99.0	94.5	90.2	92.4	96.5	105.5	100.8	93.9	96.1	95.0	97.0	116.4	106.3

DIVISION		ILLINOIS			INDIANA														
		SPRINGFIELD			ANDERSON			BLOOMINGTON			COLUMBUS			EVANSVILLE			FORT WAYNE		
		626 - 627			460			474			472			476 - 477			467 - 468		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
2	SITE WORK	90.8	94.4	93.6	79.4	96.6	92.6	76.0	96.9	92.1	73.5	96.9	91.4	81.7	132.2	120.5	79.5	96.8	92.8
031	CONCRETE FORMWORK	103.7	97.5	98.4	88.0	81.5	82.5	104.7	81.9	85.2	88.9	75.2	79.7	91.7	84.5	85.5	85.6	77.6	78.7
032	CONCRETE REINFORCEMENT	93.3	126.4	111.9	95.9	85.7	90.2	90.4	85.5	87.6	90.8	85.4	87.8	99.1	84.2	90.7	95.9	82.8	88.5
033	CAST IN PLACE CONCRETE	93.3	99.9	96.1	107.8	82.3	97.0	104.9	79.2	94.0	104.4	80.2	94.2	100.1	95.0	98.0	114.4	87.9	103.2
3	CONCRETE	88.2	104.1	96.2	98.9	83.0	90.9	100.9	80.9	90.8	99.4	79.5	89.4	103.0	87.9	95.4	101.9	82.7	92.2
4	MASONRY	68.8	99.4	87.8	95.1	80.8	86.2	92.9	76.4	82.6	92.9	76.3	82.6	88.9	86.5	87.4	93.0	83.6	87.2
5	METALS	97.1	110.5	102.1	100.0	88.8	95.9	96.0	72.0	87.1	95.6	71.5	86.7	89.8	84.0	87.6	100.0	88.0	95.6
6	WOOD & PLASTICS	102.8	95.4	99.0	99.0	81.0	89.8	116.1	82.2	98.7	103.3	77.2	89.9	91.6	83.3	87.3	96.2	75.7	85.7
7	THERMAL & MOISTURE PROTECTION	96.8	96.6	96.7	100.0	81.1	91.2	95.6	85.0	90.7	95.0	81.7	88.8	99.2	88.9	94.4	99.4	82.4	91.5
8	DOORS & WINDOWS	99.8	98.3	99.4	102.1	81.3	97.0	105.0	82.2	99.5	100.2	79.6	95.2	97.5	80.3	93.4	102.1	75.6	95.7
092	LATH, PLASTER & GYPSUM BOARD	99.9	94.9	96.7	113.3	81.1	92.2	112.1	82.3	92.6	107.0	77.3	87.5	106.4	81.5	90.1	107.5	75.7	86.7
095	ACOUSTICAL TREATMENT & WOOD FLOORING	88.0	94.9	92.5	92.1	81.1	85.0	84.7	82.3	83.2	84.7	77.3	79.9	96.6	81.5	86.8	92.1	75.7	81.5
096	FLOORING & CARPET	99.9	96.0	98.9	92.4	84.9	90.6	104.0	73.9	96.7	99.0	73.9	92.9	97.3	81.9	93.6	92.4	90.6	92.0
099	PAINTING & WALL COVERINGS	84.3	98.0	92.3	88.4	75.9	81.1	91.4	85.4	87.9	91.4	85.4	87.9	97.0	87.0	91.2	88.4	74.4	80.2
9	FINISHES	91.8	97.2	94.6	93.8	81.5	87.5	97.3	80.7	88.8	94.9	77.5	86.1	96.4	84.1	90.1	92.9	79.3	85.9
10 - 14	TOTAL DIV. 10 - 14	100.0	100.5	100.1	100.0	86.3	97.1	100.0	76.2	95.0	100.0	75.5	94.9	100.0	90.4	98.0	100.0	90.8	98.1
15	MECHANICAL	100.3	90.3	95.9	99.8	83.9	92.8	99.8	82.4	92.2	96.5	85.7	91.8	100.1	86.2	94.0	99.8	85.7	93.6
16	ELECTRICAL	99.5	95.0	96.5	83.3	90.3	88.0	101.3	87.4	92.0	100.0	84.5	89.9	97.3	88.9	91.7	83.8	87.5	86.3
1 - 16	WEIGHTED AVERAGE	95.3	97.7	96.4	97.3	85.8	91.8	98.8	82.7	91.1	96.7	80.2	89.6	96.8	91.0	94.0	97.4	85.5	91.7

DIVISION		INDIANA																	
		GARY			HENDERSON			INDIANAPOLIS			KOKOMO			LAFAYETTE			LAWRENCEBURG		
		463 - 464			424			461 - 462			469			479			470		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
2	SITE WORK	80.0	97.8	93.7	71.4	132.7	118.5	79.8	100.4	95.6	76.6	96.3	91.7	74.1	96.7	91.5	71.7	117.5	107.0
031	CONCRETE FORMWORK	88.3	106.9	104.2	86.0	86.2	86.1	88.3	96.3	86.6	93.9	75.5	78.2	85.7	85.7	85.7	85.1	74.2	75.8
032	CONCRETE REINFORCEMENT	95.9	101.3	98.9	89.8	93.3	91.8	95.3	85.5	89.8	86.7	81.3	83.7	90.4	83.7	86.7	89.8	79.5	84.0
033	CAST IN PLACE CONCRETE	112.5	106.7	110.1	80.8	100.2	89.0	103.7	87.0	96.6	106.7	87.2	98.4	104.9	87.3	97.5	98.1	79.1	90.1
3	CONCRETE	101.2	105.6	103.4	88.5	92.3	90.5	101.2	85.8	93.4	96.3	81.3	88.7	99.5	85.1	92.2	93.0	77.4	85.1
4	MASONRY	96.6	101.6	99.7	100.8	88.9	93.4	103.0	84.8	91.7	94.9	85.2	88.8	100.4	84.4	90.4	78.9	76.1	77.2
5	METALS	100.0	98.3	99.4	83.0	90.2	85.6	101.8	76.0	92.3	96.4	87.2	93.0	94.0	71.7	85.8	90.8	84.5	88.4
6	WOOD & PLASTICS	97.7	108.6	103.3	89.2	82.7	85.9	96.7	86.4	91.4	110.1	72.9	91.0	99.7	86.0	92.7	90.1	72.3	81.0
7	THERMAL & MOISTURE PROTECTION	99.8	103.5	101.5	98.8	89.8	94.6	98.6	88.3	93.8	99.7	81.9	91.4	95.0	86.7	91.1	94.6	80.7	88.1
8	DOORS & WINDOWS	102.1	96.4	100.7	95.5	87.9	93.7	107.7	84.4	102.1	96.0	75.8	91.1	98.8	83.5	95.1	99.8	71.9	93.0
092	LATH, PLASTER & GYPSUM BOARD	108.6	109.6	109.3	102.1	80.9	88.2	108.5	86.5	94.1	115.9	72.5	87.7	104.2	86.3	92.5	95.9	71.9	80.2
095	ACOUSTICAL TREATMENT & WOOD FLOORING	92.1	109.6	103.4	83.7	80.9	81.9	90.7	86.5	88.0	86.4	72.5	77.6	80.4	86.3	84.2	96.6	71.9	80.6
096	FLOORING & CARPET	92.4	107.3	96.0	96.4	80.2	92.5	92.2	95.7	93.0	96.6	74.[illegible]	91.2	97.6	90.2	95.8	72.2	73.9	72.7
099	PAINTING & WALL COVERINGS	88.4	95.1	92.3	97.0	87.3	91.3	88.4	85.4	86.6	88.4	75.5	81.1	91.4	84.8	87.5	93.5	81.9	86.7
9	FINISHES	93.1	106.3	99.9	92.[illegible]	84.7	88.6	93.2	88.1	90.6	94.3	74.5	84.2	93.3	86.6	89.9	86.9	74.5	80.6
10 - 14	TOTAL DIV. 10 - 14	100.0	106.9	101.4	100.0	97.2	99.4	100.0	87.9	97.5	100.0	75.[illegible]	94.9	100.0	87.2	97.3	100.0	71.3	94.0
15	MECHANICAL	99.8	94.8	97.6	96.6	87.1	92.4	99.8	87.1	94.2	96.3	84.9	91.3	96.5	86.8	92.2	97.1	83.4	91.1
16	ELECTRICAL	90.5	99.3	96.4	90.7	80.6	84.6	101.4	90.2	94.0	90.7	85.5	90.1	99.1	83.8	88.9	93.1	78.2	83.2
1 - 16	WEIGHTED AVERAGE	98.1	100.4	99.2	92.6	91.8	92.2	100.2	87.8	94.1	95.6	84.5	90.3	96.5	85.3	91.1	93.0	82.6	88.0

DIVISION		INDIANA															IOWA		
		MUNCIE			NEW ALBANY			SOUTH BEND			TERRE HAUTE			WASHINGTON			BURLINGTON		
		473			471			465 - 466			478			475			526		
		MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL	MAT.	INST.	TOTAL
2	SITE WORK	75.3	97.2	92.2	71.0	101.6	94.5	79.4	96.5	92.8	82.8	132.3	120.9	83.6	132.2	121.0	78.4	93.9	90.3
031	CONCRETE FORMWORK	89.0	81.4	82.5	84.7	76.9	78.1	93.6	80.2	82.1	93.4	83.5	85.2	90.9	74.3	76.7	91.1	46.1	52.7
032	CONCRETE REINFORCEMENT	100.1	85.7	92.0	91.0	82.3	86.1	95.9	76.0	84.7	99.1	83.6	90.4	91.5	83.2	86.9	93.4	79.6	85.6
033	CAST IN PLACE CONCRETE	110.2	82.3	98.4	101.3	77.4	91.2	106.6	84.0	97.0	96.9	90.5	94.2	105.6	95.0	101.1	105.0	54.5	83.7
3	CONCRETE	99.6	82.9	91.2	98.0	78.2	88.0	94.4	82.3	88.3	102.7	85.9	94.2	108.0	83.3	95.5	93.8	56.7	75.1
4	MASONRY	94.9	80.8	86.1	85.2	81.0	82.6	90.3	84.4	86.6	96.0	85.6	89.5	89.1	80.8	84.0	97.8	57.7	72.8
5	METALS	97.6	87.3	93.8	92.8	80.8	88.4	100.0	101.5	100.5	90.5	83.1	87.8	83.0	82.5	82.8	84.3	83.1	83.9
6	WOOD & PLASTICS	99.7	81.0	90.1	92.8	77.2	84.8	99.3	79.7	89.2	94.5	83.7	89.0	94.8	69.6	81.9	99.0	44.3	70.9
7	THERMAL & MOISTURE PROTECTION	97.4	80.9	89.8	90.2	78.1	84.6	99.7	87.7	94.1	99.4	86.6	93.4	99.5	85.6	93.0	96.2	68.1	83.1
8	DOORS & WINDOWS	99.9	81.3	95.4	97.2	76.6	92.2	95.5	77.1	91.0	98.1	82.5	94.3	95.0	78.3	91.0	98.4	54.6	87.8
092	LATH, PLASTER & GYPSUM BOARD	105.0	81.1	89.4	104.2	76.7	86.2	112.7	79.8	91.2	106.4	82.2	90.4	104.4	67.4	80.2	98.4	42.6	61.9
095	ACOUSTICAL TREATMENT & WOOD FLOORING	86.1	81.1	82.9	92.3	76.7	82.2	92.1	79.8	84.1	96.6	82.2	87.1	83.7	67.4	73.2	99.9	42.6	62.9
096	FLOORING & CARPET	97.0	84.9	94.1	95.3	61.5	87.2	92.4	64.2	85.6	97.3	82.2	93.7	98.6	81.7	94.5	114.2	63.0	101.9
099	PAINTING & WALL COVERINGS	91.4	75.9	82.3	97.0	69.3	80.8	88.4	78.0	82.3	97.0	83.2	88.9	97.0	87.0	91.2	114.1	48.8	75.9
9	FINISHES	94.0	81.4	87.6	94.8	73.4	83.9	93.7	76.6	84.9	96.4	83.4	89.7	94.3	76.0	84.9	105.1	48.5	76.1
10 - 14	TOTAL DIV. 10 - 14	100.0	86.2	97.1	100.0	72.1	94.2	100.0	84.1	96.7	100.0	91.3	98.2	100.0	88.5	97.6	100.0	70.2	93.7
15	MECHANICAL	99.8	83.9	92.8	96.6	78.8	88.8	99.8	80.6	91.3	100.1	86.5	94.1	96.6	84.3	91.2	96.7	50.0	76.2
16	ELECTRICAL	89.9	83.1	85.4	93.6	83.4	86.8	96.6	83.8	88.1	93.4	87.4	89.4	94.3	88.9	90.7	96.6	69.8	78.8
1 - 16	WEIGHTED AVERAGE	97.1	84.5	91.0	94.6	81.2	88.2	96.7	84.9	91.0	97.0	90.3	93.8	94.9	88.0	91.6	95.4	63.3	80.0

Location Factors

Costs shown in *Means cost data publications* are based on National Averages for materials and installation. To adjust these costs to a specific location, simply multiply the base cost by the factor and divide by 100 for that city. The data is arranged alphabetically by state and postal zip code numbers. For a city not listed, use the factor for a nearby city with similar economic characteristics.

STATE/ZIP	CITY	MAT.	INST.	TOTAL
ALABAMA				
350-352	Birmingham	96.5	67.8	82.7
354	Tuscaloosa	96.2	60.2	78.8
355	Jasper	97.5	54.1	76.6
356	Decatur	96.2	69.4	83.3
357-358	Huntsville	96.0	69.3	83.1
359	Gadsden	97.0	64.3	81.3
360-361	Montgomery	97.1	61.0	79.7
362	Anniston	95.0	54.0	75.3
363	Dothan	96.6	60.4	79.2
364	Evergreen	95.8	62.1	79.6
365-366	Mobile	97.0	69.8	83.9
367	Selma	96.1	60.4	79.0
368	Phenix City	96.9	60.7	79.5
369	Butler	96.3	60.4	79.0
ALASKA				
995-996	Anchorage	133.1	120.8	127.1
997	Fairbanks	129.4	123.5	126.6
998	Juneau	131.3	121.1	126.3
999	Ketchikan	140.4	121.0	131.1
ARIZONA				
850,853	Phoenix	99.3	82.4	91.2
852	Mesa/Tempe	99.4	73.9	87.1
855	Globe	100.2	79.5	90.3
856-857	Tucson	98.3	81.8	90.4
859	Show Low	100.3	79.7	90.4
860	Flagstaff	102.4	82.9	93.0
863	Prescott	99.7	79.3	89.9
864	Kingman	98.5	80.2	89.7
865	Chambers	98.5	80.0	89.6
ARKANSAS				
716	Pine Bluff	95.2	63.6	80.0
717	Camden	93.5	49.7	72.5
718	Texarkana	94.6	55.9	76.0
719	Hot Springs	92.8	49.0	71.7
720-722	Little Rock	95.8	62.9	80.0
723	West Memphis	95.0	67.9	82.0
724	Jonesboro	95.0	67.9	81.9
725	Batesville	93.7	62.0	78.4
726	Harrison	95.1	62.0	79.1
727	Fayetteville	92.2	42.6	68.3
728	Russellville	93.9	59.7	77.4
729	Fort Smith	96.0	62.3	79.8
749	Poteau	93.5	69.6	82.0
CALIFORNIA				
900-902	Los Angeles	105.6	119.5	112.3
903-905	Inglewood	101.7	118.9	110.0
906-908	Long Beach	103.6	118.9	111.0
910-912	Pasadena	101.3	118.9	109.8
913-916	Van Nuys	105.3	118.6	111.7
917-918	Alhambra	103.9	118.9	111.1
919-921	San Diego	105.8	111.5	108.5
922	Palm Springs	103.2	116.1	109.4
923-924	San Bernardino	100.5	116.3	108.1
925	Riverside	105.4	116.2	110.6
926-927	Santa Ana	103.1	116.8	109.7
928	Anaheim	105.5	118.2	111.6
930	Oxnard	106.1	117.3	111.5
931	Santa Barbara	105.0	116.4	110.5
932-933	Bakersfield	105.0	110.1	107.5
934	San Luis Obispo	106.9	116.0	111.3
935	Mojave	103.4	112.9	108.0
936-938	Fresno	105.8	115.4	110.4
939	Salinas	107.8	120.1	113.7
940-941	San Francisco	111.4	141.1	125.7
942,956-958	Sacramento	107.3	117.5	112.2
943	Palo Alto	105.4	132.0	118.2
944	San Mateo	108.4	130.6	119.1
945	Vallejo	105.9	130.9	117.9
946	Oakland	110.2	130.6	120.0
947	Berkeley	136.9	129.6	133.4
948	Richmond	109.6	128.5	118.7
949	San Rafael	111.6	129.2	120.1
950	Santa Cruz	111.5	121.8	116.4
CALIFORNIA (CONT'D)				
951	San Jose	110.6	132.7	121.3
952	Stockton	106.3	116.7	111.3
953	Modesto	106.7	116.7	111.5
954	Santa Rosa	107.9	132.6	119.8
955	Eureka	109.3	115.1	112.1
959	Marysville	108.0	115.9	111.8
960	Redding	109.0	112.3	110.6
961	Susanville	109.3	111.7	110.5
COLORADO				
800-802	Denver	101.6	84.0	93.1
803	Boulder	99.6	71.8	86.2
804	Golden	102.1	79.5	91.2
805	Fort Collins	102.8	80.5	92.1
806	Greeley	99.9	71.3	86.1
807	Fort Morgan	100.3	80.3	90.7
808-809	Colorado Springs	100.2	79.9	90.4
810	Pueblo	102.0	80.1	91.5
811	Alamosa	104.1	72.5	88.9
812	Salida	103.9	72.6	88.8
813	Durango	104.7	68.0	87.0
814	Montrose	103.2	65.2	84.9
815	Grand Junction	106.0	65.5	86.5
816	Glenwood Springs	104.2	78.1	91.6
CONNECTICUT				
060	New Britain	103.9	112.2	107.9
061	Hartford	104.3	111.9	107.9
062	Willimantic	104.8	111.7	108.1
063	New London	101.1	112.2	106.4
064	Meriden	103.8	111.6	107.6
065	New Haven	104.1	112.5	108.2
066	Bridgeport	105.3	109.8	107.5
067	Waterbury	104.7	112.3	108.4
068	Norwalk	104.6	109.8	107.1
069	Stamford	104.8	113.4	108.9
D.C.				
200-205	Washington	99.4	91.3	95.5
DELAWARE				
197	Newark	100.0	100.1	100.0
198	Wilmington	98.7	100.1	99.4
199	Dover	99.9	100.1	100.0
FLORIDA				
320,322	Jacksonville	98.8	70.2	85.0
321	Daytona Beach	98.7	78.4	89.0
323	Tallahassee	99.0	61.3	80.9
324	Panama City	99.7	47.5	74.6
325	Pensacola	99.3	70.8	85.6
326	Gainesville	100.0	67.2	84.2
327-328,347	Orlando	99.8	74.0	87.4
329	Melbourne	100.6	77.8	89.6
330-332,340	Miami	98.0	77.2	88.0
333	Fort Lauderdale	97.9	77.3	88.0
334,349	West Palm Beach	96.9	72.4	85.1
335-336,346	Tampa	100.0	70.8	86.0
337	St. Petersburg	101.5	70.7	86.7
338	Lakeland	98.5	70.5	85.0
339	Fort Myers	98.2	67.3	83.3
342	Sarasota	100.0	67.7	84.4
GEORGIA				
300-303,399	Atlanta	97.1	78.9	88.3
304	Statesboro	96.9	37.9	68.5
305	Gainesville	96.1	40.1	69.2
306	Athens	95.2	65.1	80.7
307	Dalton	96.9	35.7	67.5
308-309	Augusta	95.9	64.4	80.7
310-312	Macon	95.9	67.9	82.4
313-314	Savannah	97.8	66.5	82.7
315	Waycross	97.6	53.4	76.3
316	Valdosta	97.3	56.6	77.7
317	Albany	97.6	62.4	80.7
318-319	Columbus	97.6	57.4	78.3

STATE/ZIP	CITY	MAT.	INST.	TOTAL
HAWAII				
967	Hilo	115.0	130.9	122.7
968	Honolulu	115.5	130.9	122.9
STATES & POSS.				
969	Guam	114.6	50.1	83.5
IDAHO				
832	Pocatello	101.1	84.7	93.2
833	Twin Falls	103.4	57.5	81.3
834	Idaho Falls	100.6	67.1	84.5
835	Lewiston	112.2	90.3	101.7
836-837	Boise	101.2	84.8	93.3
838	Coeur d'Alene	114.2	67.9	91.9
ILLINOIS				
600-603	North Suburban	97.0	116.4	106.3
604	Joliet	96.9	113.6	104.9
605	South Suburban	97.0	116.4	106.3
606	Chicago	97.2	119.9	108.1
609	Kankakee	93.2	105.1	98.9
610-611	Rockford	96.5	105.5	100.8
612	Rock Island	93.9	96.1	95.0
613	La Salle	95.4	102.0	98.6
614	Galesburg	95.0	97.7	96.3
615-616	Peoria	97.9	100.2	99.0
617	Bloomington	94.2	101.1	97.6
618-619	Champaign	98.0	99.2	98.6
620-622	East St. Louis	93.1	104.1	98.4
623	Quincy	94.5	90.2	92.4
624	Effingham	93.9	97.1	95.4
625	Decatur	95.5	97.7	96.5
626-627	Springfield	95.3	97.7	96.4
628	Centralia	92.2	103.0	97.4
629	Carbondale	91.9	97.4	94.5
INDIANA				
424	Henderson	92.6	91.8	92.2
460	Anderson	97.3	85.8	91.8
461-462	Indianapolis	100.2	87.6	94.1
463-464	Gary	98.1	100.4	99.2
465-466	South Bend	96.7	84.9	91.0
467-468	Fort Wayne	97.4	85.5	91.7
469	Kokomo	95.6	84.6	90.3
470	Lawrenceburg	93.0	82.6	88.0
471	New Albany	94.6	81.2	88.2
472	Columbus	96.7	82.0	89.6
473	Muncie	97.1	84.5	91.0
474	Bloomington	98.8	82.7	91.1
475	Washington	94.9	88.0	91.6
476-477	Evansville	96.8	91.0	94.0
478	Terre Haute	97.0	90.3	93.8
479	Lafayette	96.5	85.3	91.1
IOWA				
500-503,509	Des Moines	97.4	84.4	91.1
504	Mason City	95.6	68.1	82.4
505	Fort Dodge	96.2	62.4	79.9
506-507	Waterloo	97.1	68.9	83.5
508	Creston	96.7	75.7	86.6
510-511	Sioux City	97.9	68.7	83.8
512	Sibley	96.2	62.1	79.8
513	Spencer	98.8	62.0	81.1
514	Carroll	95.4	69.9	83.1
515	Council Bluffs	98.5	75.5	87.4
516	Shenandoah	95.2	58.9	77.7
520	Dubuque	97.3	75.5	86.8
521	Decorah	96.6	67.5	82.6
522-524	Cedar Rapids	98.6	83.1	91.1
525	Ottumwa	96.7	75.5	86.5
526	Burlington	95.4	63.3	80.0
527-528	Davenport	97.6	89.8	93.8
KANSAS				
660-662	Kansas City	97.3	90.6	94.1
664-666	Topeka	97.0	73.9	85.9
667	Fort Scott	96.3	76.6	86.8
668	Emporia	95.9	68.5	82.7
669	Belleville	98.0	70.6	84.8
670-672	Wichita	96.2	75.4	86.2
673	Independence	97.7	58.4	78.8
674	Salina	97.6	68.2	83.4
675	Hutchinson	93.1	62.1	78.2
676	Hays	97.2	70.6	84.4
677	Colby	98.1	70.6	84.9

STATE/ZIP	CITY	MAT.	INST.	TOTAL
KANSAS (CONT'D)				
678	Dodge City	98.7	70.6	85.2
679	Liberal	96.9	58.4	78.3
KENTUCKY				
400-402	Louisville	95.3	84.4	90.1
403-405	Lexington	96.6	75.8	86.6
406	Frankfort	95.8	83.2	89.7
407-409	Corbin	94.2	54.8	75.2
410	Covington	95.0	91.3	93.2
411-412	Ashland	93.0	98.7	95.7
413-414	Campton	95.1	54.8	75.7
415-416	Pikeville	95.8	73.1	84.9
417-418	Hazard	94.4	54.8	75.4
420	Paducah	93.0	88.2	90.7
421-422	Bowling Green	95.1	83.0	89.3
423	Owensboro	95.0	85.6	90.5
425-426	Somerset	92.2	54.8	74.2
427	Elizabethtown	91.8	84.4	88.2
LOUISIANA				
700-701	New Orleans	99.8	72.2	86.5
703	Thibodaux	100.0	71.3	86.2
704	Hammond	97.0	69.8	83.9
705	Lafayette	99.3	66.9	83.7
706	Lake Charles	99.5	73.8	87.1
707-708	Baton Rouge	99.3	67.6	84.0
710-711	Shreveport	96.5	64.7	81.2
712	Monroe	96.2	63.4	80.4
713-714	Alexandria	96.3	61.2	79.4
MAINE				
039	Kittery	99.0	64.3	82.3
040-041	Portland	102.1	78.8	90.9
042	Lewiston	102.6	78.8	91.2
043	Augusta	101.5	59.6	81.4
044	Bangor	101.8	83.5	93.0
045	Bath	100.7	58.8	80.5
046	Machias	100.2	69.7	85.5
047	Houlton	100.4	63.4	82.6
048	Rockland	99.2	70.6	85.4
049	Waterville	100.8	59.6	81.0
MARYLAND				
206	Waldorf	97.1	79.2	88.5
207-208	College Park	97.2	83.9	90.8
209	Silver Spring	96.5	82.4	89.7
210-212	Baltimore	97.1	85.0	91.3
214	Annapolis	96.9	82.7	90.1
215	Cumberland	94.0	81.4	87.9
216	Easton	95.6	43.9	70.7
217	Hagerstown	94.4	82.2	88.5
218	Salisbury	96.1	58.3	77.9
219	Elkton	93.1	78.8	86.2
MASSACHUSETTS				
010-011	Springfield	102.8	107.9	105.2
012	Pittsfield	102.6	103.7	103.1
013	Greenfield	100.6	105.6	103.0
014	Fitchburg	98.9	118.1	108.2
015-016	Worcester	102.7	117.9	110.0
017	Framingham	98.7	125.0	111.3
018	Lowell	102.3	122.1	111.9
019	Lawrence	103.4	120.7	111.7
020-022	Boston	104.8	133.4	118.6
023-024	Brockton	103.7	120.0	111.5
025	Buzzards Bay	97.7	120.5	108.7
026	Hyannis	100.2	120.5	110.0
027	New Bedford	103.2	121.1	111.8
MICHIGAN				
480,483	Royal Oak	94.0	107.2	100.3
481	Ann Arbor	95.9	108.6	102.0
482	Detroit	97.4	113.7	105.2
484-485	Flint	95.8	102.8	99.2
486	Saginaw	96.1	97.4	96.7
487	Bay City	95.6	97.7	96.6
488-489	Lansing	95.6	99.2	97.3
490	Battle Creek	96.4	90.7	93.7
491	Kalamazoo	96.7	90.2	93.6
492	Jackson	95.2	94.2	94.7
493,495	Grand Rapids	96.3	73.2	85.2
494	Muskegon	96.5	88.7	92.8
496	Traverse City	94.5	84.0	89.5
497	Gaylord	95.9	91.0	93.6

7

PHYSICAL COLLOCATION (ACOI)
PROJECT LIFE CYCLE

PROPOSAL PREPARATION / PROJECT START

Ameritech

1. NECC Receives Alternate Exchange Carrier (AEC) application
   - Verify accuracy & completeness
   - Assign Service Order number
   - Forward To Collocation Coordinator

2. Collocation Coordinator determines if ACOI floor space available?
   - CSPEC
   - ARE Floor space manager
     - Administrative space
     - Floors without COE

3. ACOI Floor space available?
   - No floor space available
     - Inform AIIS Service Manager
     - Place AEC on waiting list
     - End of process
   - Floor space available
     - Verify to NECC

4. Obtain AEC Firm Order Confirmation
   - Collect Application Fee

5. Establish Undertaking in PE status

6. Schedule Walk-thru
   - Contact ASC Program Manager
     - Location
     - Date of walk-thru
     - UT #
     - AEC building requirements

ARE D&C Program Manager

7. Prepare Engagement
   - Forward for approval

8. Determine/Contact Project Manager
   - Forward Copy of Approved Engagement
   - Forward Collocation Database

9. Prepare/forward proposed COBO layout to Project Manager

10. Contact Ameritech Lock & Key Group

ARE D&C Project Manager

11. Prepare Environmental Consultant Engagement
    - Forward for approval

12. Perform sampling & Testing
    - Determine scope of abatement

13. Attend walk-thru (within 14 days of Firm Order Confirmation)

15. Prepare Central Office Build-Out Proposal
    - Cost estimate
    - Schedule
    - Scope Desription

16. Forward Proposal to Program Manager

ARE D&C Program Manager

16. Verify cost estimate & schedule
    - Forward to Collocation Coordinator
      - Within 7 days of walk-thru

Ameritech

17. Collocation Coordinator
    - Compile cost estimates
    - Prepare written proposal
      - Cost/Schedule
      - Forward to AIIS

18. Forward Written Proposal to Alternate Exchange Carrier

CENTRAL OFFICE BUILD-OUT

ARE D&C Program Manager

1. Update Engagement
2. Update Undertaking

ARE D&C Project Manager

3. Initiate abatement if required
   Prepare Environmental Consultant Change Order/Engagement
   Forward for execution
4. Prepare ACM removal documents
5. Review ACM removal documents
6. Bid/Award abatement
7. Prepare Environmental Contractor Engagement
   Forward for approval
8. Coordinate with regulatory agencies
9. Prepare work & safety plans
10. Pre-start (MOP)meeting
11. Perform abatement
    Monitor abatement
12. Prepare Environmental Close-out Documents
13. Assemble Environmental Close-Out Documents
14. Review Environmental Close-Out Documents
15. Process payment applications
16. Establish Commissioning Team
    Prepare Commissioning Plan
17. Initiate Design
    In-house / consultant
    Prepare Engagement
    Forward for approval
18. Prepare COBO construction documents
19. Review COBO construction documents
20. Bid/Award Project
21. Prepare Contractor Engagement
    Forward for approval
22. Pre-start (MOP) meeting
23. Perform COBO alterations
    Update schedule
24. Update record drawings
    Building base
    Forward copy to CSPEC

Collocation drawing
FIM drawing

25. Conduct final inspection
    PrepareCommissioning reports

26. Prepare "As-Built" drawings

27. AEC walk-thru (by Collocation Coordinator

28. Complete Punch List

29. Process payment applications

30. Project close-out

PHYSICAL COLLOCATION (ACOI)

DESIGN STANDARDS
Central Office Building Alterations

COBO (Central Office Build Out) alterations includes the following:

- Security fencing and locking to secure the Collocation area from Ameritech facilities including the provision of secure access to the Collocation area where feasible.
- Lighting
- HVAC
- (1) power receptacle on a dedicated circuit
- Upgrade of the fire detection system in the Collocation area to current Ameritech standards
- ". . . the Telephone Company's obligation is limited to providing such services in substantially the same fashion as it provides such services to itself in the building in which the Transmission Node is located"
- New Transmission Nodes shall be 9'-0" x 11'-0" where practicable. This size maximizes the usability of the area for the Customer

Transmission Node Enclosure

- 8'-0" high security fencing, as specified below, around a specific Customer's Transmission Node
- A lockable 3'-0" wide sliding gate will be provided for each Transmission Node Enclosure. Swinging gates will be used only when installation of a sliding gate is not practicable
- The exact location of the gate into a Transmission Node Enclosure will be coordinated with the Customer. However, at no time shall a gate be located in a position which will encumber further development of the collocation area.

Extraordinary Work

- All alterations required to prepare an area for Collocation or work requested by the Customer which is not specifically identified under COBO or Transmission Node Enclosure shall be considered Extraordinary work
- All extraordinary work requested by the customer must be approved by Ameritech
- Required Extraordinary work "may include but is not limited to: asbestos abatement, fire suppression system alterations or containment & conversion of non-Central Office space".

Security Separation

- Security separations will provided using 8'-0" high wire mesh security fencing
  - Mesh - 1 1/2" x 1 1/2 " nom. x 10 Ga.
  - All components except connector hardware to be factory painted
  - Gates to be 3-0" wide and of construction and finish equal to the security fencing
- Under no circumstances shall security separations installed for Collocation violate exiting requirements for any Ameritech or Collocation area
- Walls will be provided <u>only</u> when special separations such as fire separation or fire suppression system containment are <u>required</u>.

Locking

- The primary locking hardware used for Collocation will be keyed locks. Card readers or coded locks may be used for access to the main Collocation area or to secure doors along the secure access path if provided.
- Under no circumstances shall security devices installed for Collocation violate exiting requirements for any Ameritech or Collocation area
- Locking requirements will be reviewed by the Ameritech Security Lock & Key group
- Card access systems will be used only if already deployed within the building and only to secure Ameritech Network equipment areas
- Coded locks may be used to secure stairways used by the general building population

- Keyed locks will be used for securing support areas such as mechanical rooms and house service closets along the secure access path
- Keyed locks only, shall be used for securing Transmission Node Enclosures
- All keyed locks for the Collocation area shall accept Best cylinders and/or cores as manufactured by the Best Lock Corporation
- All lock cylinders and cores for the Collocation area and Transmission Node Enclosures will be provided by Ameritech. The standard cylinder will be a Best 1E74 for a 7 pin core
- Standard Locks
  - Sliding gate - Best 6S75 series gate lock with Best 1E74-C4 cylinder with R7 3/4" straight ring
  - Swing gate - Best 6S77 series gate lock with Best 1E74-C136 cylinder with B35103 straight ring
  - Other locks may be used but must accept and operate with the Best lock cylinder(s) specified above
- Requests for keys & access cards for Ameritech personnel and Customers will be made by Ameritech personnel

Electrical

- Lighting
  - Fixtures - 1' x 4' nom., 2-lamp, stem hung open fluorescent with reflector
  - Mounting height - 10'-0" A.F.F.
  - Number of fixtures - (1) fixture/50 s.f. (100 fc. nom.) of Transmission Node area
  - Stumble lighting - provide as required by building code in aisle/common areas
- Power
  - Receptacle - (1) 120vac duplex electrical receptacle on a dedicated 20A circuit / 100 s.f. of Transmission Node area
  - Mounting - receptacle to be mounted to building structure; mounting to security fencing, power poles & direct wiring to, or provisions for direct wiring to equipment bays is not permitted
  - Generator back-up - Not required
- Fire Detection
  - Update fire detection system in the Collocation Area to current Ameritech fire detection standards
  - Fire detection system upgrades for Collocation will be for the Collocation area only
  - Fire detection system alterations will be performed by Ameritech SecurityLink

Mechanical

- Environment provided for Collocation areas to be substantially equal to the environment provided for Ameritech Central Office Equipment in the building in which the Collocation area is provided
- Cooling loads shall be developed from equipment heat loads provided by the Customer
- Main distribution ductwork to be designed to 2 cfm/s.f. of Collocation area to be treated or Customer provided equipment heat loads; whichever is greater
- Mechanical Systems shall be designed in accordance with the AMERITECH STANDARDS & GUIDELINES, SECTION 04, MECHANICAL
- Temperature control systems used shall be those already deployed within the building

Miscellaneous

- All building alterations performed for Collocation shall be performed in accordance with applicable Ameritech standards and governmental regulations
- The area to treated for items such as asbestos abatement main air distribution & fire detection shall be determined by Ameritech
- Access to Ameritech facilities located within the Collocation area will be secured from access by Customers as required
- The availability and location of floor space available for Collocation within Ameritech Central Office Equipment areas shall be determined by the Common Systems Planning & Engineering Center (CSPEC)
- The availability of administrative space for use for Collocation shall be determined by Ameritech Strategic Planning

PROPRIETARY INFORMATION

AMERITECH COLLOCATION PROJECT

COBO SUMMARY

Page Number	State	Area	# Sites Bldrs. Ests.	# Sites COBO		COBO Estimates Arch.	Security	Elect.	Mech.	Other	Total	Remarks
1	Illinois	Chicago	11	17	Total	$44,375	$22,740	$19,525	$10,500	$7,500	$160,065	
					Average/Site	$4,034	$2,067	$1,775	$955	$682	$9,416	
2	Illinois	Metro	12	12	Total	$45,930	$21,315	$17,785	$14,985	$0	$100,015	
					Average/Site	$3,828	$1,776	$1,482	$1,249	$0	$8,335	
3	Illinois	Metro	5	5	Total	$20,525	$7,275	$9,200	$6,375	$0	$43,375	
					Average/Site	$4,105	$1,455	$1,840	$1,275	$0	$8,675	
	Illinois	Downstate	7	7	Total	$8,915	$15,030	$10,425	$16,025	$7,500	$57,895	
					Average/Site	$1,783	$3,006	$2,085	$3,205	$1,500	$8,271	
	Indiana		5	5	Total	$11,875	$7,400	$8,850	$25,800	$0	$53,925	
					Average/Site	$2,375	$1,480	$1,770	$5,160	$0	$10,785	
4	Michigan		24	25	Total	$64,391	$55,845	$41,235	$67,780	$2,375	$237,126	
					Average/Site	$2,683	$2,327	$1,718	$2,824	$99	$9,485	
5	Ohio	Cleveland	6	8	Total	$21,750	$12,525	$15,100	$35,500	$750	$85,625	
					Average/Site	$2,719	$1,566	$1,888	$4,438	$94	$10,703	
	Ohio	Columbus	7	7	Total	$18,500	$28,300	$14,350	$8,750	$0	$69,900	
					Average/Site	$2,643	$4,043	$2,050	$1,250	$0	$9,986	
	Wisconsin		6	6	Total	$21,500	$12,275	$11,550	$15,500	$0	$60,825	
					Average/Site	$3,583	$2,046	$1,925	$2,583	$0	$10,138	
					Grand Total	$257,761	$182,705	$148,020	$201,215	$18,125	$868,751	
	Total Sites		85	92	COBO Averages	$3,032	$2,149	$1,741	$2,367	$213	$9,443	

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In The Matter Of:

Review of Ameritech Ohio's Economic Costs for Interconnection

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August H. Ankum
February 7, 1997
** CONFIDENTIAL **

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Word Index included with this Min-U-Script®

A: Yes.
Q: Have you talked to any real estate agents in Ohio about commercial rents?
A: No, I've not.
Q: In your view, Dr. Ankum - I know you're not a real estate agent, but in your view, is there no appreciable difference between a local exchange company's central office and a residential space in terms of the commercial rent - or the rents for those spaces?
A: Well, central offices are typically not for rent, and so there is no well-established market price. I think that's one of the problems we're dealing with.
Q: Okay. When you say they're typically not for rent, does that mean they're a single-owner/single-occupant building?
A: The- what I mean by that is that local exchange companies are only allowing physical collocation because the FCC has found they have to make such space available.
If it weren't for FCC findings on that, local exchange companies would not rent out their spaces, so that's what I mean by there

really is no market for that because that product, if you wish, is deliberately held from the market.
Q: So absent these FCC directives, we're talking about single-tenant space.
Would you agree with me on that?
A: Yes.
Q: Are you familiar with the term of a special-purpose project or special-purpose construction?
A: I can conjecture what it means.
Q: But that's not a term that you've run across in your professional experience as an economist?
A: It's not part of the standard economic jargon.
Q: Do you know if appraisers of real estate use different appraisal standards or different techniques, different classifications to appraise special-purpose projects?
A: I would imagine they do.
Q: Do you know if banks in classifying their construction lending practices separately classify special-purpose projects from other

classifications?
A: I would think they do.
Q: And I take it you're familiar that banks of course separately classify commercial lending projects from residential loans?
A: I would think they do.
Q: I don't want you to speculate, but do you have an understanding as to why banks and real estate appraisers make those separate classifications?
A: When you make loans, what is critical in making the loan is an assessment of risk, and one of the reasons why you want to distinguish is because the risk characteristic may be different.
Q: Commercial lending projects generally have a higher risk?
A: They may have a higher risk depending on who the customer is.
Q: Do special-purpose projects have more risk than general commercial?
A: It may or may not. It depends on who's involved. If it's the Federal Reserve, I think it would be well below.

MR. TOWNSLEY: If you could- I don't think I heard a clarification about what you mean by a special-purpose project.
MR. BINNIG: Well, I think the witness understands the general distinction that I make.
BY MR. BINNIG:
Q: Based on how you would use the term, would you consider a local exchange company's central office to be a special-purpose type of project?
A: Yes.
Q: Do you know if the FDIC or the Office of Thrift Supervision use special classifications for special-purpose projects?
A: I would think they do.
Q: For the same reasons you talked about with respect to different risk characteristics with respect to bank lending departments?
A: Yes.
Q: And what's your understanding of why real estate appraisers would classify separately a special-purpose project for the purpose of appraising - assigning a value to that project