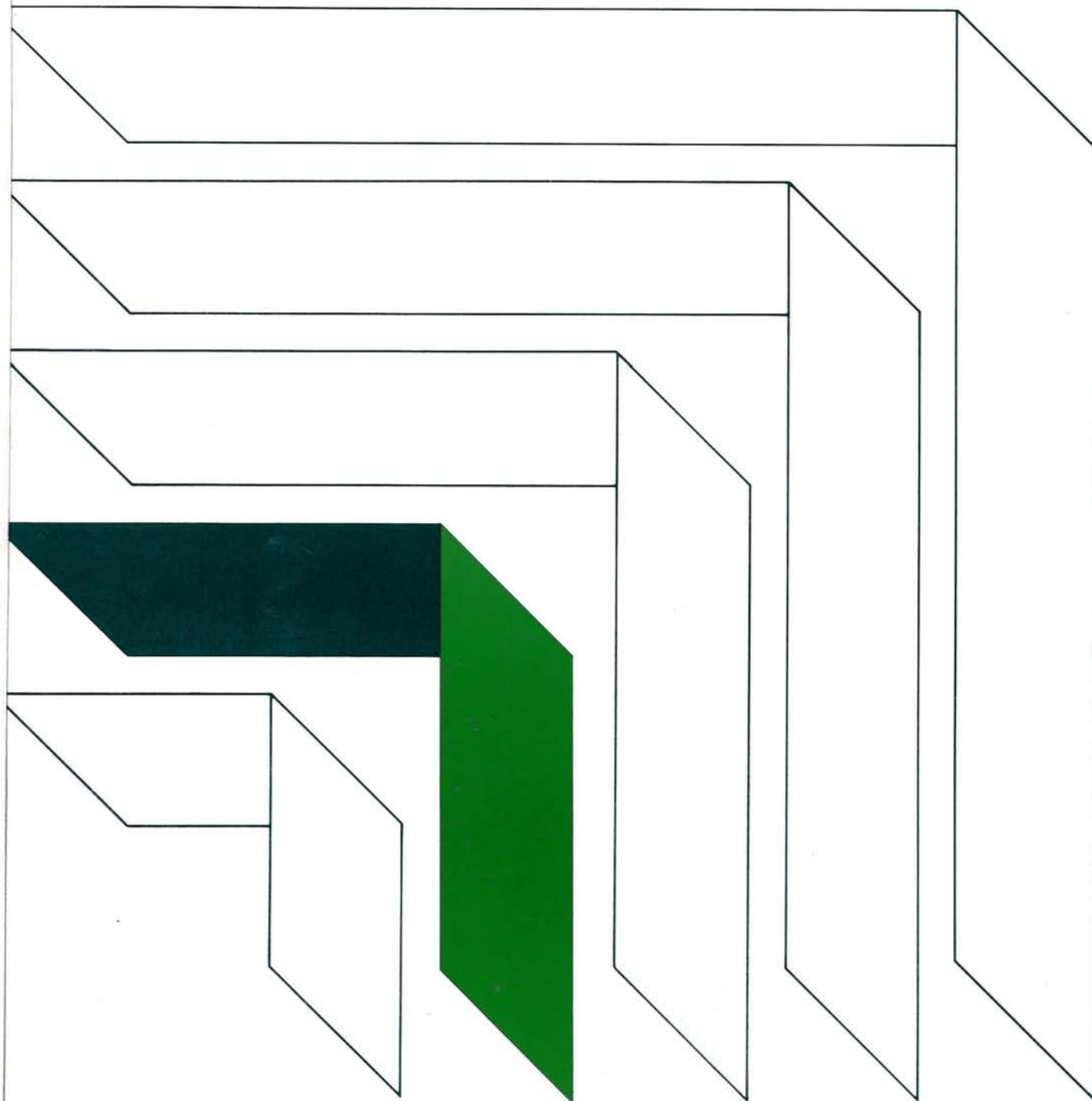


COMPENSATION MANAGEMENT: A GUIDELINE FOR SMALL FIRMS

Peter A. Piven, FAIA



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Foreword

This book represents an effort by the Institute to address the concerns of small firms about the seemingly formidable and imposing concepts of cost-based compensation. To reduce the mystique of this methodology, this work provides shortcuts and abbreviated examples of how compensation can be determined and alternative courses of action for evaluating and re-evaluating the fee proposal to the prospective client.

Compensation Management also discusses the differences between cost-based compensation and value-based compensation, recognizing that the nature of the services offered to the client can have a significant impact on the feasibility of the project itself.

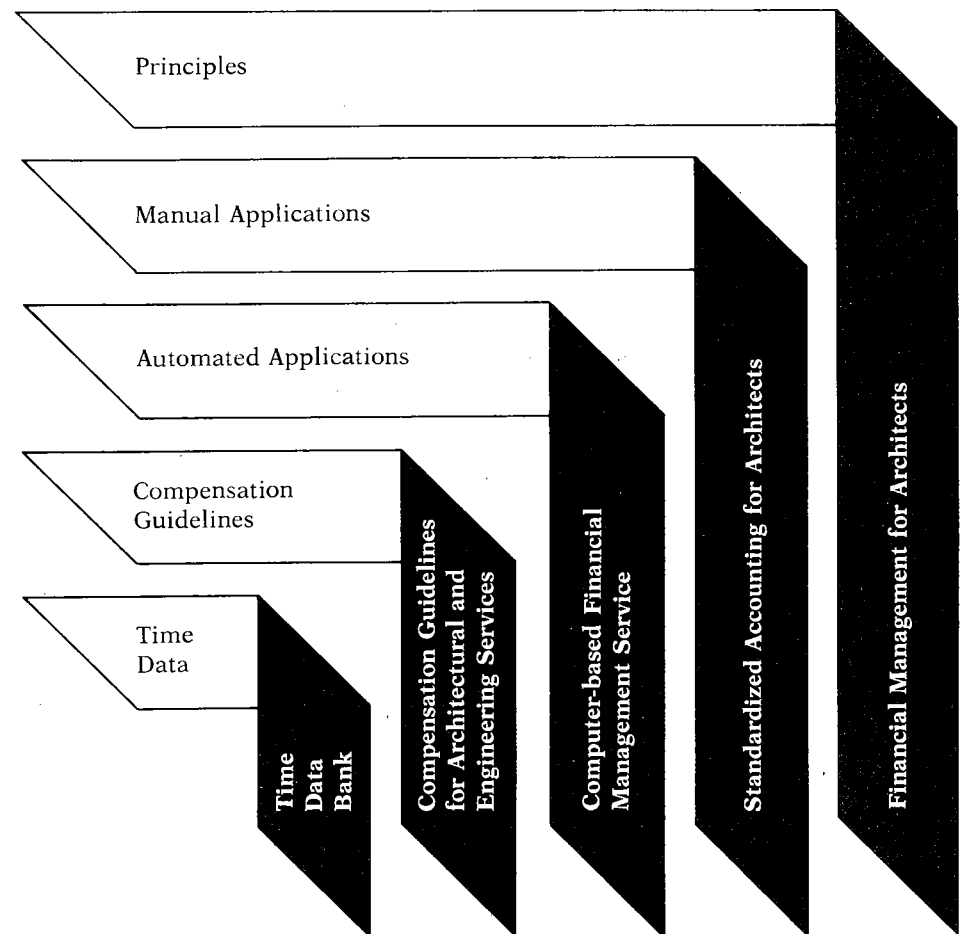
The book should serve many functions: a primer, a checklist, a negotiation tool and an effective method of negotiating an equitable fee.

Robert M. Lawrence, FAIA

1982 President

The American Institute of Architects
Washington, D.C.

COMPONENTS OF THE AIA FINANCIAL MANAGEMENT SYSTEM



Preface

In 1975 The American Institute of Architects published *Compensation Management Guidelines for Architectural Services* which set forth a rational process for relating compensation to the cost of performing services. The need for greater simplicity, comprehensiveness and uniformity of detail led to the second edition, *Compensation Guidelines for Architectural and Engineering Services*. It became the first component of the AIA Financial Management System, which comprises:

1. Principles;
2. Manual Applications;
3. Automated Applications;
4. Compensation Guidelines, and
5. Time Data.

"Principles" in the form of the book *Financial Management for Architects*, published in 1980, sets forth basic theories and applications. "Manual Applications," presented in the form of the new Third Edition of *Standardized Accounting for Architects*, together with its inter-related accounting forms, spells out uniform manual accounting procedures specifically designed for small and medium-sized offices and is coordinated with the automated mode for later transfer.

The Computer-based Financial Management Service (CFMS®), in use since 1971, is available by subscription, and provides not only automated applications of financial management, but also a comprehensive project control system and a fully integrated accounting system. An overview of the Service is found in the publication *CFMS: An Introduction*.

Compensation Management: A Guide-line for Small Firms along with *Compensation Guidelines for Architectural and Engineering Services* and its two supplements, make up the fourth component. The final component, "Time Data," describes the companion to *Compensation Guidelines*, the *AIA Time Data Bank*,

which reports the amounts of time required to provide professional services for a wide variety of projects. Its purpose is to provide an accessible data base for checking time requirements for new projects.

This book has been developed to help architects in small firms in their use of the principles and applications of compensation management. It consists of an Introduction and Summary discussing the principles of determining compensation, the Compensation Management Method describing the process, and a Case Study illustrating each step.

It is more important than ever that the architect be properly compensated for providing the level of services expected. These Guidelines present a rational, consistent and accountable system for determining and managing proper compensation.

Peter A. Piven, FAIA

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AIA Financial Management Task Force

James A. Greene, FAIA, Chairman,
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William D. Hooper, Jr., AIA, Staff
Advisor
Washington, D.C.

AIA Board of Directors

R. Bruce Patty, FAIA, Commissioner
Kansas City, Mo.
Henry W. Schirmer, FAIA,
Topeka, Kan.

Contributing Reviewers

Charles McCafferty
Charles Terrence McCafferty
& Associates
Detroit
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Heacock/Hoellrich Architects Inc.
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Kell Dixon
Lawrence Leis
Louis & Henry Inc.
Louisville, Ky.
Charles Sides
Sides & Pope
Macon, Ga.
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SMP Architects, P.C.
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COMPENSATION MANAGEMENT:
A GUIDELINE
FOR SMALL FIRMS

1 Introduction and Summary

The American Institute of Architects has developed an approach for managing compensation based on the cost of providing services. The approach was first described in 1975 in *Compensation Management Guidelines for Architectural Services* and then updated in 1978 as *Compensation Guidelines for Architectural and Engineering Services*. This book condenses explanations, simplifies procedures and makes the approach more usable by architects in small firms.

This approach to compensation management is not a method of compensation; it is a method for *determining compensation* and for *managing the process*. It is a process for determining what is to be done, how long it will take and how much it will cost. The procedure involves eight steps.

Used to best advantage, the cost-based compensation approach allows the client and the architect to develop a full

understanding of the broad range of services that the architect can offer and the elements that make up the architect's costs. For the architect who chooses to approach this topic without the client's involvement, the book provides specific information about the all-important relationship between services and compensation.

Other advantages also accrue. Documentation of the services, time and cost requirements of the project provides valuable information to assist the architect in:

1. Monitoring the actual costs of providing services;
2. Estimating costs for services on future projects;
3. Identifying the need for revising services, and
4. Renegotiating compensation to account for changes in scope.

COMPENSATION PRINCIPLES

A contract is an agreement between two parties: an architect and a client. In an agreement for services, the architect agrees to perform certain services in exchange for a consideration; that consideration is compensation. Compensation must cover the architect's expenses and should also yield a profit.

Expense is either direct (project) expense or indirect (overhead) expense. To ensure that each project contributes to the indirect expenses of the firm, these indirect expenses generally are allocated among all current projects, usually in proportion to direct salary expense. Direct expenses include salaries of principals and employees working on the project, outside services (e.g. consultants) expense and other direct expenses (e.g. non-reimbursed reproductions).

Reimbursement for expenses incurred by the firm on behalf of the project is considered separate from, and in addition to, compensation for services. These items are cited in the agreement and may include costs for reproductions, transportation, long distance telephone calls, postage and handling, etc. Whether or not an item is a direct or reimbursable expense will be determined by the architect and the client and will be documented in the agreement. Any item specifically required for the project and not included within the reimbursable expense category must be considered a direct expense to be covered by project compensation.

Profit is the excess of revenue over expense. Project profit is the difference between compensation and expenses, direct and indirect, including reasonable salaries for principals. Profit provides reward for professional and financial risk and return on investment. Each project should contribute profit to the firm.

1. Confirming the project scope



2. Identifying services needed



3. Estimating time to complete services



4. Calculating costs



5. Estimating reimbursable expenses



6. Determining method of compensation



7. Negotiating the agreement



8. Monitoring project progress



EXHIBIT 1. PAYMENTS TO THE FIRM FOR PROFESSIONAL SERVICES

Compensation			
Expense			Profit
Type	Direct Expense	Indirect Expense	
Personnel Expense (Principals and Employees)	Direct Personnel Expense (Direct Salary Expense plus Benefits)	Indirect Personnel Expense (Indirect Salary Expense plus Benefits)	
Outside Services Expense	Direct Outside Services Expense	Indirect Outside Services Expense	
Other Expenses	Other Direct Expense (Nonreimbursable)	Other Indirect Expense	
Reimbursable Expense			and Contingency

It is impossible to determine in advance (that is at the time compensation is negotiated) *exactly* what expenses will be incurred. Therefore, when *planning* profit a contingency should be considered to cover expenses not included for whatever reason. Expenses excluded might be such things as contributions, interest expense and promotional expense that a client might disallow. Since incurred expenses not allowed as either direct or indirect will reduce actual profit, the amount planned for profit must take these anticipated expenses into account.

When planning profit, it is wise to consider an appropriate fee for assuming overall technical and financial responsibility for consultants' services provided

to the client through the architect; such a fee may be calculated as a markup on the amount of consultants' services. This markup is to provide for the architect's additional overhead and profit, not for coordination effort, which should be included and compensated as services.

The amount of profit planned for a project should relate not only to the circumstances of the project such as its size, schedule and difficulty, but also to the overall financial objectives of the firm. Actual profit may or may not equal planned profit. Ineffective project management, incorrect estimating, uncontrollable project circumstances and other factors often cause profit to fall short of the amount planned—all the more reason to estimate carefully,

include appropriate contingencies, negotiate skillfully and manage well.

The reader is cautioned that the practices and conditions illustrated in the examples and Case Study may be considered good or bad depending on other conditions of a particular firm, and that the book suggests procedures, not rules of thumb or specific numerical guidelines.

2 Compensation Management Method

Compensation management is a method for determining compensation and for managing the process. To determine the level of compensation the architect confirms the project *scope* with the owner, identifies the *services* thought to be necessary to accomplish the project, estimates the amount of *time* and *cost* required to provide services and adds an amount for *planned profit*. Mindful of the appropriate compensation, the architect negotiates the agreement and monitors project progress based on the planned services, time and cost.

STEP 1. CONFIRM THE PROJECT SCOPE

Generally, project scope is determined by the client who has sought the architect for a particular project. Examples include a small commercial building, life-safety improvements for a nursing facility, classroom addition to a primary school or space analysis and plan for a law firm. The architect should discuss and document the scope with the client to ensure that both understand what is included. The issue is to define the scope with sufficient clarity for the architect, with or without the owner's participation, to estimate the services required to accomplish the project.

STEP 2. IDENTIFY SERVICES NEEDED

Plan the project, considering all the tasks that are likely to be required to complete the project. Either alone or with the client, the architect should determine and record the services to be

provided and the assignment of responsibility as to architect, consultant and owner.

For ease in identifying services and to enhance standardization of record-keeping, a wide range of services has been classified into nine categories. They include the five traditional sequential phases: Schematic Design, Design Development, Construction Documents, Bidding or Negotiation and Construction Contract Administration. These have been supplemented with three additional phases: Pre-design, Site Analysis and Post-construction. A non-sequential phase entitled Supplemental Services is provided for those services usually not restricted to a particular sequential phase.

STEP 3. ESTIMATE TIME

With a clear understanding of the work required, estimate the time required to perform each task included as part of the list of services. This step is the most difficult in the procedure—estimating the number of direct hours for providing each item of service or group of services. Toward this end, it is most helpful to have a record of tasks on similar past projects. Unfortunately, the nature of small firm practice is such that adequate records rarely exist—because the firm is new, has not kept records or has not had similar work before. Fortunately, alternate short cut methods will serve equally well.

In the most detailed method, the architect estimates the hours required for each *task* such as project administration, design, estimating, presentations, and supervision.

Example:

On a given project the architect might estimate:

Project Administration, including management meetings, team supervision etc.	100 hrs.
Design	100 hrs.
Documentation (all phases)	500 hrs.
Specifications	50 hrs.
Shop drawing review/In-house Construction Administration	200 hrs.
On-site observation/Job meetings	50 hrs.

A simpler method requires the architect to estimate the *roles* needed for each phase, such as project manager, designer, etc., recognizing that the manager and designer may be responsible for more than one task.

Example:

Knowing that the architect will retain the managerial role and will assign the design, documentation and construction administration roles to one or more people, the architect might estimate the project hours as follows:

Manager	400 hrs.
Designer	200 hrs.
Producer	800 hrs.
Construction Administrator	400 hrs.

The simplest, most direct method calls for the architect to estimate the hours required for each *phase*, such as Schematic Design or Design Development, by determining the calendar schedule for each phase and assigning the individuals who will be working on the project during that phase, regardless of specific task or discipline.

The Phase/Service Matrix, AIA Form F860, Exhibit 2, shows the interrelationship of the designated services by phases. By blacking the circle of selected services, the matrix may be used to identify those services on a specific project which will be estimated and on which personnel time will be recorded.

PHASE/SERVICE MATRIX

Project # _____

Project _____

	PHASE 1: PREDESIGN SERVICES	PHASE 2: SITE ANALYSIS SERVICES	PHASE 3: SCHEMATIC DESIGN SERVICES	PHASE 4: DESIGN DEVELOPMENT SERVICES	PHASE 5: CONSTRUCTION DOCUMENTS SERVICES	PHASE 6: BIDDING OR NEGOTIATIONS SERVICES	PHASE 7: CONSTRUCTION CONTRACT ADMINISTRATION SERVICES	PHASE 8: POST- CONSTRUCTION SERVICES	PHASE 9: SUPPLEMENTAL SERVICES	PHASE 9: (CONT'D) SUPPLEMENTAL SERVICES
	1	2	3	4	5	6	7	8	9a	9b
A	.01 Project Administration	.01 Project Administration	.01 Project Administration	.01 Project Administration	.01 Project Administration	.01 Project Administration	.01 Project Administration	.01 Project Administration	.61 Special Studies	.79 Materials and Systems Testing
B	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.02 Disciplines Coordination/Documentation/Check	.62 Renderings	.80 Demolition Services
C	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.03 Agency Consulting/Review/Approval	.63 Model Construction	.81 Mock-up Services
D	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.04 Owner-supplied Data Coordination	.64 Life Cycle Cost Analysis	.82 Still Photography
E	.13 Site Analysis and Selection	.21 Architectural Design/Documentation	.21 Architectural Design/Documentation	.21 Architectural Design/Documentation	.21 Architectural Design/Documentation	.34 Bidding Materials	.41 Office Construction Administration	.50 Maintenance and Operational Programming	.65 Value Analysis	.83 Motion Pictures and Videotape
F	.14 Site Development Planning	.22 Structural Design/Documentation	.22 Structural Design/Documentation	.22 Structural Design/Documentation	.22 Structural Design/Documentation	.35 Addenda	.42 Construction Field Observation	.51 Start-up Assistance	.66 Quantity Surveys	.84 Coordination with Non-Design Professionals
G	.15 Detailed Site Utilization Studies	.23 Mechanical Design/Documentation	.23 Mechanical Design/Documentation	.23 Mechanical Design/Documentation	.23 Mechanical Design/Documentation	.36 Bidding/ Negotiations	.43 Project Representation	.52 Record Drawings	.67 Detailed Construction Cost Estimates	.85 Special Disciplines Consultation
H	.16 On-site Utility Studies	.24 Electrical Design/Documentation	.24 Electrical Design/Documentation	.24 Electrical Design/Documentation	.24 Electrical Design/Documentation	.37 Analysis of Alternates/ Substitutions	.44 Inspection Coordination	.53 Warranty Review	.68 Energy Studies	.86 Special Building Type Consultation
I	.17 Off-site Utility Studies	.25 Civil Design/Documentation	.25 Civil Design/Documentation	.25 Civil Design/Documentation	.25 Civil Design/Documentation	.38 Special Bidding Services	.45 Supplemental Documents	.54 Postconstruction Evaluation	.69 Environmental Monitoring	
J	.18 Environmental Studies and Reports	.26 Landscape Design/Documentation	.26 Landscape Design/Documentation	.26 Landscape Design/Documentation	.26 Landscape Design/Documentation	.39 Bid Evaluation	.46 Quotation Requests/ Change Orders	.70 Tenant-related Services	.71 Graphics Design	
K	.19 Zoning Processing Assistance	.27 Interior Design/Documentation	.27 Interior Design/Documentation	.27 Interior Design/Documentation	.27 Interior Design/Documentation	.40 Construction Contract Agreements	.47 Project Schedule Monitoring			
L		.28 Materials Research/ Specifications	.28 Materials Research/ Specifications	.28 Materials Research/ Specifications	.28 Materials Research/ Specifications		.48 Construction Cost Accounting		.72 Fine Arts and Crafts Services	
M	.29 Project Development Scheduling	.29 Project Development Scheduling	.29 Project Development Scheduling	.29 Project Development Scheduling	.30 Special Bidding Documents/ Scheduling		.49 Project Closeout		.73 Special Furnishings Design	
N	.31 Project Budgeting	.32 Statement of Probable Construction Cost	.32 Statement of Probable Construction Cost	.32 Statement of Probable Construction Cost	.32 Statement of Probable Construction Cost				.74 Non-Building Equipment Selection	
O	.33 Presentations	.33 Presentations	.33 Presentations	.33 Presentations	.33 Presentations				.75 Project Promotion/ Public Relations	
P									.76 Leasing Brochures	
Q									.77 Expert Witness	
R									.78 Computer Applications	

Example:
The architect might estimate a project schedule, (not budgeted hours):

Schematic Design	4 weeks, 160 hours
Development	6 weeks, 240 hours
Construction Documents	12 weeks, 480 hours
Bid/Negotiation	4 weeks, 160 hours
Construction	40 weeks, 1600 hours

Then, by anticipating the specific individuals or staff levels assigned or likely to be assigned, the architect can estimate costs. The first two phases might be:

<i>Schematic Design—</i>	
<i>4 weeks, 160 hours</i>	
Principal @ ¼ time (25% x 160)	40 hours
Employee @ full time (100% x 160)	160 hours
<i>Design Development—</i>	
<i>6 weeks, 240 hours</i>	
Principal @ ¼ time	60 hours
Employee @ ½ time	120 hours
Employee @ full time	240 hours

The first estimate is crucial and should be as accurate as possible and should reflect caution about planning on unrealistic and unachievable schedules.

STEP 4. CALCULATE COST

Simply stated, cost is determined by calculating salary expense, applying a multiplier to cover indirect (overhead) expense and adding the costs of non-reimbursed direct expenses including outside services.

The major cost element in providing services is salaries paid to principals and staff for work on projects. Depending on the firm's custom and preference, salaries paid for work on projects can be accounted either as direct salary expense (DSE), which is payroll expense,

or direct personnel expense (DPE), which is payroll expense plus mandatory and customary benefits. A full exposition of the relationships and calculations for DSE and DPE appears in *Financial Management for Architects*.

Substep 4.1— To calculate salary expense, assign dollar values to services by using the rates for specific individuals, for staff levels or firm-wide salary averages. If records are kept by task or if required task efforts can be accurately estimated, apply these rates to the hours estimated for each task.

Example:
"Code Review" 10 hours by Jones @ \$8/hour = \$80.00

If better results can be achieved by estimating overall schedules, apply rates to those schedules.

Example:
"Schematic Design" 4 weeks @ 40 hours = 160 hours by Jones @ \$8/hour = \$1280.

If the architect is accustomed to accounting direct salaries as direct personnel expense, DPE can be used in place of direct salary expense (DSE).

Example:
With a DPE factor of 1.25, Jones' DPE rate @ 1.25 = \$8.00 x 1.25 = \$10.00.
"Code Review," 10 hours by Jones @ \$10.00/hour = \$100.00

Note that the *total expense to the firm will be the same whether DSE or DPE is used*, since inclusion of the benefits portion of overhead in DPE will reduce the amount of applied indirect expense in subsequent calculations.

Alternatively, salary expense can be estimated in other ways, such as analyzing drawing requirements. Estimate the number of drawings required for construction documentation by preparing a dummy or mock-up of the construction documents package likely to be produced. Apply direct salary expense (or direct personnel expense) to the total,

either as hours per sheet converted to dollars, or as direct salary expense per sheet. Extrapolate from the construction documents the effort likely to be required for other phases. Some firms may keep records which could be researched to produce other useful compensation data such as direct salary expense (or total compensation) per square foot by building type, or per room or other unit.

Substep 4.2— Apply an appropriate multiplier to cover indirect expenses. This is most easily accomplished by applying the indirect expense factor or ratio, which most firms determine on an annual basis by dividing total indirect expense by direct salary expense (or direct personnel expense if DPE is used as the base in cost accounting).

Example:
For a firm with an indirect expense ratio of 130% or 1.30, \$80 in direct salary expense yields \$80 x 1.30 or \$104.00 in indirect expense. \$80 plus \$104 = \$184 total. Note that this is identical to \$80 x 2.30.

In another approach, total indirect expense can be added to total direct salary expense as a lump sum by considering the portion of the firm's overhead that this project must bear.

Example:
The firm expects to produce 3 projects during the year and has estimated its overhead to be \$75,000. A portion of the \$75,000 is assigned to each project. The conventional basis for such allocation is proportional to the direct salary expense (or direct personnel expense) of each project. Another way would be by equal allocation, i.e. \$25,000 to each of 3 projects.

Substep 4.3— Add the cost of non-reimbursed direct expenses estimated to be required for the project.

EXHIBIT 3. PHASE COMPENSATION WORKSHEET

PHASE COMPENSATION WORKSHEET															PHASE 5: CONSTRUCTION DOCUMENTS SERVICES				
SERVICE	5.01	5.02	5.03	5.04	5.21	5.22	5.23	5.24	5.25	5.26	5.27	5.28	5.30	5.32	5.33				
	Project Administration	Disciplines Coord./ Document Checking	Agency Consulting/ Review/Approval	Owner-supplied Data Coordination	Architectural Design/ Documentation	Structural Design/ Documentation	Mechanical Design/ Documentation	Electrical Design/ Documentation	Civil Design/ Documentation	Landscape Design/ Documentation	Interior Design/ Documentation	Materials Research/ Specifications	Special Bidding Documents/Scheduling	Statement of Probable Construction Cost	Presentations				
IN-HOUSE PERSONNEL	Hrs.															TOTAL HOURS	TOTAL DOLLARS	ITEM	LINE
	\$																	@ \$	1
	\$																	@ \$	2
	\$																	@ \$	3
	\$																	@ \$	4
	\$																	@ \$	5
SUB TOT.	Hrs.																	Direct In-house Salary Expense	6
	\$																	Direct Personnel Expense	7
																		Indirect Expense	8
																		Other Nonreimbursable Direct Expense	9
																		Total In-house Expense	10
OUTSIDE	Hrs.																	Outside Services Expense	11
	\$																	Estimated Total Expense	12
REMARKS																		Contingency	13
																		Profit	14
																		Proposed Compensation	15
																		Estimated Reimbursable Expense	16

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To help develop and tabulate this information, AIA Forms F820-829 (Phase Compensation Worksheet) are available. The forms have been developed for maximum flexibility. They may be applied to large or small, complex or simple projects, and with detailed or more generalized breakdowns of estimated time and cost.

Standard agreement forms define and identify normal reimbursable expenses. Even if the architect expects to model an agreement on the standard form, the expense of certain items still will need to be considered as part of compensation. Ordinarily, these would include the expense of reproductions for the architect's in-office use; duplicate sets for the owner at the end of each phase, if agreed; local travel, etc. If in negotiating compensation the client objects to separate consideration of reimbursable expenses, and the architect agrees, then the estimated cost of normal reimbursable expenses must be added to compensation.

It is to the architect's advantage to encourage the client to pay reimbursable expenses separately from other direct expenses.

Substep 4.4— Add the cost of any outside services such as engineering consultation, cost estimating or other required services not provided with in-house forces. Discuss the project with the consultant(s) and request lump sum proposals, preferably measured in the same units as the architect's, i.e. by task, discipline or phase. It is preferable to have consultants identify their costs in detail, rather than having the architect estimate consultants' costs or having the consultant base them on a percentage of the architect's compensation. Identification of specific expenses provides a better understanding of the services to be provided and of the necessary interrelationship among architect, consultant and client. It provides useful information to aid in estimating compensation and, just as important, in negotiating with the client.

Apply a markup, if appropriate, to cover the responsibility and risk associated with providing outside services.

Example:
Total outside services expense \$10,000
Markup @ 15% (for example) \$ 1,500

Substep 4.5— Add Contingency. A contingency should be included to account for imperfection in estimating time, inability to project rates with absolute accuracy and/or failure to estimate exactly the cost of other direct expenses. Inevitably, actual project conditions will be different from those projected. The schedule may be extended slightly; the persons expected to be assigned may be required on other projects and other, more highly paid persons may actually do the work; it may take more time to accomplish certain tasks than was estimated; certain additional minor tasks not warranting contract renegotiation may have to be performed; certain overhead expenses may rise unexpectedly, thereby raising the actual indirect expense ratio.

In short, estimates are not perfect; they may be accurate, but they are not likely to exactly predict actual performance. A contingency should be added to account for unanticipated conditions.

Contingent amounts can be included by increasing the number of hours or the hourly rate estimated for each task or discipline; adding an additional amount as a percentage of each phase subtotal, or adding an additional amount as a percentage of total estimated expense or as a percentage of compensation. *For ease in calculation, add to the total at the end; for safety in negotiation, add to hours and rates for individual tasks.*

Example 1:
"Code review," 10 hours; increase to 11 hours, or "Code review," 10 hours by Jones @ \$8.00 = \$80; increase to \$88.

Example 2:
"Schematic Design," \$1280; increase to \$1400.

Example 3:
Total Cost \$40,000; Contingency @ 10% = \$4,000, or Compensation \$50,000; Contingency @ 12% = \$6,000

Contingent amounts should be based on the relative difficulty of the task and the clarity of the scope. They should not be used to account for elements of work outside the original agreement. Services performed under an expanded scope of services (added to the original project) should be treated as precisely that—Additional Services—and additional compensation should be negotiated.

Substep 4.6— Add profit. Every professional is entitled to profit as a reward for risk and return on investment. Profit is required to ensure that the firm survives and continues to serve present and future clients. For the firm to be profitable, projects must be profitable. Calculate the amount of profit recognizing the services being performed, the benefit to the client, the firm's profit plan, the project risks and the conditions prevailing in the marketplace.

Add the amount planned for profit on the basis of a percent of total cost, percent of total compensation or lump sum. Consider adding an amount as a markup on the value of outside services for assuming the professional and financial responsibility for those services.

Example 1:
Total expense
(including outside services) \$40,000
Profit @ 16% 6,400
Compensation \$46,400

Example 2:
In-house expense \$30,000
Profit @ 20% 6,000
Outside services expense 10,000
Markup @ 15% 1,500
Compensation \$47,500

Note that profit calculated as a percentage of cost will yield a lesser percentage of total compensation. Architects accustomed to planning profit for the firm as a percentage of revenue (and project profit as a percentage of compen-

sation) should exercise care in formulating the amount.

Example:
 Total expense \$40,000
 Profit @ 16% 6,400
 Compensation 46,400
 Profit = 16% of Expense
 Profit = 13.8% of Compensation

To determine the amount required to yield a percentage of compensation use:
 Expense (E) + x % Compensation (C) = Compensation (C)

Example:
 To calculate profit at 16% of compensation where expense is \$40,000:
 $\$40,000 + .16C = C$
 $C - .16C = \$40,000$
 $.84C = \$40,000$
 $C = \$47,619$
 Profit = $.16C = \$7,619$

STEP 5. ESTIMATE REIMBURSABLE EXPENSE

Language common to many standard agreements reads "Reimbursable expenses are in addition to the compensation for (Designated and Additional) Services and include actual expenditures made by the architect and the architect's employees and consultants in the interest of the project . . ." (AIA Document B141, *Standard Form of Agreement Between Owner and Architect*). This language supports the underlying principle of cost-based compensation that compensation should be calculated on the basis of the cost of providing services. Expenditures made in the interest of the project, sometimes referred to as out-of-pocket expenses, are not part of the architect's costs in providing services, and therefore should not be included in compensation but identified separately. It is useful to estimate the value on some reasonable basis such as cost of trips, drawing packages to be reproduced, etc.

Example:
Travel:
 40 trips of 50 miles @ \$.25/mile \$500.00
 3 overnight stays @ \$100/night 300.00
 3 per diem expenses @ \$50 150.00
 Subtotal \$950.00
Reproductions:
 6 Schematic Design sets of 5 drawings @ 12 sq ft X .10/sq ft \$ 36.00
 6 Design Development sets of 10 drawings @ 12 sq ft X .10/sq ft 72.00
 30 Construction Document sets of 20 drawings @ 12 sq ft X .10/sq ft 720.00
 Specifications, 30 copies @ \$15 450.00
 Subtotal \$1,278.00

Also, consider applying a markup to the value of the reimbursable expenses to cover the administrative cost incurred in handling them.

STEP 6. DETERMINE THE METHOD OF COMPENSATION

The method (or methods) of compensation chosen depends on a number of factors. The following criteria are commonly used in evaluating compensation methods:

- Does it permit the architect to recover costs and net an adequate profit, assuming reasonably efficient office and project management? Adequate profit depends on the specific conditions of the project and the management objectives of the firm.
- Does it accurately reflect the *value* of the particular architect's services to the client? Value-based compensation may be greater than the cost-based calculations, due to the special services to the client.

- Does it provide for compensation increases brought about because of changes in the scope of services or factors outside the architect's control? The architect may encounter client delays as well as labor disputes which may affect the delivery of services.
- Does it allow for compensation increases due to rising costs of providing services? During the course of a long project, staff salary and other cost increases are not uncommon.
- Could it create legal problems? Certain governmental clients may have highly restrictive methods of determining compensation.
- Does it encourage the client to cooperate fully in advancing the project? Close cooperation between the architect and the client allows the client to monitor evolving conditions of the project.
- Does it act as an incentive to draw from the architect high quality design, technical competence and managerial efficiency? Certain methods of compensation limit the amount of compensated time which may be spent on the project.
- Is it easy to understand and simple to use? A discussion of the chosen method can allay concerns of the client about how the proposed fees were determined and will be calculated during the life of the project.
- Does it allow the client to predetermine the costs for services? The client may be interested in estimating the total compensation. This will be possible if the scope of services and schedule are clearly determined.
- Does it provide for adequate cash flow? A retainer at the outset and subsequent periodic billing, when used in conjunction with the method of compensation, serve to prevent interruptions to the project and placement of the firm in the role of creditor to the client.

The architect may think of other criteria. No matter what method or combination of methods is chosen, no one method will meet all the criteria; some criteria may be more applicable to a specific commission than others. For example, a complex renovation project, with many unknowns, may best be handled on an hourly or multiple of direct personnel expense basis rather than a percentage of construction cost approach. Accordingly, the architect and client must weigh the criteria depending on such factors as the length of the client-architect relationship and degree of trust; the nature of the work the firm generally performs; the type of project planned; the duration of construction, and the likelihood and extent of changes in the scope of work.

The following is an overview of common methods of compensation.

A. MULTIPLE OF DIRECT SALARY EXPENSE. This method of cost-based compensation is related directly to the amount of time and effort required to provide professional services for a project. It is one of several methods well suited to projects which are undefined in scope or which require special or supplemental services. Using this method, direct salary expense incurred on the project is multiplied by a factor. This factor must account not only for indirect expense but also for other nonreimbursable direct expense and profit.

A variant involves compensation of a principal's time at a fixed hourly rate and employee time at a multiple of direct salary or direct personnel expense. Reimbursable expense is accounted for separately, as is outside services expense. In determining the multiple, it is important to analyze all elements in order to ensure that all items of expense and profit are included.

B. MULTIPLE OF DIRECT PERSONNEL EXPENSE. Because direct personnel expense comprises both direct salaries and direct benefits, the multiple used for this method would be lower than for the similar multiple of direct salary expense method. This reflects a lower indirect expense factor although the amounts billed to the client under both methods should be approximately the same for the hours worked.

If a maximum limit or upset is required by the client, the architect should exercise care to establish an amount which sufficiently provides for contingencies. Because this method has limited profit potential and unlimited loss potential, defining and monitoring services becomes critical.

C. PROFESSIONAL FEE PLUS EXPENSES. This cost-based method of compensation, similar to those previously described, does not include a factor for profit and is therefore lower, reflecting only expense.

Alternatively, all items of incurred direct expense and pro rata share of indirect expense may be considered reimbursable. Planned profit, set in advance of services performed, may be a stipulated sum, or it may be a percentage of total expense or of construction cost.

D. PERCENTAGE OF CONSTRUCTION COST. This method is not based directly on the architect's costs, but on an assumed definitive correlation between the construction cost of a project and the architect's efforts. Compensation is determined by taking a percentage of construction cost; the actual percentage used is a variable dependent on the nature of the project (its type, size, cost quality, complexity), the scope of services to be rendered, and the method of awarding the construction contract or contracts. An inherent inequity of this method for both client and architect is

the financial penalty the architect suffers as a result of working to reduce the project's construction cost. In other words, the method may bear little relationship to the actual effort expended by the firm.

If this percentage method must be used, the fairest approach is to establish the percentage figure only after the work is at a stage at which the construction cost can be estimated with reasonable accuracy; prior to this point, payments are best calculated on a "cost-plus" compensation basis.

E. STIPULATED SUM. If the scope and schedule of the project are sufficiently defined at the outset to allow the architect to calculate proposed compensation accurately, the client and architect may agree on a stipulated sum for compensation. To avoid misunderstanding, services to be provided should be clearly listed and described in the agreement. An alternative is to use a combined method: traditional services provided under a stipulated sum, with all other services provided on a "cost-plus" basis.

F. HOURLY BILLING RATES. This cost-based method of compensation is suitable where the time required to solve a problem or set of problems is hard to assess. Hourly billing rates are established for each level of in-house personnel, or for specific personnel to account for direct personnel expense, pro rata share of indirect expense, other direct nonreimbursable expense and planned profit. When there are outside services these expenses may be billed as stipulated sums or as multiples or, like in-house expenses, may be accounted for by levels of personnel or specific personnel of outside services consultants. Billings for outside services expense should be marked up, as should other reimbursable expense, to account for the archi-

tect's coordination (except where it is included in in-house billings), handling expenses and risk.

A variant is to use daily billing rates in lieu of hourly rates. Long-term agreements should contain a provision for periodic adjustment of hourly or daily rates to reflect changes in the architect's costs.

G. MULTIPLE OF AMOUNTS BILLED TO ARCHITECT. This method of compensation is suitable when the architect engages and coordinates the work of outside services contractors or professional consultants.

H. SQUARE FOOTAGE METHOD. Compensation is computed by multiplying the square footage (gross area) of a building by a price factor. This method lends itself to large, simple projects (such as warehouses) for which the scope and complexity can be clearly defined. Not in general use by many firms, it depends on experience on similar work, accurate judgment of the services and compensation required. A variant on this method is compensation per net square foot of a building, sometimes used for layout of tenant spaces in shopping centers and office buildings.

I. UNIT COST METHOD. Compensation based on unit costs may be calculated for a number of project types. Services required are usually in direct proportion to the size of the project and may be compensated as follows in different ways—for motels/hotels: cost per room; for apartment: cost per unit (may vary with unit type or mix), and for land planning: cost per acre.

As with the square footage method, experience is required for accurate estimates. One hazard lies in failing to recognize differences in complexity of non-repetitive portions of the project. For example, a commercial roadside motel

may have only 5 percent or 10 percent of its room areas devoted to public space, whereas for a convention or resort hotel, this figure may run from 40 percent to 200 percent. Similarly, apartment buildings may have sharply varying sizes of units and amounts of space devoted to common use. This method is best used in combination with other methods.

J. ROYALTY METHOD. Royalty arrangements apply in such cases as repeats of a basic building type, discussed further in the later section on repeat work. Agreements must be tailor-made to the project. In arrangements of this type, the architect has two options (of which there may be variants):

1. To set compensation for the initial work based on the expectation of enough royalty income at a later date to produce a profit on the entire project. In this case the degree of risk must be measured and the royalties set accordingly.
2. To recover costs and planned profit on the prototype and receive royalties for reuse of the design as well as compensation for extra work and related profit. This is a more sensible business arrangement.

Another royalty situation may occur when the architect is to provide repeated services for a building designed by another firm. Thus, a franchiser who has an architect-designed prototype building may expand into states where this architect is not registered or where the site is too remote for the architect to service the project efficiently. This may require the services of another practitioner. In this type of arrangement, care should be taken to define responsibilities, especially risk of liability. A valid hold-harmless agreement is applied only to contracting parties and does not preclude a third party suit. Its value depends on the indemnifying party's financial responsibility. A case in point would

be a situation in which architect (A) markets a prototypical residential design through franchise distributor (B) to third party purchaser (C). Architect (A) as party to a hold-harmless agreement with distributor (B) is protected from suits brought by purchaser (C) only to the extent provided for in the agreement. Consult with legal counsel and the insurer prior to commitment.

K. COMBINED METHODS. On large, complex, ill-defined or certain special projects, a combination of methods becomes viable. The architect may tailor a proposal to the specific problem. For example, large low-rise, highly repetitive multi-family projects, including land planning might be approached as follows:

1. Land planning phase: cost per acre
2. Design of typical apartment units: hourly or "cost-plus" type method
3. Construction drawings for typical units and buildings: stipulated sum
4. Repeats and site adaptation: unit cost

Estimating costs in this manner is quite simple and will usually entail fewer problems than trying to estimate phases by inappropriate methods. By combining methods, the architect may estimate compensation for each phase by the most sensible method. However, care should be taken to avoid a line-by-line "shopping list" of diverse services and compensation methods.

Many firms contract for certain early phases on an hourly arrangement and for the balance by percentage of construction cost, stipulated sum, or another method, with amounts determined as the scope becomes defined. Since most unknowns occur during the early stage of the architect's work, this dual or multiple method approach is fair to both parties. The architect is assured of time in the design phases to solve the

problem; the client need not contract for all the architect's services on the more open-ended, "cost-plus" basis.

L. REPEAT WORK METHOD. There are several applications of methods of compensation for projects involving repeat work. Several examples are:

—*The client wishes to build a second building the same as or similar to the original, on a different site.* In this instance, compensation for subsequent buildings should be negotiated to fairly reflect expended time, profit and expense for any changes to and reuse of original construction documents and adaption to the new site. Most applicable are "cost-plus" types or stipulated sum.

—*The client wishes to build a large multi-family development.* Here, a combination of methods best recognizes the differing complexities of each phase. The work required in Schematic Design and Design Development may depend on the number of typical units required. For example, work required in the design phase for 200 three-bedroom apartments of the same size and configuration may be far less than that for 200 units with many suite sizes and types. A combined method would use the unit cost method for the design of each type of unit, and another method for other phases. The same applies to motels, offices and industrial parks.

—*The client wishes to build a large, repetitive development in stages over several years.* Compensation for the first stage should cover all basic design and construction documents costs, with later stages compensated by a "cost-plus" or stipulated sum method. Occasionally, however, the client must negotiate on the basis of equal dollar amounts becoming available at each stage, despite the disproportionate cost required for the initial stage. The architect should establish a "bail-out" cost to cover at least the first stage expenses should the

project be dropped at that time. In any event, higher profits are justified to reflect the architect's higher risk and carrying of receivables.

—*When a client embarks on a large scale program, such as a franchise operation, the royalty method is appropriate.* The client's enthusiasm at this point does not guarantee success, and the architect is best advised to create a no-loss situation for the prototype in case the client decides to drop the construction program. The rewards for the risk undertaken should be proportionately high.

Compensation to account for recovery of these costs will be in addition to any royalties. The royalty should reflect compensation for reuse of the design and for profit to the architect. Alternatively, a stipulated sum or unit cost per building may be negotiated. The cost of administering contracts in a franchise-type situation is difficult to estimate accurately, especially if the geographic area is large.

STEP 7. NEGOTIATE THE AGREEMENT

Once the cost of performing services has been calculated and the most appropriate method or methods of compensation have been determined, the architect is in an excellent position to negotiate the agreement.

For convenience in describing the way in which the compensation management approach can be used as an effective tool in negotiating compensation with the client, the following material has been excerpted from the *A/E Supplement to Compensation Guidelines*.

NEGOTIATING WITH THE CLIENT. Always consider these issues when beginning discussions and negotiations with the client on compensation amounts and methods:

—*Issue.* The degree to which the architect can agree to stipulated sum or upset price amounts usually depends on the extent and depth of understanding of the client's program and requirements. Therefore, the early phase of service may be performed best on an hourly or multiplier basis, working toward a more precise program and the computation of more precise compensation.

Suggestion. Be flexible and consider combinations of compensation methods for best results.

—*Issue.* Final compensation amounts should reflect the degree of risk borne by each party.

Suggestion. When a maximum or upset price is set on compensation under any of the methods chosen, evaluate such a limit carefully for its profit potential. Allow a contingency on maximum limit agreements.

—*Issue.* The architect should exercise care in allocating reimbursable expense.

Suggestion. Consider reimbursable expense separately from (and in addition to) compensation, regardless of the method of compensation used.

—*Issue.* The reliability of the client and/or the project itself are sometimes in question. Also, the architect normally "carries" receivables prior to the first billing.

Suggestion. It is appropriate to include a retainer or advance payment in such circumstances, or if difficult to negotiate, shorter term billings.

—*Issue.* There is a direct relationship between scope of services and compensation. Most negotiations center on dollar amounts rather than on service requirements. Thus, it is crucial for the client to understand the need for, and description of, the services being offered

in a given project. Often the architect knows best those needs required to complete a project, and is thus put at a disadvantage when pressed to consider lower, perhaps pre-conceived compensation amounts.

Suggestion. Be certain that someone (whether client, architect or outside consultant) is made responsible for performing services which are essential to adequately complete the project.

—*Issue.* Complete candor and thorough preparation of support information can be invaluable in convincing a client of the architect's skill and understanding of the project requirements.

Suggestion. Plan carefully to communicate to the client the degree of complexity of the project and the scope of services needed.

—*Issue.* The architect must ensure protection from exposure to liability that could be caused by incomplete services, unclear indications of responsibility and inadequate compensation.

Suggestion. Know the limits of responsibility before accepting a commission. Consider declining a commission with inadequate compensation for the services requested, thus avoiding the temptation to shortcut professional services.

—*Issue.* Increases in staff compensation are facts of life.

Suggestion. When negotiating compensation, always consider the cost impact of periodic adjustments in wages and benefits.

—*Issue.* The client needs to have a full understanding of the nature and scope of the firm's indirect expense. Detailed discussion of the indirect expense factor may be required to obtain the client's concurrence. Some clients limit the list of items allowed as indirect expenses. The architect may therefore need to in-

corporate such expense in planned profit or elsewhere.

Suggestion. Be fully prepared to discuss with the client all cost elements related to the firm's overhead.

—*Issue.* Outside consultant services often consume a significant piece of the total compensation for the project.

Suggestion. In presenting compensation proposals to the client, the architect should obtain, in advance, compensation proposals from all outside consultants. Bring outside consultants into the process of estimating compensation. Also, on large projects, or those requiring extensive consultant services, it may help to invite the consultants to take part in early discussions with the client.

—*Issue.* Recognize that the type of contract between owner and contractor affects the time required of the architect. For example, it is simpler to administer a project built under a single-contract, stipulated-sum construction agreement than to administer a cost-plus project consisting of separate contracts with major subcontractors where additional conferences, bid evaluations, change-order approvals, approvals for payment and many other services are necessary. Also, "fast-tracking" (or phased construction) involves the architect more intensely.

Suggestion. Either know the construction method before negotiating compensation or recognize the variable and allow for those services to be based on time, or renegotiated when the contract method is set.

—*Issue.* Many traditionally reimbursable expenses (such as travel, telephone and telegraph and duplication of construction contract documents) are sometimes included in compensation for services in order to achieve a definite price.

Suggestion. Estimate such costs with

care; clearly define the extent of services to be performed, being sure, for example, to separate personnel expense required for travel time and coordination from other direct expenses.

COMPENSATION ADJUSTMENTS.

When the client has an inflexible budget for services, and after the architect has carefully checked the level of service implied by the client's compensation budget, there are several options to consider if initial calculations overrun the budget:

1. Alter the scope of services by assigning more services to the client or client's consultants. Be sure to retain responsibility for those services which are essential to maintain adequate control over the project.
2. Reduce the scope of services by taking out of some services those tasks least essential to the project. Certain services could be eliminated altogether, if need be; avoid reducing the scope to a point where services to be provided by the architect are not sufficient for proper control over the project. In other words, don't skimp by providing inadequate services.
3. Additional discussion with the client about the nature and conditions of the project may allow for recasting the compensation proposal. This may achieve reductions by eliminating some contingencies, renegotiating outside services expense or, as a last resort, adjusting planned profit.
4. Some services (especially early services) may be offered on a cost-plus basis. The client contracts for the service without assigning a specific compensation amount, until such time as the extent of the service becomes more defined. This technique is useful when, for example,

the architect needs to provide detailed project programming services although the project scope and the level of services required are still imprecise.

5. An institutional client with many small projects, none of which alone can justify the scope of services required, may be able to aggregate such projects into one, for which the architect could provide services on a more cost-efficient basis.
6. One way to reduce compensation is to cut back on the estimated number of hours required to complete each service. If the architect has conscientiously budgeted time, this alternative should be as unacceptable to the client as it is to the architect because it does cut back *real* services.
7. If compensation cannot be reduced without jeopardizing the quality of service or the architect's financial position, the only choice is to relinquish the commission. Proper application of these guidelines should alert the architect as to whether a commission is potentially unprofitable or would result in inadequate services.

REVISIONS TO COMPENSATION.

Compensation may eventually need to be revised if:

1. At the time the initial scope of services is defined, the extent of (or need for) a service during a later phase of the project is not clear;
2. During the execution of a project the client opts for changes in the scope of a Designated Service or desires Additional Services;

3. There is an agreed-upon variation from the time schedule upon which the architect's services were estimated;
4. Delays or other unexpected conditions upset the original scope, timing or amount of services;
5. There are unexpected salary or benefits adjustments not covered in a long-term agreement, or
6. Client requests result in the need for overtime work at premium rates.

In such cases, the architect must feel free to return promptly to the client to renegotiate compensation. Such adjustments should be contractually provided for in the original agreement for professional services. Follow the same procedure in determining revised compensation as was followed in calculating the original compensation, but use an adjusted scope of services.

Proper use of the cost-based compensation approach should minimize the need to request additional compensation if there has been no change in the scope or scheduling of services. On the other hand, when there is a change, this approach will provide the justification for changes in compensation.

STEP 8. MONITOR PROJECT PROGRESS

Once compensation has been negotiated, an agreement executed, and services initiated, the architect who has used the cost-based compensation method has in hand a valuable tool for internal office management. A list of services, an estimated cost of those services and a

time schedule have been established. If the estimate is not divided into individual tasks, it may be broken down by groups of services or phases, but the management potentials are the same. The architect can use the information developed in planning the project to budget and monitor project hours and dollars. This budgeting may be by hours only, cost only, or both and may be established on the basis of disciplines, phases, services and personnel classification, or simply by total project.

Several benefits can be expected:

1. Communication. The staff becomes aware of schedules and expectations, with early opportunity for feedback of information. The client can be made aware of how much will be billed (and when), establishing a project cash flow projection.
2. Accountability. This approach provides goals for each service, group of services or phase, and the means of measuring progress toward those goals. It facilitates improved individual performance and performance evaluation.
3. Future estimations. By establishing a record of time and costs for specific services or phases, the architect is provided with an excellent basis for estimating time and costs on future projects.

Using the approach to its fullest potential, the architect will be able to establish a project plan and monitor performance relative to the plan. In addition, it will be possible to produce accurate and timely information for producing invoices and monitoring collections.

Principals of smaller firms should recognize that it is important to maintain records on time of all staff (principals and employees.) That recording includes direct and indirect activities: direct by project (and possibly phase or task or both) and indirect by several categories (at least marketing, office management and paid time off).

[illegible]

3

Case Study

Mac Apple is the proprietor of a small architectural firm. He employs one registered architect, two graduate architects and a secretary. The firm's payroll journal, time analysis and income statement for the most recent complete year are shown in Exhibit 3-1 and Exhibit 3-2.

The firm typically provides services for institutional, commercial and residential clients; the compensation for their largest commission was \$100,000. The firm has been selected to provide professional services for an elementary school with an estimated construction cost budget of \$1,600,000 and has been asked to propose a fee within the agency's statutory fee limit of 7.5%. What fee should Apple propose?

EXHIBIT 3-1 SAMPLE PAYROLL JOURNAL AND TIME ANALYSIS

PAYROLL JOURNAL

Employee	Position	Annual Salary	Hourly rate on 52 weeks at 40 hrs. or 2080 hrs.
Apple	Principal	\$31,200*	\$15.00
Durango	Architect	24,960	12.00
Frances	Drafter	17,680	8.50
Irving	Drafter	14,560	7.00
Margo	Secretary	11,440	5.50
		<u>\$99,840</u>	

*Represents the annual base draw for professional services to the firm; it is the rate at which direct salary expense is charged to projects. Added draw could be made at the end of the year from profit.

TIME ANALYSIS

Employee	Direct Hrs.	Indirect Hrs.	Total Hrs.	Direct/Total
Apple	1625	875	2500	65%
Durango	1830	458	2288	80
Frances	1870	330	2200	85
Irving	1980	220	2200	90
Margo	<u>208</u>	<u>1872</u>	<u>2080</u>	<u>10</u>
	7513	3755	11,268	67

EXHIBIT 3-2 SAMPLE INCOME STATEMENT

INCOME STATEMENT**Revenue**

Fee Revenue (compensation)	\$230,000	
Reimbursable Revenue	<u>6,000</u>	
Total Revenue	\$236,000	100.00%

Reimbursable Expense

Reproductions, travel, etc.	\$ 6,000
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Direct Expense

Direct Salary Expense	\$66,900
Consultant Expense	55,000
Other Direct Expense	<u>2,000</u>
Total Direct Expense	\$123,900

Indirect Expense

Indirect Salary Expense	\$ 32,900
Payroll Tax Expense	12,260
Benefits Expense	14,800
Office Expenses	<u>25,000</u>
Total Indirect Expense	\$ 84,960

Profit*	\$ 21,140
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*After reasonable salaries but before bonuses and Apple's distribution of profit. For further disc refer to *Financial Management for Architects*.

STEP 1. CONFIRMING THE PROJECT SCOPE

As a matter of practice, the agency responsible for the project does not meet with the architect to confirm the scope or determine the services; therefore, Apple will not have the opportunity to proceed with the normal first step of confirming scope.

STEP 2. IDENTIFYING SERVICES NEEDED

This is Apple's first opportunity to design a complete school; the firm has worked for the township before and has done classroom additions, but has not accomplished a free-standing school building.

Apple knows that the township uses an owner-architect agreement modeled on AIA Document B141 and that the project will proceed in five phases: Schematic Design, Design Development, Construction Documents, Bidding, and Construction Administration. He assumes the tasks listed here will be required.

Project Administration

- Design
- Review with Owner
- Documentation
- Coordination with Consultants
- Agency Review
- Preparation of Bid Documents
- Bid Evaluation
- Shop Drawing Review
- Field Observation
- In-House Construction Administration

STEP 3. ESTIMATING TIME TO COMPLETE SERVICES

Never having designed a school, Apple has no records indicating precisely how much time will be required to accomplish each task, but he has estimated that a reasonable work schedule for the project would be:

Schematic	
Design	6 calendar weeks
Design	
Development	8 calendar weeks
Construction	
Documents	16 calendar weeks
Bid Period	6 calendar weeks
Construction	
Administration	52 calendar weeks

Apple intends to do most of the initial client contact and to be responsible for the design of the project. Frances will be responsible for construction documentation, bid period administration and construction administration, assisted by the firm's other drafter as required. Apple estimates that he will spend one-third of his time on the project through design development and about 5% thereafter. Frances will participate in Schematic Design and will spend about half time through Design Development, and full time through Construction Documents. She estimates that the involvement during the bidding and construction periods will require about one and one-half days per week. Irving will assist on a half-time basis during SD and will work full-time until documents have been completed. Margo will require a week to type specifications.

STEP 4. CALCULATING COSTS

Apple's calculation for this effort follows six substeps.

Substep 4.1. Estimate hours and calculate direct salary expense. The following worksheet was developed to show relationships between personnel time and expense.

Schematic Design—6 wks. @ 40 hrs./wk. = 240 hours

Apple	@	33% of 240 hrs.	=	88 hrs.	×	\$15.00	=	\$1,320
Frances	@	50% of 240 hrs.	=	120 hrs.	×	8.50	=	1,020
Irving	@	50% of 240 hrs.	=	120 hrs.	×	7.00	=	840
				328 hrs.				\$3,180

Design Development—8 wks. @ 40 hrs./wk. = 320 hrs.

Apple	@	33% of 320 hrs.	=	106 hrs.	×	\$15.00	=	\$1,590
Frances	@	50% of 320 hrs.	=	160 hrs.	×	8.50	=	1,360
Irving	@	50% of 320 hrs.	=	160 hrs.	×	7.00	=	1,120
				426 hrs.				\$4,070

Construction Documents—16 wks. @ 40 hrs./wk. = 640 hrs.

Apple	@	10% of 640 hrs.	=	64 hrs.	×	\$15.00	=	\$ 960
Frances	@	100% of 640 hrs.	=	640 hrs.	×	8.50	=	5,440
Irving	@	100% of 640 hrs.	=	640 hrs.	×	7.00	=	4,480
Margo				40 hrs.	×	5.50	=	220
				1,384 hrs.				\$11,100

Bid Period—6 wks. @ 40 hrs./wk. = 240 hours

Apple	@	5% of 240 hrs.	=	12 hrs.	×	\$15.00	=	\$ 180
Frances	@	40% of 240 hrs.	=	96 hrs.	×	8.50	=	816
				108 hrs.				\$ 996

Construction Administration—52 wks. @ 2080 hrs.

Apple	@	5% of 2080 hrs.	=	104 hrs.	×	\$15.00	=	\$1,560
Frances	@	30% of 2080 hrs.	=	624 hrs.	×	8.50	=	5,304
				728 hrs.				\$6,864

Total Direct Salary Expense \$26,210

Substep 4.2 Apply an appropriate multiplier to cover indirect expenses. Apple's indirect expense factor for last year was 127%.

Total Indirect Expenses	=	\$84,960	=	127%
Direct Salary Expense		\$66,900		

As a result of developing a profit plan for the firm's next fiscal year, Apple expects that increases in the cost of rent, higher professional liability insurance limits and premiums, and increased salaries will probably raise the factor to 130%. At that rate, the cost of in-house services would be:

$\$26,210 \times 130\% = \$34,073$
 $\$26,210 \text{ plus } \$34,073 = \$60,283$
 or, $\$26,210 \times 230\% = \$60,283$

Substep 4.3. Add the cost of non-reimbursed direct expenses. From previous experience with the client, Apple knows that travel, long-distance communications and reproductions for the owner's use will be reimbursed. Cost of reproductions for the architect's use will not be reimbursed and will have to be treated as a direct expense. Apple estimates that these costs will approximate \$1,000.

Substep 4.4. Add the cost of outside services. Apple has described the project to the structural and mechanical/electrical engineering consultants he normally retains, and they have proposed the following fees:

Structural	\$15,000
Mechanical/Electrical	30,000
Total outside services expense	45,000

Apple adds the results of Steps 1-4 to determine the estimated cost of services:

In-House (architectural) Services	\$ 60,283
Direct Expenses	1,000
Outside Services	45,000
Total Services Cost	\$106,283

Substep 4.5. Add contingency. To account for his concern regarding estimates for time required especially during construction, possible salary increases and minor scope changes, Apple adds a 7.5% contingency to the amount estimated for in-house services:

In-House Services	\$60,283
Contingency @ 7.5%	4,521
	\$64,804

Alternatively, Apple could have added contingency as a percentage of total services or as a lump sum.

Estimated cost for services now totals:

In-House Services	\$ 60,283
Direct Expenses	1,000
Outside Services	45,000
Contingency	4,521
Total Services Cost	\$110,804

Substep 4.6. Add profit. Apple plans the profit he believes the project should produce for the firm. Last year Apple planned for profits of 10% of revenue; the firm produced overall profit of \$21,140 on revenues of \$236,000, or 8.96%. This year Apple plans to produce overall profits at 12% of revenues. Because some projects cannot achieve that level, profit for most projects is planned at 15%.

$\text{Cost plus } .15 \text{ C} = \text{Compensation (C)}$
 $\$110,804 \text{ plus } .15 \text{ C} = \text{C}$
 $.85 \text{ C} = \$110,804$

Proposed
 Compensation (C) = \$130,358
 Proposed
 Profit @ .15 C = \$19,553

Alternatively, Apple might have chosen to calculate profit on the basis of a percentage of the cost of in-house services, plus a markup on outside services.

That calculation might be:

In-House Services	\$ 60,283
Profit @ 15%	9,042
Outside Services	45,000
Markup @ 10%	4,500
Proposed Compensation	\$118,825
Proposed Profit	\$ 13,542

Apple compares the higher proposed compensation with the budgeted construction cost:

Proposed Compensation = \$130,400, which is 8.15% of the Budgeted Construction cost, \$1,600,000.

STEP 5. ESTIMATE REIMBURSABLE EXPENSES

Apple estimates that travel and communication costs are likely to be nominal and will probably not exceed \$500. However, the township's requirements for end-of-phase submissions are extensive, and Apple estimates that reproduction expenses might total 1% of proposed compensation.

ANALYSIS

Apple's estimate for compensation exceeds the township's maximum statutory fee limitation. Apple can take any of several actions:

1. Refuse the commission. If the compensation estimate appears reasonable, and the architect believes the project cannot be accomplished profitably, this option is viable. The advantage of this compensation calculation method is that it identifies in advance whether the project is likely to be profitable or unprofitable and thereby permits an informed decision as to whether the commission should be accepted at the compensation offered, in this case within the maximum fee limitation.
2. Accept the project at a reduced profit or at a loss. Advance identification of the likelihood of loss again permits an informed decision. If no other projects are on the horizon and the architect has little faith in the firm's marketing ability, a decision might be made to take the project at a compensation level that would produce less than the desired profit, or even a loss, in order to keep staff intact and to cover some portion of the office overhead until other potentially profitable projects can be brought in. In considering this action, it is important to note that similar decisions across the board would soon result in insolvency. Although loss can be acceptable on any given project, the sum of all the projects must yield a profit.
3. Test the original assumptions regarding phasing, scheduling and staffing. Perhaps the project could be accomplished in less time, with fewer tasks or with less expensive personnel.

4. Test assumptions by calculating costs in another way. For example, Apple can prepare the list as shown of the construction documents he estimates will be required.

Site plan
Floor plan
Elevations (2 sheets)
Sections
Wall sections
Details (2 sheets)
Schedules
Miscellaneous
Total 10 sheets

Historically the firm has taken approximately 150 hours per sheet to prepare construction documents. By multiplying the estimated number of sheets by the hours per sheet, Apple can test his assumptions regarding staffing and scheduling for the most costly project phase, construction documentation.

Example: 10 sheets x 150 hours =
1500 hours
Compare with 1384
hours previously estimated.

5. Meet with the township administrator to confirm the scope, or better, revise the scope and/or schedule to reduce the cost of services. Devices worth considering include omitting presentations, assigning certain major or minor responsibilities to the township, reducing consultants' costs or treating certain direct expenses as reimbursable.
6. Consider alternate methods of payment. For example, providing for payment of schematic design services on the basis of a multiple of DPE until project scope is clear allows this part of compensation to be opened-ended. This would allow

acceptance of a lump sum or percentage fee when costs of services might be better related to known scope. Similarly, providing for construction administration services to be paid for on a multiple would remove the least controllable aspect of a project from the restriction of finite fees.

STEPS 6 AND 7. DETERMINE THE METHOD OF COMPENSATION AND NEGOTIATE THE AGREEMENT

Rather than arbitrarily reducing his estimates for cost of service, contingency or profit, and recognizing that the owner was unable to increase compensation, Apple decided to try to negotiate scope. He met with the client, indicated the compensation required for the firm to provide the services necessary to achieve the owner's project and suggested some revisions, including placing an absolute limit on the time for construction services to be compensated as part of basic services; reducing the frequency of required review meetings during design and job meetings during construction, and assigning to the client the responsibility of documenting job meetings. He further suggested reducing the number of schematic alternatives to be presented for the owner's consideration, and assigning to client's staff the responsibility for project cost estimating.

The client was reluctant to accept responsibility for any services that had been considered normal for the architect, but did accept the architect's explanation regarding the uncertainty of estimating the cost of providing construction phase services without fixed time limits. The client agreed to place a 12-month limit on construction phase services which enabled the architect to reduce his contingency and accept a 7.5% fee.

If the client had not accepted any of Apple's suggestions, Apple would have retained the other options of refusing the project, accepting it at a probable loss or restructuring the services to accomplish the project more efficiently.

STEP 8. MONITOR PROJECT PROGRESS

Apple initiated services on the project. A review of time sheets at the end of schematic design showed time and dollar expenditures on the project through the end of the phase:

Actual

Apple	120 hrs.	@ \$15 =	\$1,800
Durango	120 hrs.	@ 12 =	1,440
Irving	<u>100 hrs.</u>	@ 7 =	<u>700</u>
Total	340 hrs.		\$3,940

Budget

Apple	88 hrs. =	\$1,320
Frances	120 hrs. =	1,020
Irving	<u>120 hrs. =</u>	<u>840</u>
	328 hrs.	\$3,180

Apple realized that not only had Frances been unavailable for assignment, but that he had devoted more design and administrative time to the project than he had thought would be necessary; this additional expense had not been sufficiently offset by Irving's reduced expense. Assessing the reasons for the increase, Apple attributed about half to the complexity and learning involved in designing a new building type, but the other half was attributed to interim presentation demands made by the client.

Apple decided to reassign staff, reduce the schedule for Design Development, if possible, and seek additional compensation for the extra presentations during Schematic Design.

Glossary

Compensation

Payments that flow from the client to the architect for professional services rendered.

Expense

Payments made or payable by the firm for goods or services (that do not result in the acquisition of an asset, distribution of profit or reduction of liability). Expense is either direct (project related), indirect (overhead) or reimbursable.

Salary

Regular payments to staff (not including bonus and profit sharing) for services.

Direct Expense

All costs that can be charged to specific projects. Included are the costs of staff working on the project; outside engineering and other consultants; and other costs connected with the project such as non-reimbursable printing, travel and long-distance communications.

Direct Salary Expense (DSE)

The direct salaries of all the architect's personnel engaged on a project, excluding the cost of contributions and benefits related thereto.

Benefits

Expenses paid by the firm to, or on behalf of, staff in addition to salaries.

Some firms customarily (and sometimes selectively) provide additional benefits or perquisites (such as unlimited use of company car, parking space or education). These may be disallowed as a personnel expense by some private clients and local, state and federal agencies. In such cases, expense of such items should be considered in planning profit when estimating compensation. Bonuses and profit sharing are distributed out of the firm's profits and therefore are not considered benefits within the meaning of these guidelines.

Benefits Factor

The total cost of benefits (mandatory and customary benefits, plus paid time off) divided by the value of total payroll (direct plus indirect salary expense) excluding paid time off.

Direct Personnel Expense (DPE)

The direct salaries of all the architect's personnel engaged on a project, and the portion of the cost of their mandatory and customary contributions and benefits related thereto. In formulating this factor, principals' salary should be included at an appropriate rate as compensation for their time and effort expended directly on the project.

Direct Outside Services Expense

Payment for services rendered to the firm by outside, independent service contractors or professional consultants.

Other Direct Expense

Payment for all of the firm's non-reimbursable direct expenses, except for personnel and outside services expense. It can include reproduction of drawings and specifications for in-house use, travel expenses, long-distance communications and items paid for on the client's behalf if not reimbursed.

Indirect Expense

Expense items paid in operating the business that are not chargeable to specific projects. These items collectively often are called overhead or burden.

Indirect Expense Factor

The ratio of all indirect expenses including indirect personnel expense (mandatory and customary benefits plus paid time off) to either Direct Salary Expense (DSE), or Direct Personnel Expense (DPE), depending on how a firm applies the expenses of benefits in project accounting. The ratio can be expressed either as a percentage of DSE or DPE (e.g.

125%) or as a multiple of DSE or DPE (e.g. 1.25).

Profit

Excess of revenues over expenses.

Contingency

An allowance used in estimating compensation to cover such unknowns as possible project complexities, minor changes in project scope, minor project delays or other unforeseen conditions.

Reimbursable Expenses

Project-related expenses which, by agreement with the client, are to be paid back (reimbursed) directly. As traditionally defined in AIA owner-architect agreements, these include the actual expenditures made by the architect and the firm's employees and consultants for travel and transportation, long distance communication, etc.

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The American Institute of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006