The Bridging Method of Construction Project Delivery

February 2014

The major benefits to the Owner in a design and construction program carried out by employing the Bridging method are listed and discussed below along with the benefits to the Owner's Design Consultant (ODC), the architectural and engineering team that is referred to sometimes as the "Owner's Architect". (There are two teams of architects and engineers in a project carried out by Bridging; however, the total cost of those services to the Owner will be about equal to the cost of one architectural/engineering team in a traditional method project).

The benefits of employing the Bridging method:

The project Owner has a firm, fixed construction price as well as a time of completion commitment at a point by which only about half the level of the design services costs and time have been expended as compared to any other project delivery method.

Lower total construction cost for a fully equivalent end project, usually at least about 4-5% or more in savings, as compared to any other project delivery method.

In Bridging, the Owner has less exposure to change orders which are made necessary by errors or omissions in the contract drawings or specifications.

Earlier completion of the construction at no additional cost to the Owner.

Significant reduction in delays, unexpected costs and disputes between the parties arising during construction.

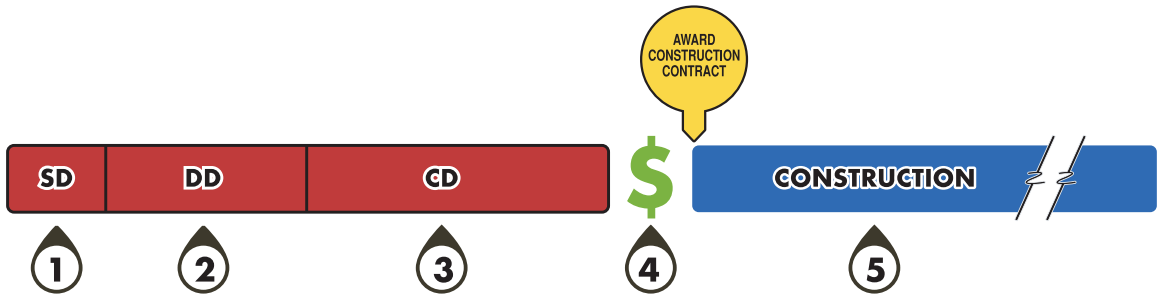
Single source responsibility for errors and omissions by the Design-Build Contractor and its architects/engineers. Thus, the Owner is not caught between the Owner's Design Consultant and a General Contractor and/or its subs in determining which entity is responsible.

Quicker fixes for correcting design and/or construction "bugs" which often come to light after occupancy of newly finished facilities.

Greatly reduced exposure to professional liability claims against the Owner's Design Consultant ("ODC").

The Traditional Design-Bid-Build Method

Described below for the purposes of comparison



Step 1. Schematic Design. In this traditional method, which has been widely employed in the United States (with similar methods employed in other countries) in the first design phase the Owner's architects and engineers prepare schematic drawings along with outline specifications for the Owner's review and approval. In this first phase the basic design concept is developed with the architect's drawings typically including the main floor plan(s), conceptual exterior elevations, the proposed basic finish materials, and, if needed to adequately illustrate the basic design concept, one or more sections through the building as well as the basic plan for site development.

Other documents prepared by the Owner's architects and its engineers at this first stage will include an outline of the technical specifications for the construction along with time schedules for the design and construction as well as cost estimates for the full project.

Step 2. Design Development. In this step the architects and engineers typically prepare more extensive documents for further reviews and approvals by the Owner.

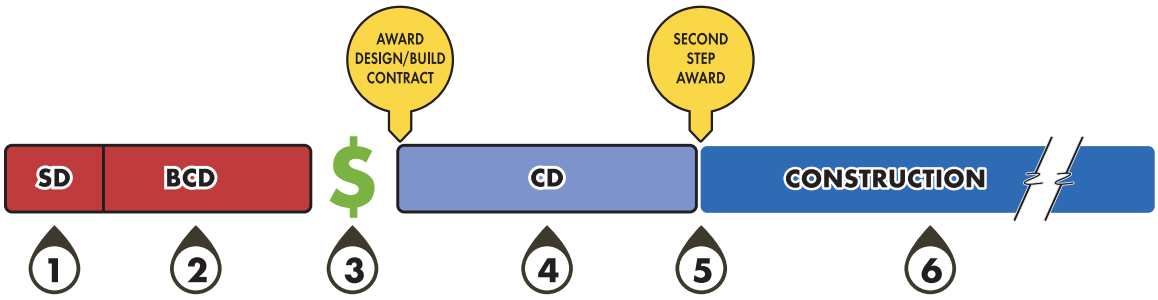
Step 3. Preparation of the final Construction Contract Documents which are often referred to as the "working drawings" and specifications.

Step 4. Obtaining competitive bids for full project or carrying out negotiations with a single prospective General Contractor.

Step 5. Observation of the Construction on behalf of the Owner by the Owner's architects and engineers and/or by the Owner's program manager, or both, with on-site inspectors on larger projects, and with the approval (or requiring re-submittals) of payment requests by the Owner's program manager and/or architects and engineers.

See Note 1 at end of this document regarding program managers.

The Bridging Method



Main Entities:

Owner's Design Consultant ("ODC")
The Owner's architects and engineers. Must be different and separate from the Contractor's architect and engineers.

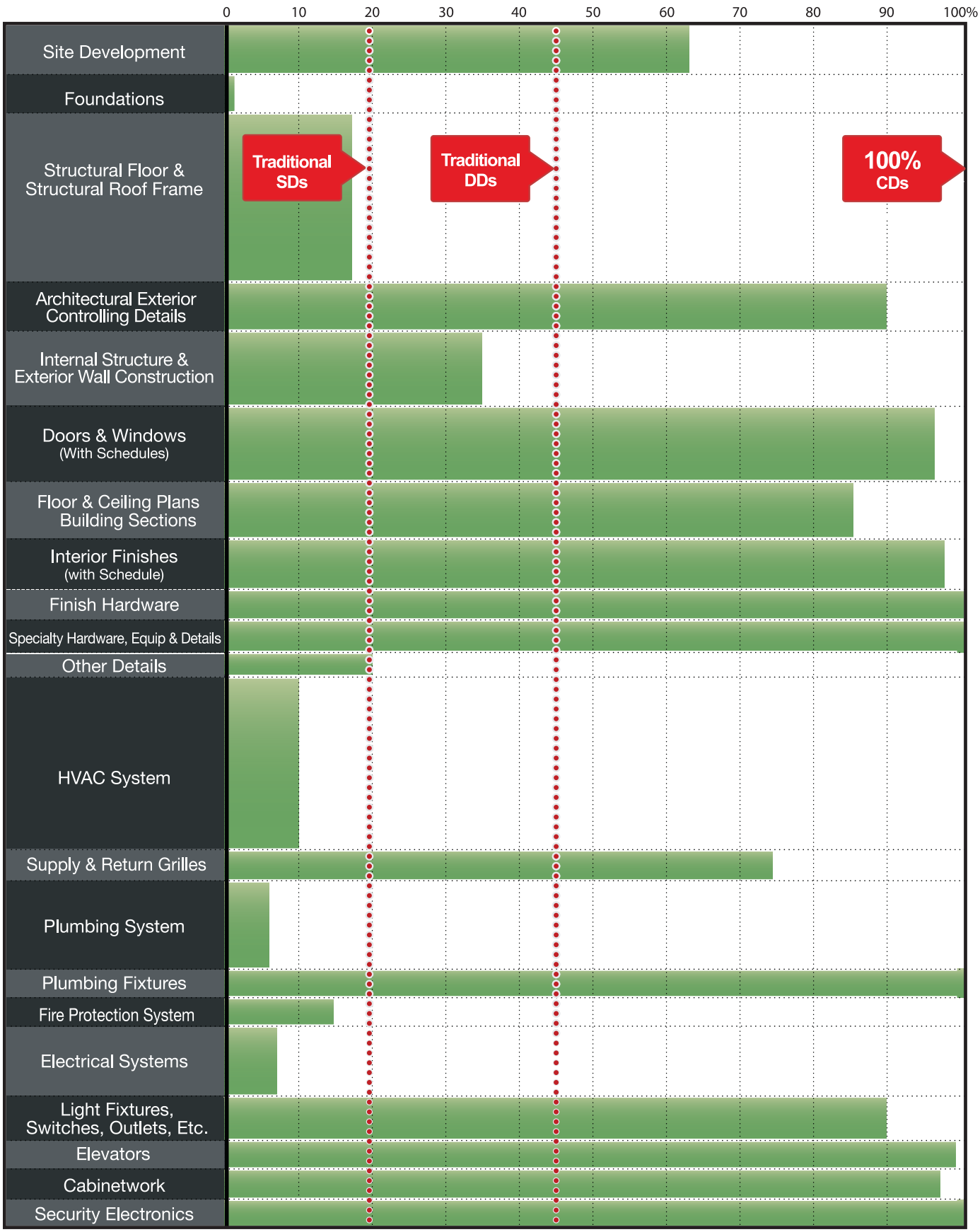
Design-Build Contractor
A general construction contractor which has in-house architects and engineers or engages architects and engineers as its subcontractors in order to carry out both the construction and the final design work including the preparation of the detailed "working drawings" and specifications.

Design-Build Contractor's Architects & Engineers
The general contractor's architects and engineers as referred to above (separate from the ODC).

Program Manager (Optional)
The Owner's Program Manager, a team (except on smaller projects when one Program Manager would be sufficient) engaged by the Owner before the ODC is selected.

Step 1. The first step in a Bridging project is exactly the same as Step 1 in Design-Bid-Build method.

Step 2. Preparation of Design-Build Contract Requirements prepared by the Owner's Design Consultant. While the illustration of these documents on the following page appear to be incomplete, they should actually be fully complete in all respects in terms of the Owner's requirements while leaving to the Design-Build Contractor and its AE as much latitude as is acceptable to the Owner and the ODC in order to get the best price and time of completion but with full applicable code compliance.


0
10
20
30
40
50
60
70
80
90
100%
Site Development
Foundations
Structural Floor & Structural Roof Frame
Traditional SDs
Traditional DDs
100% CDs
Architectural Exterior Controlling Details
Internal Structure & Exterior Wall Construction
Doors & Windows (With Schedules)
Floor & Ceiling Plans Building Sections
Interior Finishes (with Schedule)
Finish Hardware
Specialty Hardware, Equip & Details
Other Details
HVAC System
Supply & Return Grilles
Plumbing System
Plumbing Fixtures
Fire Protection System
Electrical Systems
Light Fixtures, Switches, Outlets, Etc.
Elevators
Cabinetwork
Security Electronics

Step 2 (continued)

The illustrations depicted on the preceding page illustrate the extent of drawings and specifications typically prepared by the ODC and its consulting engineers. It should be noted that in most projects that would consist of preliminary plans, elevations and controlling details to illustrate the Owner's requirements while leaving as much latitude as is prudent to the Design-Build Contractor and its AE. Thus, typically, there would be only architectural and site drawings with no engineering drawings in the documents indicated on the preceding page, but including written documents prepared by the ODC's consulting architects and engineers.

In turn, the Owner's Design Consultants (both architects and engineers) would review the documents prepared by the Design-Build Contractor's architects and engineers in connection with its recommendations to the Owner for partial or final payments due the Design-Build Contractor. Neither the ODC nor its consultants should ever commit to being responsible for detailed technical reviews of these drawings or specifications, but only to approve or reject payment requests which must include the Contractor's assurance that it and its AE are in full compliance with contractual and code requirements.

It should be clear in the original bid documents that the Design-Build Contractor's architects and engineers are to produce a complete set of architectural and engineering drawings and specifications which fully cover all aspects which the ODC and its engineers have previously required. Thus, the final architectural and engineering drawings and specifications are prepared by the Design-Build Contractor's AE with only reviews for payment approvals by the ODC and the ODC's consulting engineers. Neither the ODC nor its consulting engineers should indicate or otherwise commit that they have any responsibility for the completeness nor code compliance of any of the drawings or specifications prepared by the Design-Build Contractor and/or its architects and engineers.

Step 3. Receipt of Design-Build type price proposals from prospective General Contractors, each with its own architects and engineers, based on the requirements of the Bridging Contract Documents (BCDs) which consist of the BCDs and any documents prepared by the Contractor's AE as part of its Design-Bid proposal.

Step 4. First Step of the Award of the Two Step Design-Build Contract. To this point the Owner has saved time and money and will have obtained competitively bid contractually enforceable prices for the design and construction of the project which meets all of the Owner's requirements. In carrying out the remaining design work the Design-Build Contractor has the flexibility to make all remaining design decisions so long as the end product completely conforms to the Bridging Contract Documents and is fully code compliant. Failure on the part of the Design-Build Contractor and/or it's AE to properly complete the documents within a specified time would be the basis for delayed payment to the D-B Contractor or the termination of the Design-Build Contract with no payment. Upon completion

of this phase the Owner pays the Design-Build Contractor a pre-determined amount for the completion of the preparation of the Construction Documents. The fee for design is stipulated for all construction bidders by the ODC in the original request for proposals as a set percentage of the base bid price. Typically fees run between 2 to 5% of the construction price bid, depending on the size and complexity of the project and should be fair and reasonable for the required level of design work

Step 5. Termination or Proceeding with Construction. At this point, the Owner has the right to proceed with construction with the successful Design-Build Contractor or to terminate the project without cause upon payment to the Contractor for its drawings and specifications.

Step 6. Construction. If the Owner elects to proceed, the ODC and/or the Program Manager would carry out construction administrative services on behalf of the Owner. During construction, the services of the ODC and the ODC's consulting engineers, as well as the services of the Program Manager, would be the same as in other forms of construction contracts except that the Contractor's AE checks the shop drawings and passes the checked documents on to the ODC and/or the Program Manager.

Note with regard to Program Managers

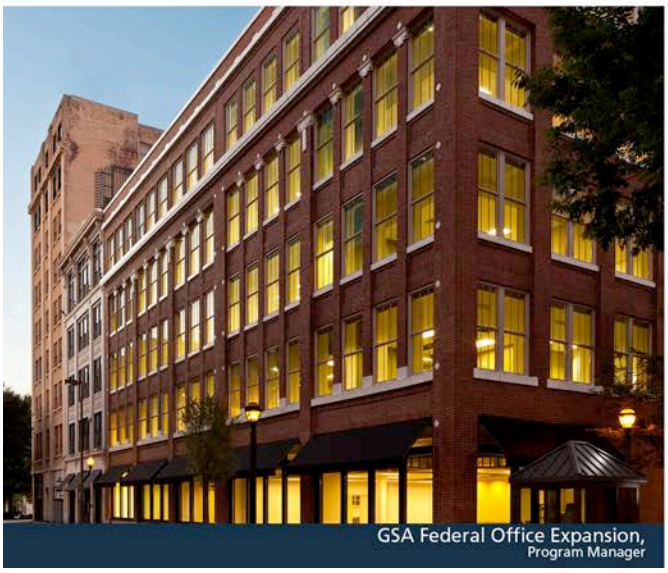
In any project, whether by the traditional project delivery method, other methods, or Bridging, if the Owner engages a program manager it is recommended that the program manager (or program management team) be selected and engaged before the architect and engineers are selected and before design starts. A very valuable assistance to the Owner by its program manager can be assisting the Owner in engaging and contracting with the design team. If any design work is required for the purposes of the pre-design setting of the budget or preliminary arrangements of financing, it is recommended that that work be done under a separate design agreement that the Owner has with either the proposed Owner's Design Consultant or a different design team.

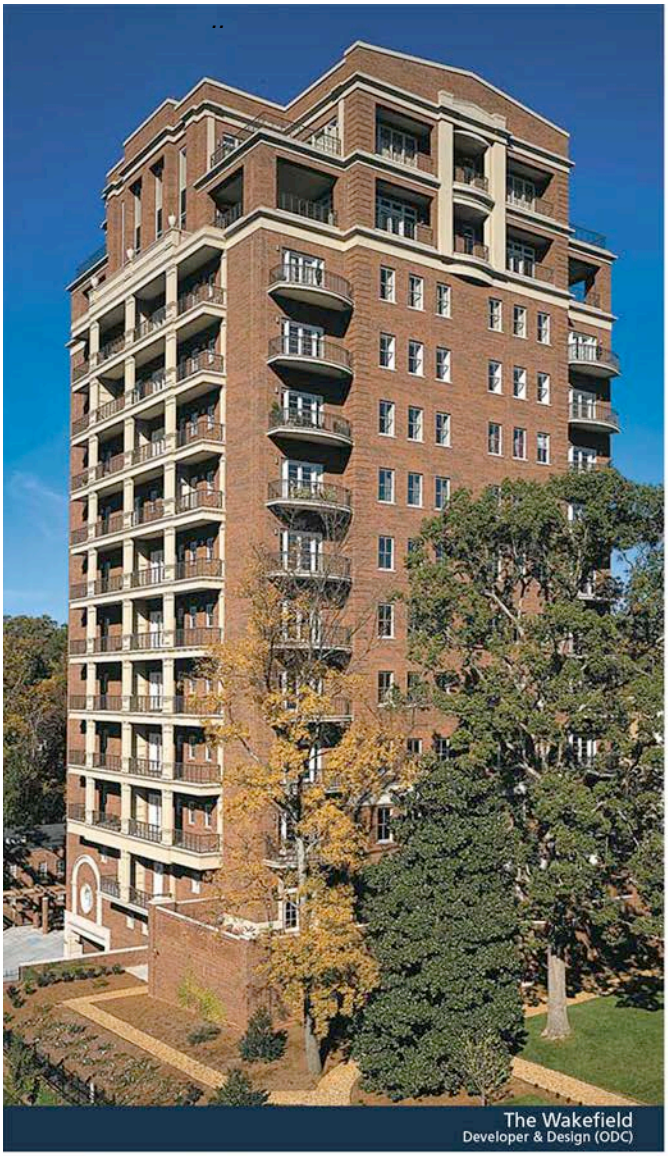
Brookwood Group, of San Francisco, Atlanta, Los Angeles and Seattle has published this document for its clients, other owners, and other developers, program managers, architects and engineers.

Brookwood Group's Chairman Emeritus, George T. Heery FAIA RIBA FCMAA FBIA was the originator of the Bridging method. However, Mr. Heery points out that a number of members of Brookwood, and earlier, of Heery International, made significant contributions toward the full development of Bridging. These people include W. Ennis Parker, Louis N. Maloof, David O. Kelly, Brinton L. Smith, and S. Shepherd Heery, the latter now Chairman/CEO of Brookwood Group.

On following pages are photos of projects carried out by the Bridging method.

Some of Brookwood's completed Bridging method projects




The Wakefield
Developer & Design (ODC)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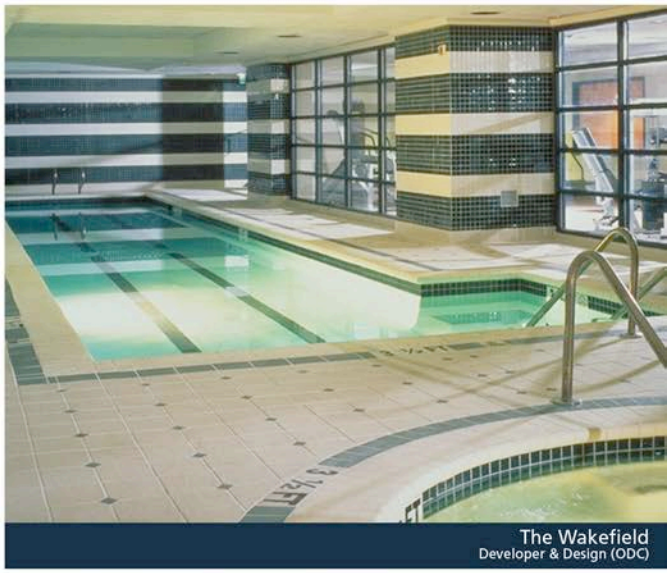
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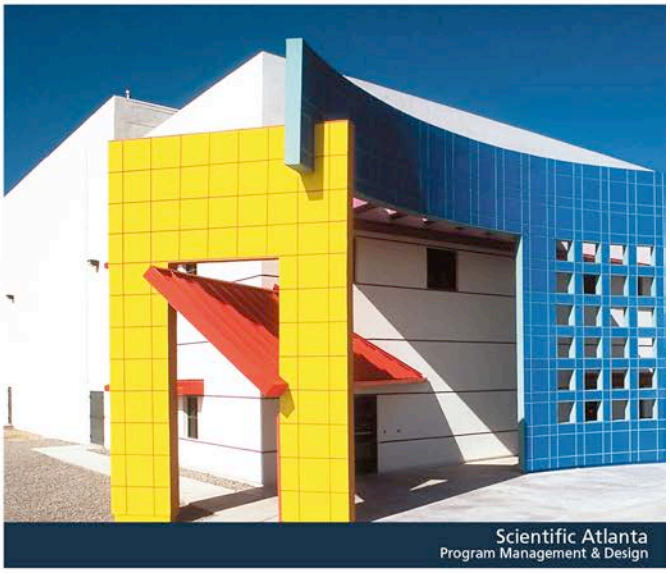
Developer & Design (ODC)

Georgia Tech Savannah Campus
Program Management & Design

Georgia Tech Savannah Campus
Program Management & Design

Morehouse Student Housing
Program Management & Design (ODC)



Scientific Atlanta
Program Management & Design

Georgia State Graduate Student University Lofts
Development Management

Milliken Design Center and Production/Distribution Facility
Program Management & Design Consultant