

## **The Agony and the Ecstasy** Of the Construction of a Building Project

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My presentation today reviews the proper processes to allow the Owner to minimize risks to project problems (**AGONY**) and to maximize the chances to fulfill all expectations (**ECSTASY**) from all of the project's stakeholders. The discussion's secondary purpose is to provide a series of guidelines for the Owner to obtain exactly what he buys when he builds a building for the least fair cost. Since the story of 'The Agony and the Ecstasy' is parallel to the discussions purpose today, I thought you would be interested in knowing some facts regarding the project that Michelangelo Buonarroti was hired for by Pope Julius II in 1508. Originally a fictional account of Michelangelo by Irving Stone, the book was also made into a movie starring Charleston Heston and Rex Harrison.

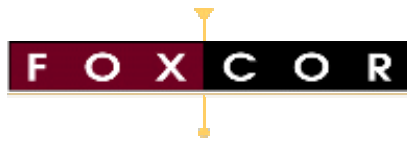
Originally named the Palatine Chapel, the Sistine Chapel in Rome was completed in 1483 and mimicked the exact dimensions of the Temple of Solomon in Jerusalem (40.93 meters x 13.41 meters). In 1508, Pope Julius II cajoled Michelangelo into re-painting the ceiling. Michelangelo did not initially want to paint the ceiling, but wanted to concentrate on his sculptures instead. The ceiling area alone was 5000 square feet. Michelangelo originally contracted to paint only 12 figures (the 12 Apostles), but ended up painting a little over 3,000 figures. He should have asked for a **CHANGE ORDER**, but knowing he would be denied, kept painting.

Michelangelo went through the **AGONY** of lying on his back, 60 feet off the floor for four years, and Pope Julius II went through the agony of not having a **SCHEDULE** for completion. In the end, both stakeholders enjoyed great **ECSTASY** in the final result being renowned as one of the greatest pieces of art in the world. However, it could have been a lot easier on all parties.

### Owner's Responsibilities

Before the project can begin in a productive and organized manner, the Owner must be prepared to address and develop the following issues:

- Selection of the Owner's Management Team
  - The Owner must create a Management Team which can either be an internal or external group of individuals experienced and qualified in Construction Project activities. These activities will certainly include the following:
    - Design Management – the inter-action between the Owner and the contracted design professionals
    - Program Management – the inter-action between the Owner's staff, management, and the design professionals to construct the facilities' program
    - Cost & Budget Management – the creation, updating and management of the construction budget



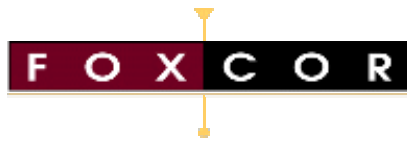
- Schedule Management – the creation, updating and management of the construction schedule
- Selection of Design Professionals
- Selection of General Contractor

### Selection of Design Professionals

Let's examine each one of these areas in more detail and explanation. I will start with the selection of the Design Professionals since they may input or otherwise participate in many other activities before the actual design process begins.

The selection of Architects and Engineers methodology varies from project to project, but I am going to outline one that is typically utilized.

- Design Professionals Selection
  - Develop a list of the Architects to be considered for the project
    - From past favorable experiences
    - Colleagues and friends references
    - Community reputation
  - Solicit qualifications for similar projects from your developed list (RFQ)
  - Review with appropriate members of the Management Team and develop 'short' list of 3 – 5 firms to actually be interviewed. Evaluation criteria of submitted documentation should include
    - Project type experience
    - Local project management approach
    - Response to your specific project
  - Conduct personal interviews with selected firms
    - Agenda should be left to firms in order to evaluate their thoroughness and their depth of understanding of your project
    - Firms should present their anticipated SCHEDULE for deliverables to the Owner
    - Architects should discuss composition of consultants for the project
    - Owner may want to insert consultants into the team with whom they have had successful relationships
    - Architects should discuss their 'basic' fee structure and approach
    - Architects should present the staff that would be assigned to the Owner's project
  - Make a selection of the firm, and schedule a first meeting to discuss
    - Exact and precise scope of services to be provided
    - Contract form to be utilized (AIA B141)
    - Insurance requirements and certificates (Errors & Omissions, as well as general liability)
    - Fee approach to include reimbursable expenses and mark-ups
    - **Remember, FEES ARE NEGOTIABLE!!!!**



### Program Management / Development

Programming is simply an identification of all of the spaces and uses to be provided in the facility. In a university/college project, the programming effort should be focused on the users of the project, as well as the Owner's 'Development Team'.

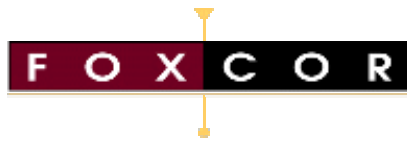
- Identify building spaces required
- Identify special uses required (laboratories, food service, auditoriums, etc.)
- Identify special requirements (ceiling height, utilities, movable partitions, etc.)
- Identify contingency spaces (open space to be finished at a later date, uses/spaces that are to be revised on a phasing plan, etc.)
- Remember space for building systems
  - Electrical
  - Mechanical
  - Telephone / Communication
  - Maintenance
  - Storage
  - Fire protection
  - Elevators
  - Exit stairways
  - Computer servers and systems

The Program for the facility is what the Architect will use as the basis for his design approach to the project. It needs to be as detailed and accurate as feasible.

### Cost & Budget Management / Development

Project Budget creation is one of the most important components of Project Management and one of the most poorly created and managed. One of the reasons is that the starting budget assumptions are based on some past experience or a friend's costs on a similar facility. Some Owners create budgets on a cost per square foot by researching similar project costs; however, Construction costs are also driven by local labor and material markets. Budget creation and accuracy will be enhanced greatly by receiving assistance and guidance by a professional estimating firm. The firm should be aware of local prevalent wages and the availability of the local work force. Estimators should also have in-depth knowledge of material cost fluctuations for the project market compared to the national and international markets and trends. The cost for this service should be returned to the Owner by a significant reduction in **AGONY** of being over or out of budget and the **ECSTASY** of having monies to reapportion to other parts of the project. Project budgets should include

- Hard Construction Costs (from professional estimates)
- Soft Construction costs
  - Architects and other design professionals
  - Surveyors
  - Soil testing
  - Testing laboratory during construction
  - Permits and fees by governing authorities
  - Attorneys
  - Internal time devoted to Project management
  - Professional Estimators



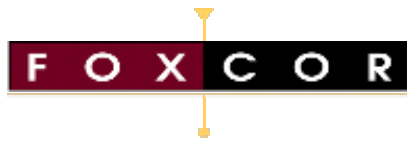
- Project Managers
- Costs of borrowing funds
- Utilities
- Owner Provided Costs
  - Furniture, Fixtures and Equipment
  - Decorative Light Fixtures
  - Food Service Equipment
  - Laundry Equipment
  - Audio Visual Equipment
  - Window Treatment
- Contingency
  - Contingency controlled by the Owner
  - Contingency controlled by the General Contractor

#### Schedule Management / Development

The Architect, the Estimators and other experienced personnel on the Owner's Management Team should be able to create a preliminary Schedule based on the anticipated value of the project, as well as the program. However, the Schedule will not be validated until the General Contractor has been selected and has input and buys in to a schedule. The created Schedule should include

- Pre-construction activities
  - Owner required site surveys and soil testing
  - Design professionals selection
  - Design professionals deliverable milestones
    - Schematic design completion
    - Design development completion
    - Construction document completion
  - Owner Review and Approval milestones
  - Permit Acquisition
    - Fire Marshal
    - City Building Department
    - Historical Buildings (if any exist)
    - Utilities
- Construction activities
  - Detailed list by tasks
  - Supported by 'logic' of sequencing of activities
- 'Float' or contingency time for
  - Anticipated weather delays
  - Unforeseen conditions
    - Sub-surface utility or object discovered during excavation
- Owner provided items to include purchasing and installation
- Substantial completion milestone
- Punch list corrections
- Project close-out

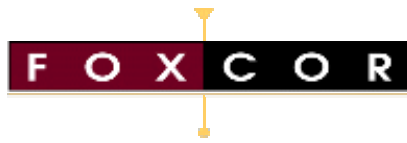
#### Selection of Contractor



Contractor selection can occur in a number of ways and is highly dependent on other circumstances involving the Owner and the Design Professionals.

- Bid Selection
  - Submitted to Contractors via an 'open' bid (anyone who wants to bid) or a defined selected few Contractors
  - Construction documents must be completed or inaccuracies amongst bidders will develop
  - Must hold 'pre-bid' conferences to allow Contractors and Sub-contractors to ask questions for clarification to the Design Professionals in order for the bids to accurately reflect the design intent
  - The invitations to bid should include language to the effect 'The Owner reserves the right to reject any/or all bids for any reason' (language to be developed by Attorney)
  - Bid invitations should include all required insurance coverages and certificates
  - Bid invitations should also require project references and a list of recent completed similar projects
  - Bid invitations should include form of contract
  - Bids need to be reviewed in great detail to ascertain that the bids are 'Apples to Apples'
  - Bid review should confirm submission of insurance certificates
  - References and projects should be checked by a member of the Owner's Management team
  - Owner's Management team should evaluate bids and present recommendation to Owner for approval
- Negotiation
  - Contractor selection is made at any time during project schedule, but having the Contractor 'on-board' during the design process will allow for creation of budget estimates during the design process, as well as schedules
  - Usually occurs with a Contractor who has provided successful services and projects in the past to the Owner
  - Resultant pricing goal should be a GMP (Guaranteed Maximum Price) and will constantly change until the Design Construction Documents are at least through the Design Development stage
  - Contractor will carry a contingency factor for missed or unknown design conditions
  - Other Contractor considerations
    - Consider requesting a shared savings of the Contractor's contingency at the end of the project
    - Consider providing the Contractor with a guaranteed Fee in exchange for the Contractor not charging a Fee on any Change Orders
    - Consider requesting an 'Open Book' agreement for all costs allowing the Owner to review submitted bids for all sub-contracted work, monthly invoices, time tickets, etc.
    - Utilize industry standard contract forms (AIA A101)

#### Other Construction Process Issues



There are a few issues the Owner needs to address when creating the scope of the program, budget and schedule.

- Fast Track Construction Process
  - Provides advantage of being able to utilize building sooner (**ECSTASY**)
  - Provides disadvantage of having to increase budget contingencies (**AGONY**) due to construction beginning prior to actual completion of Design professionals contract documents
  - Utilize this process only if project is negotiated with a GMP
  - Increases management costs in the soft cost portion of the budget
- Owner's Scope Increases
  - Owner decides to 'finish out' the unfinished space before the completion of the project
  - Owner decides to add another project to the original project already in construction
    - Owner should confirm that completion schedule of original project to not change, OR
    - Be prepared to extend the project schedule of original project
- Change Orders (**AGONY**)
  - Inevitable until **PERFECT** Construction Documents are achieved by Design Professionals
  - Can be minimized by Contractor involvement during the design process and reviews
  - Contractor should review all Change Order requests by sub-contractors to determine 'entitlement' to the change order request
  - Owner's Management Team to review issue of 'entitlement' to change order request
  - If determined COR is valid, then Owner's Management Team should negotiate a 'fair value' based on actual material costs plus actual labor rates as depicted in the Contractor's contract (**ECSTASY**)

### Conclusion

- Construction of a building project is a major challenge to any Owner
- In order to maximize expectations (**ECSTASY**) it is essential that the Owner's Management Team (internal or external) is populated with qualified and experienced personnel
- Project problems (**AGONY**) will be minimized

### Closing Image and Remarks

I want to close with a photograph (Exhibit 1) that actually occurred on one of our projects. We call this the 'Detail of The Week'. For the Owner and the entire team, this situation doesn't contain a single drop of **ECSTASY**, merely a large dose of **AGONY**.