THE INNOVATOR Newsletter

The Process of ART

The process of Art for TGCE started in 2001. Art, in this context, refers to the 3D Art Annex Renovation at the main campus of Texas Tech University in Lubbock, Texas. The project consisted of renovating an abandoned warehouse building into the Art Annex to house four departments of the School of Art: Jewelry and Metalsmithing, Ceramics, Sculpture, and Woodworking. The Art Annex also includes classroom space for undergraduate foundations and exhibit space. The process of design and four phases of construction spanned nearly a decade.

Each of the four departments has a number of specialized processes, each of which requires special building systems to accommodate them. The process for the design team began with initial meetings, introducing us to the faculty and staff and to the facilities that housed the operations to be relocated to the new annex. This initial step began our understanding of the processes, the equipment and materials used, the hazards associated with the processes and materials, and how and where these processes were to be incorporated into the new facility. Over the next several years, the project experienced a number of twists and turns, evolutions and changes, and funding challenges. The first two phases of construction, rehabilitating the site and building shell plus the finish out of the Jewelry and Metals department, were completed in late 2007.

The new space for Jewelry and Metals includes a soldering room with ten soldering stations for student use and one instructor station. Each station is piped with compressed air, natural gas, oxygen and acetylene. Each station includes a moveable source capture fume collector that is ducted to a dedicated ventilation system. Other processes producing hazardous fumes or using corrosive materials required local containment via both industrial process type hoods and traditional fume hoods with exhaust to outdoors.

The third phase of construction, the finish out of the Ceramics department space, was completed in early 2009. The indoor operations of the Ceramics department consist largely of clay mixing, glaze mixing and formulation, and molding/throwing of the works. *(continued on page 3)*

Soldering stations in Jewelry and Metals.

Ceramics glaze formulating and burn-out kilns.

Welding stations and fume source capture arms.

Get with the Program

Programming is a valuable tool in the pre-design process and when successfully implemented, results in a win-win for the Client/Owner, all stakeholders, and the design team.

A successful program will allow the design phase to begin with Owner goals and requirements documented/understood and with a preliminary construction budget aligned with the project scope and requirements.

What is programming?

Programming is the process of obtaining and analyzing Owner requirements for a project, guiding the Owner's prioritization of their requirements, and producing documentation of these requirements. The basic information needed to design the project should be in the resulting programming document.

Programming will provide a platform for stakeholder input on what should be in the project, allow for options to be developed and considered, distinguish "needs" from "wants", and develop consensus on decisions in an organized, logical sequence.

While many public entities require programming for all of their larger projects, some public organizations and many private sector Owners/ Clients are not on board with the concept of programming and do not understand the reasons and benefits of going through this pre-design process. Thus, it becomes incumbent on A/E's to present the value of the programming process to their clients. While programming will have a "relatively" small up-front cost to the Owner/Client, there is research available (Construction Industry Institute for one) that a well conducted programming effort will likely appreciably reduce overall project costs, decrease the uncertainty in final project cost and schedule, and better meet the Client's requirements/goals.

The figure below depicts the underlying premise of programming: You can influenence/affect the outcome of a project the most during pre-project planning and for the smallest expenditure. Conversely, exerting a small influence on a project during construction (read change order) has a high relative associated expenditure.

From the A/E perspective, the absence of a formal programming process for a larger, loosely defined project puts the A/E in the position of trying to program during schematic and design development stages of a project. For many reasons, this situation is undesirable for both the Client and the A/E. Instead of beginning to structure and develop the design as is the intent of these early phases, design tasks become interwoven with programming tasks leading to a one-step forward and two-steps back scenario frustrating all involved. The result is often that all stakeholder requirements are not fully vetted and the A/E spends double the time their fee allots for these stages without fully satisfying their Client. Scope and budget alignment is also difficult with this scenario because you have a continuously moving target.

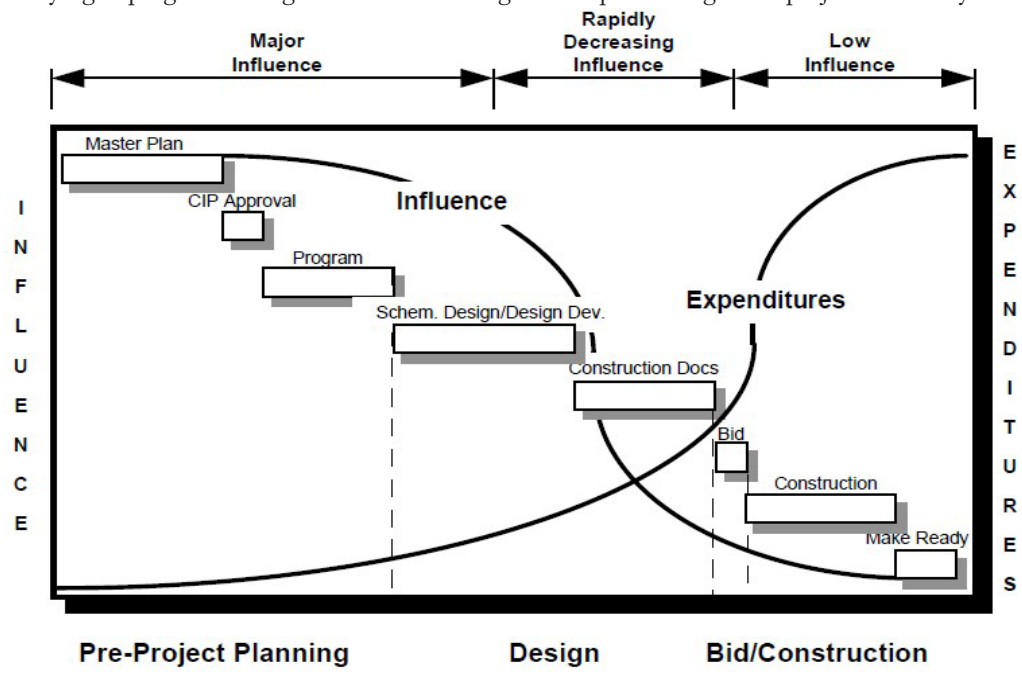

Figure Above (courtesy of UT OFPC - Facilities Programming Guidelines): The curve labeled "influence" reflects an institution's ability to affect the outcome of a project during the various stages of a project.

So, when the project size and type can justify a programming effort, it is in the best interest of all involved for the A/E to pro-actively present a sound, logical case for programming to their clients. - *Tod Thompson , P.E., LEED AP - Principal Engineer.*

The Process of Art

(continued from page 1)

This is dirty, messy business. Controlling the dust and debris, and providing appropriately designed cleanup facilities was a major focus. A system of industrial process hoods captures the dust produced by the clay and glazing mixing processes. High velocity industrial process ducts carry the captured material to two large dust collectors that filter the air and return it to the rooms. As with the Jewelry department, certain processes produced hazardous fumes which were contained and exhausted to outdoors. Large multi-compartment sinks, numerous hose bibs, floor drains, trench drains, plaster traps, and a main line sand trap were included to help with cleanup, and to prevent clay residues from migrating beyond the local building systems.

The fourth and final phase of construction included Woodworking and Sculpture. Woodworking was the more straightforward of the two areas, with a relatively commonplace system of dust collection ducts connecting the various tools to two large dust collection units that filter the air and return it to the space. A distinguishing feature of the system is a digital control system that automatically opens blast gates at the tool connections and starts the appropriate dust collector when a tool is started. System variables such as gate size, gate location, duct sizes, tool on/off status, etc. are evaluated by the system logic to determine the fan speed and number and location of blast gates to open to maintain a minimum duct velocity to keep the captured material entrained in the airstream.

The Sculpture department includes the most varied and demanding processes housed in the Art Annex. The indoor processes include oxygen/acetylene welding, electric resistance welding, MIG/TIG welding, plasma cutting, metal machining, grinding, polishing, the mold making processes associated with lost-wax casting, fiberglass resin work, and painting processes requiring a paint spray booth. All of these processes occur in an indoor, climate controlled environment. The outdoor processes include a metal melting crucible furnace, metal forges, and several large kilns. The Sculpture department Foundry is in addition to the Ceramics department kiln yard and shed that houses a variety of specialty kilns, many of which were designed and built by the Art department.

Each of the many processes in the Art Annex has its own set of requirements and building systems to accommodate those requirements. In addition, the combination of these systems within a single building envelope, many located in close proximity to each other, presented special challenges not only of planning and organization, but also of building pressurization control and room air flow patterns.

Given the number and complexity of the processes in the Art Annex, one might lose sight of the most important process required for a successful project, the process of communication. All members of the project team played a role in this process. Special thanks goes out to the Texas Tech University Facilities Planning and Construction Department, the faculty and staff of the Texas Tech University School of Art, the Project Architect, Parkhill, Smith & Cooper, Inc., Western Builders of Amarillo, Inc. and the many subcontractors and suppliers that worked together to make the 3D Art Annex a success. - *Robert Williams - Senior Designer*

Sculpture room prior to placement of the student welding benches.

Ceramic kilns and stacks

Finished condition of Foundry crucible and exhaust hood.

TGCE LIFESTYLES

PICKS OF THE SEASON

march of dimes
march for babies℠

I'm very excited to be a part of March for Babies this year. It is a cause that hits home for me. My son, Landon, was born one week early through an emergency C-section and was taken to the neo-natal intensive care unit (NICU) minutes after birth due to meconium aspiration and a small hole in his lung. It was the next two days of NICU visits, until my son was released, that I saw several frail pre-term babies and how amazingly delicate life really can be. My emotions were peaked...even though Landon's condition was easily treatable. I couldn't imagine what the other parents were going through. Bottom line, everyone wants their baby to be healthy and happy...a success story rather than tragedy. So, that's why I've decided to be a part of this cause. I want to thank a long-time friend of mine (Melissa McSpadden - who lost twin sons at early birth) for introducing me to March for Babies. We will be walking together.

Please help me reach my goal by making a donation to our walk. It's easy and secure - just click through to make your donation. If funds are lacking, join a team and walk with us.

Your gift will fund March of Dimes research and programs that help moms have full-term pregnancies and babies begin healthy lives. And it will be used to bring comfort and information to families with a baby in newborn intensive care.

Thank you for helping give all babies a healthy start,
~Greg Maxwell, LEED AP - Designer/Technologist

to help CLICK HERE by 5/7/11

WALKING TOGETHER FOR STRONGER, HEALTHIER BABIES

Pageonce - FREE

Pageonce automatically organizes and tracks your money and bills. See your banks, credit cards, bills and investment accounts in one simple place. Control where your money goes and get important real-time alerts and reminders about your accounts. You can even track your frequent flyer miles, rewards, mobile minutes, text and data usage. Pageonce is safe and secure, and was chosen by over 4 million people to simplify their daily financial lives.

Loren Cook - Engineering Cookbook - FREE

The Engineering Cookbook is a convenient reference guide for mechanical designers and Engineers. It provides "fingertip" access to frequently needed information, including: System Design Guidelines, Mechanical Equipment Standards, Load Estimating, Ventilation Rates, Formulas and Conversion Factors, and more.

TOM'S TRIVIA

I always loved word problems. Give your math skills a shot with this one:

A 10 foot rope ladder hangs over the side of a boat with the bottom rung on the surface of the water. The rungs are one foot apart, and the tide goes up at the rate of 6 inches per hour. How long will it be until three rungs are covered?

* All "close to correct" responses will be pooled, with a winner drawn and awarded a $25 gift card to The Home Depot.

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