

CHASTAIN-SKILLMAN, INC.

ENGINEERS ? ARCHITECTS ? SCIENTISTS ? SURVEYORS

CONSULTANT'S UPDATE

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MATERIAL PRICES EXPECTED TO BOOST CONSTRUCTION COSTS

By Suzanne H. Hunnicutt, AIA



After more than a decade of relative stability in construction material prices, contractors have been stunned by the largest price hikes for materials since the early 1970's. Steel prices have risen most sharply, but costs for

lumber, plywood, gypsum wallboard, copper, stainless steel, and fuel are all up significantly over last year. In the first quarter of this year alone the industry saw price increases for steel products ranging from 20% to 60%. Engineering News-Record, which tracks construction material prices, is reporting annual increases of 41% for plywood, 15% for lumber, 17% for ductile iron pipe, and 16% for copper tubing.

In the steel industry, prices have reached crisis proportions. Fabricators who frequently have fixed-price contracts, have been especially hard hit and some industry experts expect as many as 25% of the fabricators to be out of business or in bankruptcy by the end of the year. Several factors have come together to cause the pressure on steel prices. The recent building boom in China has caused that country to buy up 30% or more of the world scrap steel supply. Scrap is the basic raw material of the mini-mills which produce most of the steel construction materials in this country. China has also monopolized the coke market at a time when a major mine fire disrupted U.S. domestic coke supply. In addition, the price of some alloys has tripled and fuel costs have risen, increasing shipping costs.

Gypsum wallboard, another widely used construction material has also shown recent price pressures. A robust home building market has increased demand at the same time that manufacturers have seen increases in the price of key ingredients, like paper and natural gas, along with increased transportation costs. Manufacturers have passed these costs along in the form of price hikes ranging from 15% to 30% so far this year.

Another material crisis appears to be looming on the horizon as a cement shortage has begun to spread from Florida and the Southeast into the Midwest and West. Good weather during the last three months of 2003 raised demand at a time when producers are usually stockpiling product for the spring construction season. Imports, which make up one-quarter of the U.S. supply, have been reduced by a lack of dry bulk ships to bring the material here. Again, the building boom in China and other Asian countries has monopolized shipments of products. So far this year, cement prices have only seen about a 7% to 10% increase, but industry insiders expect additional increases and don't see any easing of the shortage before the end of the year.

Overall, construction costs are already up 6% over this time last year. This is significant compared to the average annual increase of less than 2.5% seen by the industry over the last ten years. This trend is expected to continue with the possibility of double digit increases by the end of the year. Projects and owners that require fixed price contracts can expect to see

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EOH NEWS

- ◆ *OSHA releases voluntary Ergonomic Guidelines for Retail Grocery Stores. A copy of the guidelines is available for review at: www.osha.gov*



- ◆ *Florida Mold Legislation update: **Senate Bill 1350 – "On Hold"***
- ◆ ***National Academy of Science, Institute of Medicine Report on Mold** essentially says, "the evidence that is available does not support an association of mold and health problems, but evidence of well-conducted studies and reliable data, the committee could not rule out the possibility".*
- ◆ ***HUD requires inspection for Mold and Radon***

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USE OF COMPUTER BASED MODELS FOR UTILITIES MANAGEMENT

By Karen Karvazy, PE



No one doubts that the development of computing over the past 30 years has truly changed the practice of civil engineering. From the consultant's perspective, use of computer

aided design tools, such as AutoCAD, have greatly impacted the design process, and helped to automate procedures that in the past would take much longer. From the municipality's viewpoint, another great change has been the advantage of computer modeling of utility systems.

For many fast growing cities and towns, recording and evaluating the growth of their utilities systems can be challenging. Foreseeing important system upgrades before problems arise, and identifying and prioritizing the extent of upgrades, is an important function of any municipality.

Records of the location and performance of water distribution mains, valves, pumps, manholes, sewer networks, lift stations and force mains throughout the years were traditionally tracked through transfer of general knowledge from field personnel to key maps that were continually updated (or not) with new information by hand-drafting. Records dating back half a century or more from the beginnings of the utility system construction were continually modified and updated as new development occurred. Use of computer modeling systems is

now helping to centralize this information with the added advantage of assisting a municipality in system evaluation and troubleshooting.

Recently, Chastain-Skillman assisted the City of Bartow with the transfer of their paper records to a computer-based model of their sewer system. The newly constructed model consists of over 458,000 feet of gravity sewer, 1,821 manholes, 31 pump stations and 75,000 feet of force main. The model software is compatible with AutoCAD allowing the generation of system drawings. The model development included quality control efforts which located the manholes in the system. Pipes and inverts were verified tied to NGVD29 (The National Geodetic Vertical Datum of 1929). Structures were tied to the state plane coordinate system allowing future use with Geographic Information Systems (GIS).

The City computer model not only maintains an inventory of the system in its database, but can run during a typical or peak day diurnal flow scenario, providing important information, as follows:

- Collection system capacity issues
- Upgrades resulting from proposed new developments
- Impacts of existing system deficiencies

The ultimate goal of the model is to determine the adequacy of the sewer collection system to meet the current and

future needs of the City and determine the actions required to meet those needs. In deficient areas, for example, examination of upstream and downstream pipe inverts shown in the model helps to determine the source of existing problems. The model has also been particularly helpful in foreseeing future impacts when proposed developments wish to connect to the City's sewer system, answering questions, such as: "Can the existing system handle new flows?", "Will downstream lift stations and gravity networks handle the new flows?", and "Where is the best location to tie in to the existing system?". The information is invaluable in developing and prioritizing projects for the City's Capital Improvements Plan.

Computer modeling is also relevant to water distribution networks. Chastain-Skillman modeled the City of Auburndale water distribution system, providing a model network of pumps, distribution pipe, and tanks in their system. Advantages to distribution system modeling are similar to that of the sewer system, as it allows the City to:

- Identify low pressure areas
- Perform fire flow analysis, and identify residual pressures
- Evaluate and identify system deficiencies
- Identify any required system upgrades resulting from growth
- Develop a Capital Improvements Plan

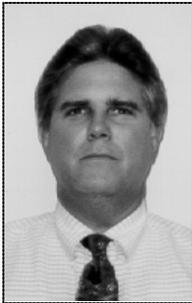
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even higher prices as contractors seek to protect themselves from volatile material prices. It appears that predictable construction costs are a thing of the past ... at least for the foreseeable future.

Suzanne Hunnicutt, AIA is a Department Head/Registered Architect for Chastain-Skillman's Architectural Department in Sebring. Her work focuses on the design of office, institutional and industrial buildings for both public and private clients. Suzanne received a Bachelor of Design degree in 1975 and a Master of Architecture degree in 1980 from the University of Florida. She can be reached at (863) 382-4160 or shunnicutt@chastainskillman.com.

ANNOUNCEMENTS



Chastain-Skillman, Inc. is pleased to announce its merger with Barrett Engineering, Inc. located in Tallahassee, Florida. Over the past 4 years, our firms have collaborated on numerous projects across the State, during which time both firms have come to respect each other's work. This merger and expansion into Tallahassee provides Chastain-Skillman, Inc. with the opportunity to better serve our clients, by its proximity to the Capitol and state regulatory offices, and by providing a base for operations in northwest Florida. Located at 224 Office Plaza, the Tallahassee office will operate under the name of Chastain-Skillman, Inc. Providing balance across the state, the merger will compliment our other Florida locations in Orlando, Tampa, Sebring, and Lakeland (corporate office), as well as our Atlanta office.

Barrett Engineering is a civil/environmental engineering and hydrogeological consulting firm founded in 1991, providing engineering and scientific services on projects for clients throughout Florida, south Alabama, south Georgia, and Texas. Pearce Barrett is a native of Tallahassee and is a registered Professional Engineer in Florida, Georgia, and Alabama. A former CPA and governmental auditor, Pearce has a Bachelor's degree in Business Administration with an Accounting concentration and has a Bachelor's degree in Civil Engineering, each from the University of Florida. Pearce will serve as Regional Director of our Tallahassee office.

As our clients' needs grow, this merger further enhances our ability to provide professional consulting services throughout the state of Florida and the regional southeast. Chastain-Skillman, Inc. is excited about this opportunity, and we welcome the staff of Barrett Engineering to the Chastain-Skillman family.



Chastain-Skillman, Inc. is pleased to announce the expansion and relocation of our Longwood office to the Lake Point Business Park in Orlando. This move will allow us to better serve the expanding needs of our growing client base. Mr. Mark Addison, PE, has assumed the office managerial duties, and he will concentrate on providing civil and environmental engineering services. Mark will be assisted by Mr. Bruce Kelly, CIH, and Mr. Greg Oblom, CSP, serving the needs of our clients in the areas of Industrial Hygiene / Occupational Health and Safety. Ms. Jennie Bowe provides administrative support, while Tonia Hopkin provides CAD support for the Orlando staff. The new address for the Orlando office, including new telephone and facsimile numbers, is as follows:

**6250 Hazeltine National Drive, Suite C-116
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As an example, the model was used when a large industrial user was proposed to be added to the system. Upgrades at the water treatment plant were planned based on maintaining system pressure and fire flow capabilities throughout the network. The model assisted in identifying pump upgrades at the water treatment plant, and analyzing fire flow capabilities for the new commercial center and surrounding users.

In short, computer models can provide critical tools to help establish efficient and economical evaluation of the water distribution and wastewater collection programs. Upgrading record keeping and analysis can be a useful tool for a city or town's master planning and capital improvements plans. However, there is a caveat: the model is only as good as the input and the user. Training is necessary to understand the mechanics of the program and records need to be kept up to date.

In the future, the benefits of these models will only continue to grow as applications are integrated with GIS and other databases.

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This newsletter is provided solely for informational purposes and presents only highly condensed summaries relating to the topics presented. Therefore, it should not be relied upon as a complete record for purposes of regulatory compliance, nor is it intended to furnish advice adequate to any particular circumstances. For additional information on any of the topics in this newsletter, please contact the author, or Allan Duhm, (863) 646-1402, or e-mail us.

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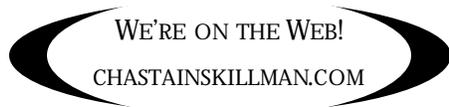
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