

# Steel Market Trends

By John Cross, P.E.

Design and construction professionals can learn to manage market volatility for all construction materials to the benefit of their construction projects.

You might have seen some of these headlines over the past few months:

**December 20, 2004**—*Engineering News*

*Record* projects 10% increase in structural steel prices in 2005

**January 3, 2005**—*Wall Street Journal*

reports steel prices could drop by \$200 a ton in 2005

**January 14, 2005**—*The Kiplinger Letter*:

"Steel prices will rebound by early spring after a slight drop this winter."

**January 17, 2005**—*Engineering News*

*Record* reports study projects \$200 drop in steel prices

Confused? You are not alone! Design and construction professionals are approaching the 2005 construction market much like Punxsutawney Phil, the famous Pennsylvania groundhog who pokes his head out of his burrow each year in early February. But rather than wondering about the weather, this year's question is, "Will the volatility in the price and availability of construction materials we experienced in 2004 continue into 2005?" The answer is simple—volatility will continue to be present for all construction materials in 2005.

Does this mean the prices for construction materials, including structural steel, are going to increase in 2005? Not necessarily. Volatility is best defined as unpredictability. The only predictable trend we'll see in 2005 construction material pricing is that it will be unpredictable.

The market for all types of construction materials has changed radically in the past year. No longer are we participating in a domestic market governed by the economics of domestic demand against domestic production, supplemented by imports. Whether the topic is structural steel, reinforcing steel, cement, concrete, gypsum, lumber, plywood, or copper, the patterns of the old construction marketplace have been replaced by the dynamics of global demand and global supply. Today burgeoning demand in China for construction materials, a weakened US dollar, growing global production, escalating shipping costs, future growth expectations in India, increased competition for raw materials, and a domestic policy favoring free trade have created the context for continuing

volatility in all types of construction materials. For some materials, this volatility will manifest itself as price instability. For other materials, availability will be the key issue.

During 2004, mill prices for structural steel increased nearly 60% when both base price increases and scrap surcharges are taken into account. These increases translate into a 15% to 20% increase in the price of the steel package for a typical project. Price increases for structural material have been the smallest of all steel products, with increases for materials such as reinforcing bar, plate, joists, and cold rolled products often more than doubling. No

**"The only predictable trend regarding construction material pricing is that it will be unpredictable."**

availability problems existed in 2004 for wide-flange structural shapes, with domestic production capacity significantly exceeding domestic demand.

There are no anticipated availability issues surrounding structural shapes in 2005. Domestic capacity will continue to exceed domestic demand resulting in structural shapes being

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## The Five Vs

When evaluating the market behavior of various construction materials, it is helpful to view that behavior through a defined framework. Perhaps the most helpful framework is that of the five Vs: Volume, Velocity, Variety, Value, and Volatility.

**Volume** is a measure of the capacity of the market to supply the demand of the marketplace. The concrete industry is dependent on a significant percentage of imported cement to satisfy domestic demand. Overall, nearly 20% of cement used in the United States is imported. In some areas of the country (Florida), over 40% of cement is imported. Recent shipping and supply problems have limited the capacity of the market to supply the growing demand of the construction marketplace. This volume constriction has created allocations and project delays in 29 states.

In contrast, the domestic structural steel industry has an annual capacity to produce nearly six million tons of wide-flange structural shapes. In 2004, domestic demand approached four million tons. This excess capacity translates into adequate volume to meet both the current and long term demands of the domestic market. This is not true of all segments of the steel industry. Capacity restrictions are affecting sheet rolled and

plate products, which impact pipe, tube, plate, and sheet metal products.

**Velocity** is the measure of the speed at which the supply can reach the end user. Even if excess capacity exists in the production process, availability problems will still exist if that process cannot meet the demand for specific products. Structural steel mills are on an industry standard six to eight week rolling cycle where their product line is produced within a single cycle. In addition, steel service centers stock one million tons of steel (25% of annual demand) of all sizes for delivery on an immediate demand basis. Also impacting the velocity component of a construction material is the availability of transportation to move the material from production locations to project sites. This may be the largest challenge on the horizon for all construction materials.

**Variety** is a measure of the different number of items within a product family that are being used in the marketplace. During 2004, certain materials such as metal studs, reinforcing bars, and post-tensioning strand have been difficult to obtain. Because these products have few variations (a limited number of items within the product family) some contractors, pre-casters, and rebar fabricators

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readily available in the marketplace. Pricing at the mill level is anticipated to be less volatile in 2005 than in 2004. During the last eight months, mill prices for a typical structural shape including both base price and scrap surcharges reached a plateau near \$600 per ton and varied within 5% of the midpoint of that range. As that trend is viewed in the context of the global market for structural steel and materials used in the steel making process, it seems reasonable to anticipate that this plateau will continue into 2005. But that does not mean there will not be variability in that price. On a monthly basis, swings of as much as 8% may occur.

The key to 2005 is not whether the price of construction materials will increase, decrease, or stabilize. The key is whether we are prepared to react differently to volatile market conditions in 2005 than we were in 2004. On the structural steel side of the construction materials equation, the lessons of the past year have emphasized:

- The need for early fabricator involvement in projects to convey current market information to project decision makers and identify cost saving approaches to project design and construction.

- Comparison of costs for alternate structural systems must be based on current costs, not prior rules of thumb estimates.
- The need for clear bid documents specifying which party is to assume the risk of a change in material prices. This includes whether or not escalator clauses are to be included in the bid. If an escalator is to be used, it should take into account the length of the project delivery schedule and specify the basis of the escalation calculation.
- The importance of rapid processing of bids and rapid issuance of the notice to proceed to the selected fabricator.
- The minimization of the impact of price variations can best be accomplished through the early purchase of all mill material by the fabricator (this requires reimbursement to the fabricator at the time of material purchase for the cost of material and storage).
- Communication and teamwork between producing mills, service centers, and fabricators is an invaluable asset to an overall project team.
- The importance of continuing to search for improved design and construction practices to improve the overall productivity of the building industry.
- The need on the part of the design and construction professional not to irrationally

react to press reports regarding the cost and availability of steel and assume that structural steel is exhibiting the same marketplace characteristics as other steel products.

These lessons are just as important during a period of decreasing prices as they are during periods of increasing prices. Effective construction project management is not the art of knowing when to jump into the marketplace to purchase materials at a low point in price, but the science of knowing the proper process of managing a project during periods of variability in material costs and availability.

2005 does not have to be a year where the construction industry lives in fear of its own shadow or merely experiences the confusion of 2004 all over again. 2005 will be the year when wise design and construction professionals recognize the long term pattern of volatility of all construction materials and learn to manage that volatility for the benefit of their projects.

If you have questions regarding the availability and use of structural steel for your next project, please contact the AISC Steel Solutions Center at 866.ASK.AISC or email [solutions@aisc.org](mailto:solutions@aisc.org). ★

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have increased their inventories, making their product scarcer and even more difficult to obtain in the general marketplace.

Structural steel provides a clear image of the opposite condition. Because such a large variety of structural shapes are used in building construction, it is not financially feasible for a steel fabricator to stock material on a speculative basis. The result of this product variety, combined with adequate volume and efficient velocity, is that wide-flange structural steel members are readily available in the construction marketplace today, and for the foreseeable future, from producing mills and steel service centers.

**Value** is a measure not of the absolute cost of the material but the relative cost for equivalent value that a product brings to the marketplace. Much has been written about the impact of rising steel prices on overall project costs. To determine the value component, it is necessary to step back and evaluate the impact that changing prices have on project costs as compared to competing materials.

A per-ton price increase of 61% at the mill level for structural steel does not equate to increases in project costs of 61%. For a typical

project, the cost of the total structural steel package (material, detailing, fabrication, transportation, and erection) will represent 10% to 12% of the total project cost. As a percentage of the steel package, the mill material will typically represent 30% to 40%. This means that of total project cost, the structural steel material will account for only 3% to 4%. An increase in mill product costs of 61% will translate into an increase in project cost of about 2%.

But the overall project costs are increasing more than 2%. The reason behind the higher rates of increase is that there are many other components that are affected by rising steel prices. Some are included in the steel package (plates, tubes, and metal decking) while others are not (piping, sprinklers, elevators, door frames, HVAC ductwork, and reinforcing bar). When all of these are taken into account, the anticipated increase in project cost is 3.5% per \$100 increase in steel price, independent of the framing system used on the project. Because of the amount of reinforcing steel in concrete structural members (often over 50% of the equivalent weight of a steel beam or column), and increases in cement and forming costs, the overall comparative value of alternative structural systems has remained relatively unchanged. The resulting project price

increase in 2004 was in the neighborhood of 12% to 15%.

This means that the bottom line for the owner, architect, structural engineer, or general contractor is that when evaluating the value of selecting a particular structural material on a particular project, a current comparison must be made of competing systems rather than relying on traditional rules-of-thumb. In addition, care should be taken to evaluate the total project cost utilizing competing structural systems, not just the structural frame itself. Often, using steel framing can result in reducing foundation and other project costs—these differences must be taken into account.

**Volatility** is the predictability of the price and availability of a construction material. There can be no question that over the past 12 months, all construction materials have experienced significant volatility characteristics. This volatility has manifested itself across the board with all materials. Some materials, notably cement and concrete, have experienced “smoother” price increases while other materials, such as structural steel, have been more erratic in pricing behavior. On the flip side, steel supply has much more predictable than cement and concrete supply. ★