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# CONSTRUCTION Claims Topics

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## Productivity and Efficiency Losses Due to Trade Stacking and Area Crowding

### Trade Stacking

This practice is commonly found on delayed building projects that have been accelerated to a contract-specified completion date. Trade stacking is a phenomenon that involves the tightening of serial operations of a number of different follow-on trades or the conversion of serial operations to parallel operations for those trades.

The idea is to schedule more tradesmen into areas of the building(s), concurrently or very tightly behind each other, to rough-out and finish the building(s) in the least amount of time without causing serious disruption between those trades in the process.

Unfortunately, tighter serial operations or parallel operations usually *do* cause serious delays or disruptions in the work of some or all the trades involved. It is not uncommon to have plumbers, electricians, drywall installers, carpenters, HVAC workers, block masons, glazers, and ironworkers (to name a few) working on the same floor of a high-rise building, all trying to move their materials, equipment, tools, and tradesmen onto the floor with the same lift or hoist, and all trying to sequence themselves so their work is done correctly in the scheduled order.

Under normal circumstances, one to three trades usually work on a floor at one time. In a trade-stacked environment, all the rough-in trades would probably be on the same floor at the same time, and all the finish trades would probably be on the floor or two below them at one time. The idea is to finish out floors for punch-out and occupancy as quickly as possible. As long as the trade stacking and logistics flow are both well coordinated, the effort may work. The key word is *coordination*.

Because the owner is the one who usually orders trade stacking, the burden of accurate and thorough coordination falls on the owner or the owner's construction manager or design professional in the absence of a CM.

Instead, what usually happens is that a CM or design professional orders all trades involved to "coordinate their work with each other so as not to interfere with or disrupt each other." After that, a "hands-off" attitude usually prevails on the part of the CM or design professional. When that happens, the *ordered* coordination between trades becomes mythical or illusionary at best, and rather substantial productivity and efficiency losses occur in all or most of the trades.

Trade stacking can be accomplished without efficiency losses if an owner is savvy enough to appoint a "king" or "traffic director," order its CM or design professional to do so, or hire one. These individuals supervise all coordination efforts and oversee that each trade has ample, uncrowded space to work in and that the logistics system is there to support the work.

Efficiency losses caused by trade stacking are often mistaken as losses caused by overtime fatigue, area crowding, shift work, etc., because those efficiency loss operations or situations usually accompany owner-ordered trade stacking. Proving that trade stacking has occurred is a relatively simple matter. However, quantifying what the efficiency losses and consequential damages are in dollars on a trade-by-trade basis is not that simple. Moreover, those losses often get commingled with other efficiency losses and their resulting damages.

To make matters more complicated, the owner, CM, or design professional sometimes institutes a back-charging system that attempts to pass the losses from trade to trade or among contractors and subcontractors. Back-charging attempts to levy the cost of one trade's suffered interferences, disruptions, and other matters on the party who is *allegedly responsible* for the delays.

The back-charge is *not valid* if the original as-planned schedule showed adequate, large sequences of work areas between the trades, in contrast to the subsequent after-the-delay(s)-occurred schedule showing trade stacking as the new schedule "norm."

The best way to deal with trade stacking and any resulting losses is to stay ahead of them through careful documentation and quantifying. That requires extra clerical personnel and their accurate preparation of daily construction record reports.

## Area Crowding

This practice usually results from *parallel trade stacking*, though not always. The efficiency losses caused by cramming too many different trades into a common area are usually quantified with trade stacking efficiency losses because they're almost impossible to separate.

Another form of area crowding is caused by attempting to overload or overstaff one or more trades in a single area in order to hustle the completion of work and get back on the original as-planned schedule by shortening schedule activity durations (performance time of the activity or operation from start to finish). Efficiency losses from this form of area crowding often get compounded with crew oversizing efficiency losses and may be commingled with efficiency losses attributed to overtime fatigue, shift work, or trade stacking.

Some contractors, in a trade-stacked, crowded work environment elect to use *measured mile* methodologies to quantify efficiency losses from work delays or interferences, lumping together all noncontractor causes and their resulting efficiency losses into one cost or damage figure. Other contractors utilize *total cost* or *modified total cost* methodologies to quantify all losses suffered in an area, on a floor, or perhaps on the whole project.

As a final reminder, efficiency losses due to area crowding are best avoided by not letting project areas or floors become too crowded with workers. As in trade stacking, a king or traffic director can eliminate the problems. Again, the key to preventing problems is coordination—hands-on, on-the-spot direction and assistance to physically avoid building project delays.

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