



Gary Porter, Engineering & Technical Services for the Masonry Advisory Council is called upon with questions about construction concerns and for masonry advice from a variety of Architects, Engineers, Contractors, Developers and Distributor sources. He is dedicated to ongoing education of masonry and shares helpful tips from his professional experience that may be beneficial to you.

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## Winter Costs

In the bidding process, general contractors and owners typically do not want to pay a premium or any additional cost for masonry work performed in the winter. Masonry has strict guidelines that must be followed by the mason contractor when temperatures Units fall below 40 degrees. It costs more money to follow and adhere to these guidelines. In most cases, mason contractors will eliminate any additional costs associated with working in the winter and treat this as a separate line item.

There are many items that contribute to additional costs for installing masonry below the 40 degree temperature guideline. At 40 degrees the hydration of cement begins to slow down and there is a concern of how good the bond is being made between the masonry unit and the mortar. The molecular structure of a very cold or frozen brick or block is not readily bondable to warm mortar. To this date, no chemical engineer or chemist has found a way to make this bond magically happen when the temperature drops.

Additives for mortar and grout are available that may accelerate the setting time for masonry. The use of type III Portland cement may be used. This cement sets faster than regular cement (type I), but it has some limitations. When we get to the 25 to 20 degree temperatures, all masonry needs to be protected and kept at least 32 degrees for a 24 hour period. Grouted masonry needs to be protected for a 48 hour period, but that time can be minimized to 24 hours if Type III cement is used for the grout.



## Winter Costs (continued)

Trying to keep the mortar and grout warm creates added costs. Heating water, heaters, propane to fuel these heaters, electric insulated blankets to cover sand or completed walls, building an enclosure around the mixer or mixing area adds costs. Along with the costs of heating the materials used to make mortar, covering brick and block materials, there is additional labor and time involved in providing this work. A scaffolding may have to be pre-built and enclosed so men can work within the enclosure. This takes a lot of additional labor time. That same enclosure is like its' own building and needs to be maintained daily.

A checklist for Cold Weather Masonry might look like this:

- heating mortar
- enclose silo
- heater for sand
- heater for water
- additives for mortar and grout.
- cover materials
- heat materials
- pre-build scaffolding for enclosure
- type of scaffolding to be enclosed, mast climber, adjustable or tube type scaffolding
- additional scaffolding for other side of wall (is it veneer or loadbearing)
- additional plank
- winter enclosure brackets for tube scaffolding,
- winter enclosure brackets for mast climber scaffolding
- reinforced poly for enclosure
- wind clips for scaffolding
- additional scaffolding ties to wall
- tie wire
- wood lath
- wood 2x4's
- nails
- heaters for enclosure (how many?, type, additional hoses)
- LP or natural gas source.
- additional labor time to watch heaters overnight
- additional labor time to tear enclosure down & haul away/store for future?
- Loss of production! (temperature, confined space, crew size)

## Winter Costs (continued)

One item that is not discussed enough is the loss of production while working in an enclosure. Working in an enclosure is a confined area. Sometimes it is too hot or still a little chilly in the enclosure. Workers wearing additional layers need time to adjust, at any rate this environment is not usually ideal as workers try to be comfortable, resulting in a loss of production. Brick and block placed in an enclosed scaffold may not be located in the most efficient location for the mason, which will take extra time to re-arrange or find and contributing to more loss of production. Due to the colder temperature even though it is a safe workable temperature, it may take longer for materials to set up and become tool-able. Work may have to stop a little earlier than usual each day as mortar is setting up slower.

There is a broad range of what the exact cost/sf will really end up being for winter enclosing. Each project has its' own set of contributing factors. The ability to work through the winter is good for the schedule of the project and good for the mason to keep men working. The geographic area around the Chicago area and the fluctuations in temperature experienced here, create weeks when it is impossible to work in an enclosure due to cold temperatures and then times when winter enclosures for masonry make good economic sense.



The Masonry Advisory Council is a non-profit organization that markets and promotes the benefits of building with masonry. Our vast network of industry professionals are available through MAC as a source of education, technical support, promotion, and market outreach.

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