



A Publication For Our Clients & Friends

Summer 2000

Adding a Mezzanine into an Existing Building

Many existing buildings have enough floor to roof height to insert a new second floor or partial mezzanine. DBM has designed the foundations and structural systems for numerous projects of this nature, recently completing a multiphased 90,000 square foot second story addition for one client; essentially doubling their space in that area of their facility without expanding their building footprint or the substantial cost of a new roof or



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DBM Home Page

Visit our home page at www.DBM-INC.com for our direct dial phone numbers, project lists, states of registration, company information and resume, and past newsletters, including articles on:



- Preventing wet basements (Winter 99)
- Frost heave and exterior door stoops (Summer 99)
- Control joints in concrete block masonry (Summer 99)
- Allowance for structural deflection (Summer 99)
- Efflorescence (Winter 99)

If you would like hard copies of any newsletters listed above, call Nyssa at 763-544-8457 ext. 10.

Vapor Barriers and Slab-on-Grade

We are frequently asked whether a polyvapor barrier should be placed under concrete slabs-on-grade. The answer to that question is yes if the passage of water vapor through the floor is undesirable, and particularly if the slab is to receive an impermeable floor finish.

Although most slabs-on-grade are impermeable to the passage of liquid water from the ground unless the water is under pressure, they are not impermeable to water vapor. Water vapor easily passes through a concrete slab and evaporates at the top surface, if it is not well sealed. Floor coverings such as linoleum, felt or fabric backed compositions, tile, carpet, wood and synthetic surfacing effectively seal the moisture within the slab where it eventually may cause problems with the covering and/or adhesive. When furniture, boxes, pallets and other objects are placed on a floor lacking a vapor barrier, moisture can condense beneath them, causing dampness and mildew.



It should be noted that, because vapor barriers can also trap liquid water from placing the concrete during construction, they can contribute to upward warping (curling) and aggravate problems of shrinkage cracking. The Portland Cement Association (PCA) recommends that a three-inch thick layer of self-draining compacted granular fill be placed over the vapor barrier to prevent or minimize the above problems. To keep slab cracking to a minimum, the PCA also recommends control joint spacing of two to three times the slab thickness in feet regardless if the slab is reinforced with fiber mesh. This corresponds to a control joint spacing of 8 to 12 feet for a four-inch thick slab.

E-Mail and Area Code Update

DBM has recently expanded our staff e-mail capabilities. We also have a new area code. Our e-mail addresses and phone numbers are as follows:

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CAD Corner

By Dale Urevig, CAD Operator

Use “Copy/Paste” to reduce errors and avoid excess typing in AutoCAD, Word, Explorer, E-mail and the Web.

AutoCAD allows a user to “copy/paste” text and entities from one drawing to another.

Example: In one drawing go to edit/copy (select text and entities) then in a second drawing go to edit/paste to insert the text and entities.

Users may also use “copy/paste” to copy text from one program or format to another, error free.

Example: Use the AutoCAD distance command to verify a dimension, then from the AutoCAD text window “copy” (Distance=10’-7”) then “paste” text (Distance=10’-7”) into an e-mail or word document.

In Windows Explorer users may also use “copy/paste” to rename a subdirectory.

Example: After receiving a zip file named “New Brownie Lake PROJ.ZIP” “copy” (Brownie Lake PROJ) then in Explorer, file/new/folder “paste” text (Brownie Lake PROJ) into (New Folder).

When emailing or searching on the web use “copy/paste” to avoid excess typing.

Example: In an open web browser select a line of text (Modern architecture in southern Minnesota) “copy” then “paste” into an e-mail or web browser “search engine”.

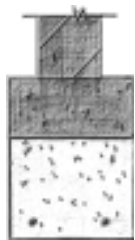
“Copy/paste” easily reduces errors and saves valuable time.

Underpinning Existing Foundations

Occasionally we are asked this question about underpinning existing foundations; “What holds up the existing building in between the time the soil is excavated out from underneath the existing footing, and the new concrete is poured in place and is up to strength?”

The answer to that is underpinning has to be phased in small sections, usually only four feet at a time, and never closer than twelve feet on center. New sections can’t be started until the last poured sections are up to adequate strength (usually three days with high early or seven days with normal strength concrete). That way at any given time during the underpinning operation, two thirds of the structure is always supported on the existing soils or new hardened concrete. One of the most important aspects of underpinning is pouring the new concrete under a head of pressure to get it up tight to the bottom of the existing footings. Concrete does shrink so even if this is done right some minor settlement of the existing structure should be expected.

One way to minimize the settlement is to pour the new underpinning a few inches low from the bottom of the footing, let it set up, then hand pack the gap with non-shrink grout supplemented with 3/8” pea rock aggregate.



One way to further minimize the settlement is to pour the new underpinning a few inches low from the bottom of the footing, let it set up, then hand pack the gap with non-shrink grout supplemented with 3/8” pea rock aggregate. Incidentally, underpinning is a highly effective and economical way to convert crawl spaces into usable full height basements. Call Harry for details at 763-544-8457 ext. 16.

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walls. Frequently, new window openings can be cut and framed with new lintels to provide natural light to the upper story. Precast concrete floor slabs can be used to speed construction and minimize the structural floor depth. Even if the existing perimeter walls or footings do not have any reserve capacity, the new floor system can be designed to be wholly self supporting by cantilevering off new columns set “inboard” of the perimeter walls. If new roof top units are needed to handle the additional space, the existing roof may need to be reinforced to support the added weight.

DBM Projects

These are some of our projects that are in design or under construction:

- .. Public schools in central and northeast Wisconsin
- .. Hospital addition in central Minnesota
- .. Golf Clubhouses in Seattle, Washington and St. Paul, Minnesota
- .. Apartment buildings in Plymouth and Burnsville, Minnesota
- .. Retail buildings in Blaine, Minnesota and Aberdeen, South Dakota