Frost Depth Study TAG
Meeting Notes

Date: Wednesday, November 3, 2021
Meeting Location: WebEx Event

Call to order:

Dan Kelsey called the meeting to order at 9:11 AM

Attendance:

TAG Members present: Dan Kelsey (DLI), Greg Metz (DLI), Mitch Okeson (Alternate -Sandman Structural Engineers), Kurt Welker (Welker Custom Homes), and Jack Nyberg (City of Moorhead), Don Dabbert (Dabbert Custom Homes), and Mark Hallan (Widseth)

TAG Members absent: Kurt Sandman (Sandman Structural Engineers) and Ezra Ballinger (Braun Intertec)
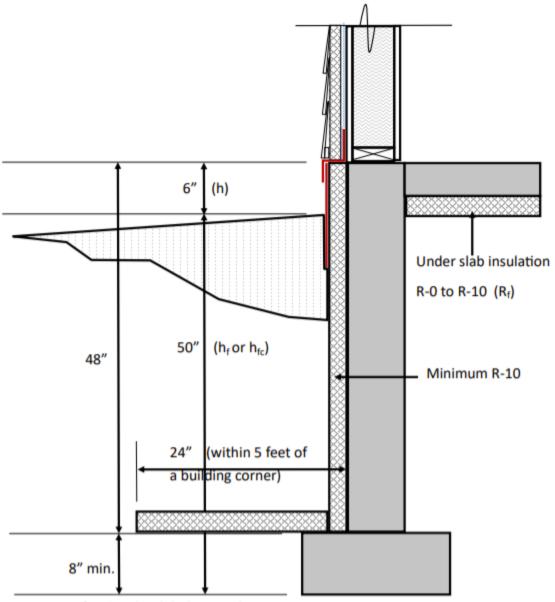
Guests attending: Amanda Spuckler (DLI), Chad Payment (DLI), Jeff Lebowski (DLI), Brittany Wysokinski (DLI), Steve Shold (DLI), Mark Brunner, Nathan Weber, Priscilla Gurath, Brett Braatan, Jason Schuetzle, Lynn Timm, Steven Zabel, Steven Schroeder, Mark Puppe, Dale Kleven, and Karl Franson

1. Call to order

- WebEx instructions/procedures

2. Discussed [semi-heated garage foundation section diagram](#).

- Requires minimum R-5.7 extruded polystyrene foundation insulation from finished grade down to the top of the footing, and then horizontal wing insulation of extruded polystyrene extending a distance of at least 2 feet perpendicular from the foundation wall. This horizontal insulation need only occur where within 5 feet of exterior corners.
- The garage must have average monthly temperature at or above 41 degrees Fahrenheit to comply with ASCE 32 requirements. In order to comply with that requirement, the garage will require heating equipment which may be most economical as a baseboard electric heater and low-temperature thermostat.
- Depicts a foundation of more than 38 inches below grade.
- If the horizontal wing insulation is not installed at the outside corners, then the foundation must be at least 59 inches in depth and the vertical foundation insulation must extend to the top of the footing.

- Under slab insulation of R-0 to R-10 is acceptable because heat is moving down from the semi-conditioned space.

3. Discussed energy conservation requirements for the semi-heated garage shell above the foundation.

- A garage that is provided with some heat to maintain the minimum monthly temperature of 41 degrees is a part of the building thermal envelope and must be insulated like the conditioned dwelling in compliance with Minnesota Residential Energy Code.
- The overhead door is exempt from a blower door test because in its open operational condition, the air exchange is so extreme that a tight seal when closed is impractical and illogical.
- Compliance with energy code requirements for a heated garage that is part of the building envelope is costly, but a semi-heated garage is an amenity for homeowners.

4. Discussed ASCE 32 requirements for unheated attached garage and unheated garage section diagram.

- One method requires insulation under the slab, vertical insulation, and horizonal insulation well beyond the foundation walls.
    - This method is costly due to the over excavation needed to install the horizontal insulation.
- ASCE 32 does not require insulation for foundations that are 60 inches below grade. This can be achieved with a 48" concrete foundation wall by utilizing either a footing that is 18 inches thick or a code minimum footing with crushed rock or free draining, non-frost susceptible sand placed below the footing and drain tile is provided.
    - These methods do not provide cost savings.
- ASCE 32 requires the same amount of insulation unless the foundation is ~~59 or~~ 60 inches, at which point insulation is no longer required.

5. Reviewed rulemaking procedures.

- Data is needed to make any changes to the existing requirements.
    - Changes to climate zones do not necessarily drive changes to the air freezing index.
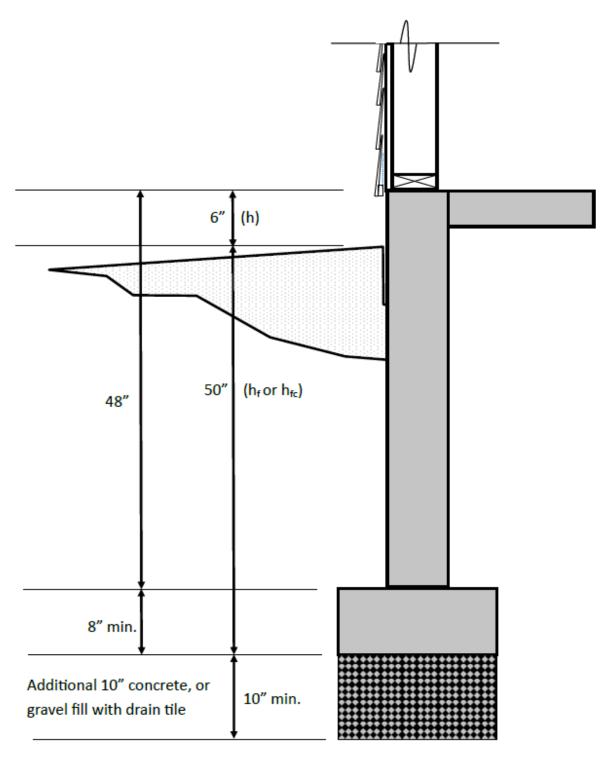
Meeting Adjourned: 10:57 AM

Prepared by: Dan Kelsey

6" (h)

50" (h_f or h_{fc})

48"

24" (within 5 feet of a building corner)

Under slab insulation

R-0 to R-10 (R_f)

Minimum R-10

8" min.

Minimum footing depth below grade at AFI 3750

Semi-heated Garage Foundation Section Diagram

Footing depth compliant per ASCE 32 for Air Freezing Index of 3750 or less.

6" (h)

50" $(h_f$ or $h_{fc})$

48"

8" min.

Additional 10" concrete, or gravel fill with drain tile

10" min.

Unheated Garage Foundation Section Diagram

Footing depth compliant per ASCE 32 for Air Freezing Index of 3750 or less.