

Residential Plan Review Report - Comments

Date: 7-30-2023

Permit Number:

Site Address: 792 Rose

City: St. Paul

Project Description: Structural evaluation and architectural code review

Architectural Firm: Paul Thomas Design Build, LLC

Address: 501 Carlson Parkway suite 312

City: Minnetonka, MN 55305

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Phone: 612-250-9400

Structural Engineer: Gary Reinhold

Contractor: Elevate Construction, LLC

Address:

City:

Contact

Phone: 763-352-1474

PLAN REVIEW SCOPE:

This building code plan review does not include state fire codes, electrical and/or plumbing installations, site grading or civil work, landscaping, septic designs, well construction, or other site utilities. Local municipal City/County zoning and/or fire codes have also not been included as part of this review. Separate review, approval, and/or authorizations must be obtained for this work.

This site analysis is based on the current 2015 Minnesota Residential Code. Although every attempt has been made to identify code issues or concerns for proper and necessary change, the project designer(s), the building contractor(s), and the property owner(s) are ultimately responsible for providing for complete code compliance and maintaining minimum construction standards for the safeguarding of life or limb, health, public welfare, and property.

Comments contained within this report shall not be construed to relieve from, lessen the responsibility, or grant authorization for work in violation of any laws or ordinances of the State of Minnesota, or of this jurisdiction.

In accordance with state law, prior to excavation or grading on any site, utilities must be located. Call Gopher State One Call at 1-800-252-1166 (651-454-0002 local) as soon as possible to schedule utility locations for this site. [Minnesota Statute 216D.01 to 216D.07]

Site grading, landscaping, utility installations, erosion control measures, etc., must all be completed as approved by the City Engineering Department and Planning Commission without alteration. Deviations from previously approved plans must be checked and approved by the Engineering Department and/or the City Planning Commission prior to said change. In addition, required erosion control devices must be installed and maintained throughout the construction process as approved by the City Engineering Department.

Zoning Comments:

See Zoning comments on Permit application

Building Comments:

1. NOTE: The work of this permit may require compliance with the US EPA's Lead-Based Paint Rule pursuant to 40CFR745.82. It is the responsibility of the permit applicant to verify compliance with US EPA's rules before starting work. Contact the US EPA Region 5 Office at 312-886-6003 or at epa.gov/lead.

1. Separate plumbing and mechanical permit applications and plan reviews are required as applicable. The City of Arden Hills reviews all plumbing and mechanical plans and performs all plumbing and mechanical inspections for work in its jurisdiction.
2. Concrete foundation wall cracks need to be fixed (see attached pictures) selected and constructed in accordance with the provisions of **Section R404.1.2**. Concrete foundation walls shall be laterally supported at the top and bottom in accordance with **R404.1**. Provide poured wall documentation for inspectors' reference. Supporting engineering must be on site prior to pouring!

3. **R402.1.1 MN2015 Energy code**

Insulation, waterproofing, and fenestration criteria of the building thermal envelope shall meet the requirements of Table **R402.1.1** based on the climate zone specified in Chapter 3, and the requirements contained in Section R402.2. Cast-in-place concrete and masonry block foundation walls shall be waterproofed according to IRC Section **R406** and the following requirements:

1. The waterproofing shall extend from the top interior wall edge, across the top of the wall, and down the exterior wall face to the top of the footing. If a full width, closed-cell material is installed to create a seal between the sill plate and the top of the foundation wall, the installation is deemed to meet the requirements for the top of the wall waterproofing.
2. If the walls are exposed to the exterior environment, the waterproofing system shall have a rigid, opaque, and weather-resistant protective covering to prevent degradation of the waterproofing system. The protective covering shall cover the exposed waterproofing and extend a minimum of 6 inches (152 mm) below grade. The protective covering system shall be flashed in accordance with IRC Section **R703.8**.

R402.1.1.1 Integral foundation insulation requirements Any insulation assembly installed integral to the foundation walls shall be manufactured for that intended use and installed according to the manufacturer's installation instructions.

R402.1.1.2 Exterior draining foundation insulation requirements Any insulation assembly installed on the exterior of the foundation walls and on the perimeter of slabs-on-grade that permits water drainage shall: be made of water-resistant materials manufactured for that intended use; be installed according to the manufacturer's installation instructions; comply with either ASTM C578, C612, or C1029, as applicable; and have a rigid, opaque, and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering shall cover the exposed exterior insulation and extend a minimum of 6 inches (152 mm) below grade. The insulation and protective covering system shall be flashed in accordance with **IRC Section R703.8**.

R402.1.1.3 Exterior non-draining foundation insulation requirements Any insulation assembly installed on the exterior of the foundation walls or on the perimeter of slabs-on-grade that does not permit bulk water drainage shall: 1. be made of water-resistant materials manufactured for that intended use; 2. be installed according to the manufacturer's installation instructions; 3. comply with either ASTM C578 or C1029, as applicable; 4. be covered with a 6-mil polyethylene slip sheet over the entire exterior surface; and 5. have a rigid, opaque, and weather-resistant protective covering to prevent degradation of the insulation's thermal performance. The protective covering shall cover the exposed exterior insulation and extend a minimum of 6 inches (152 mm) below grade. The insulation and protective covering system shall be flashed in accordance with IRC Section **R703.8**.

4. 1/2" anchor bolts must be embedded 7" into concrete or grouted cells of masonry units and spaced not more than 72" O.C. and with-in 12" of every corner and splice. If approved anchor straps are used, they must be spaced as per manufactures instructions.
5. **R408.** A minimum of a 6 mil vapor retarder to be placed directly beneath concrete slabs on grade.
6. **R404.1.4** Floor framing blocking to be in accordance with Section R404.
 - a. R404.1.4 Blocking shall be full depth and three joist spaces in. See table R404.1(1) for blocking spacing. sheathing shall be fastened to blocking in accordance with Table R602.3(1). [MN Section 404.1 #4]
7. Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with 1/2 inch gypsum board pursuant to R302.7
8. A final inspection of the completed work is required before this space can be occupied. Moving personal belongings and furniture into the structure or area is prohibited until then.
9. Decorative gas heating appliances require a separate mechanical permit and inspections.
10. Contractor must maintain proper clearances of combustible materials and insulation at chimneys and gas fireplaces.

11.R603.7 Jack and King Studs

The number of jack and king studs installed on each side of a header shall comply with Table 603.7(1). King and jack studs shall be of the same dimension and thickness as the adjacent wall studs. Headers shall be connected to king

studs in accordance with Table R603.7(2).

12. R802.10.1 Truss Rafters.

Ice and water barrier shall be installed under the roofing starting at the edge of the eave and extended up the roof to a line a minimum of 24 inches inside the exterior wall line of the building. In lieu of on-site inspection, provide photos of ice and water barrier installation for review by the Building Inspector at the time of the scheduled framing inspection(s).

13. Roof slopes between 2/12 and 4/12 can use shingles but require double underlayment installed pursuant to IRC R905.2.7 or continuous ice and water barrier.
14. Roof slopes of 4/12 and above may use standard asphalt roofing applications with ice and water barrier installed under the roofing starting at the edge of the eave and extended up the roof to a line a minimum of 24 inches inside the exterior wall line of the building. In lieu of on-site inspection, provide photos of ice and water barrier installation for review by the Building Inspector at the time of the scheduled framing inspection(s).
15. Roofing materials other than asphalt shingles requires approval by the Building Official before installation.
16. Roof ventilation is required at enclosed attics and rafter spaces where ceilings are applied directly to the underside of roof rafters. Ventilation will be provided at not less than 1 square foot of net free ventilation area for each 150 square feet of the area of the space ventilated.
 - i. **Exception:** Ventilation area may be reduced to 1 square foot for each 300 square feet provided 50%, but not more than 80%, is located at least 3 feet above the eave vents with the balance of the required ventilation provided by eave vents, or provided a vapor barrier having a transmission rate not exceeding 1 perm is installed on the warm side of the ceiling.
17. A minimum of 1 inch air space shall be provided between the insulation and the roof sheathing at the location of the roof vent. Insulation shall not block the free flow of air.
18. In lieu of on-site inspection, provide photos of ice and water barrier installation for review by the Building Inspector at the time of the scheduled framing inspection(s).
19. Kick-out flashing is required on new construction and only when re-siding.
20. Verify with engineered lumber manufacturer that structural members and supports are designed to support all loads imposed on engineered lumber.
21. Sill plates in contact with concrete or masonry are required to be decay resistant treated lumber.
22. Comply as applicable with **IRC R602.10.6.2** requirements for alternate braced wall panels adjacent to door and window openings at the braced wall line containing the garage door openings.
23. Framing inspection will follow completion of mechanical, electrical and plumbing rough in inspections. Framing and insulation inspections may be combined with prior approval of the Building Official.

24. Install approved fire blocking and/or draft stopping at all penetrations in fire separation walls and all penetrations between floor levels, at attics, at concealed spaces and at mechanical chase openings.
25. **R402.2.1** Ceilings with attic spaces. When section R402.1.1 would require R-38 in the ceiling, R-30 shall be deemed to satisfy the requirements for R-38 wherever the full height of uncompressed R-30 insulation extends over the wall top plate at eaves.
26. **R317.1** Protection of wood and wood based products from decay shall be provided in the following locations by the use of naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use. Preservatives shall be listed in Section 4 of AWPA U1.
 - a. Wood joists or the bottom of a wood structural floor when closer than 18 inches (457 mm) or wood girders when closer than 12 inches (305 mm) to the exposed ground in crawl spaces or unexcavated area located within the periphery of the building foundation.
 - b. All wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches (203 mm) from the exposed ground.
 - c. Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier.
27. The ends of wood girders entering exterior masonry or concrete walls having clearances of less than 1/2 inch (12.7 mm) on tops, sides and ends.
28. Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches (152 mm) from the ground or less than 2 inches (51 mm) measured vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surfaces exposed to the weather.
29. Wood structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier.
30. Wood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls below *grade* except where an *approved* vapor retarder is applied between the wall and the furring strips or framing members.

Stairs

31. IRC Stairway minimum clear width is 36 inches. Maximum tread rise is **7 3/4** inches and minimum tread run is **10** inches. The dimensions of any one treads run or riser shall not vary from the dimensions of any other treads run and rise by more than **3/8 inch**. Stairways having four or more risers shall have at least one handrail. The handrail grip shall be placed not less than 34 inches or more than 38 inches above the nosing of the stair treads. The handrail grip shall not be less than 1 1/4 inches and not more than **2** inches in cross-sectional dimension or the shape shall provide an equivalent gripping surface. The handrail grip shall have a smooth surface with no sharp corners. Handrail grip ends shall start at a point directly above the top riser of a flight to directly above the lowest riser of the flight. The handrail ends shall be returned or terminated in newel posts or safety terminals. Hand grip shall extend not more than 4.5 inches into the minimum clear width of the stairway. Handrails adjacent to a wall shall have a space of not less than 1.5 inches between the wall and the handrail.

32. There shall be a floor or landing at the top and bottom of each stairway. The width of the landing shall not be less than the width of the stairway served. Every landing shall have a minimum dimension of 36" inches measured in the direction of travel. [R311.5.4:]
- i. **Exception:** A floor or landing is not required at the top of interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs. A flight of stairs shall not have a vertical rise larger than 12' feet between floor level or landings.
33. **R303.7 Stairway illumination.** All interior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Interior stairs shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway.
34. Fasteners used in pressure preservative and fire-retardant-treated wood shall be hot dipped galvanized steel, stainless steel, silicon bronze or copper.
- i. **Exception:** One-half inch (1/2") diameter or greater steel bolts. (2007 IRC, section R323.3)
35. **R703.2 Weather-resistive barrier:** One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2" inches. Where joints occur, felt shall be lapped not less than 6" inches. The felt or other approved material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1 [R703.2]
36. **Safety glazing** is required as applicable in windows located in hazardous locations pursuant to the 2015 MSBC, Section R308.4 Hazardous locations, and shall meet the acceptance criteria of ANSI/DASMA 108.
37. **R308.4.2 Glazing adjacent doors.** Glazing in an individual fixed or operable panel adjacent to a door where the nearest vertical edge of the glazing is within a 24-inch arc of either vertical edge of the door in a closed position and where the bottom exposed edge of the glazing is less than 60 inches above the floor or walking surface shall be considered a hazardous location.
38. **R308.4.5 Glazing and wet surfaces.** Glazing in walls, enclosures or fences containing or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60 inches measured vertically above any standing or walking surface shall be considered a hazardous location. This shall apply to single glazing and all panes in multiple glazing.
- i. **Exception:** Glazing that is more than 60 inches, measured horizontally and in a straight line, from the water's edge of a bathtub, hot tub, spa, whirlpool, swimming pool.
39. **Table R402.1.3** New windows and exterior doors must be a maximum of U-0.32 or less.
40. **R312.2 Window Fall Protection:** Window fall protection shall be provided in accordance with Section R312.2.1 and R312.2.2.
41. **R312.2.1 Window Sill:** In dwelling units, where the lowest part of the opening of an operable window is located more than 72 inches above finished grade or surface below, the lowest part of the window opening shall be 36 inches above

the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4 inch diameter sphere where such openings are located within 36 inches of the finished floor.

- a. **R310.1 Egress windows** are noted on the Construction Documents; the following are additional requirements for the basement and in all bedrooms.
 - b. MN R310.1 Emergency Escape and Rescue Required. Basements, habitable attics, and every sleeping room shall have at least one operable emergency and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Where emergency egress and rescue openings are provided they shall have a sill height of not more than 44 inches measured from the finished floor to the bottom of the clear opening.
 - c. MN R310.1.1 Minimum Opening Area. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet.
 - d. MN R310.1.2 Minimum Opening Height. The minimum net clear opening height shall be 24 inches.
 - e. MN R310.1.3 Minimum Opening Width. The minimum net clear opening width shall be 20 inches.
 - f. MN R310.1.4 Operational Constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge.
42. **R312.2.2 Window Opening Control Devices.**
- a. Window opening control devices shall comply with ASTM F 2090. The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by Section R310.1.1.
43. **Smoke Detectors and Carbon Monoxide Alarms** Effective August 1, 2008, single family dwelling and every multifamily dwelling unit shall be provided with a minimum of one approved (UL2034) and fully operational carbon monoxide alarm installed within ten (10) feet of each sleeping room. If sleeping rooms are located on separate floors additional carbon monoxide alarms would be necessary within ten feet of these areas.
44. Install smoke detectors in all new and existing sleeping rooms and in all areas giving access to sleeping rooms. In new and existing construction each level and the basement shall have a smoke detector. Primary power for required smoke detectors will be from the building wiring and shall be equipped with a battery backup. Smoke detector alarm shall be audible in all sleeping rooms.
- i. **Exception:** Required smoke detector alarms in areas of existing buildings where the wall and/or ceiling finish has not been removed or where there is no above ceiling access may be solely battery operated.

PLUMBING / MECHANICAL

45. Plan review for building only, plumbing & mechanical will be done when submitted for permit.
46. **MN2015 Plumbing code 710.1.** This system may require a backflow valve if the lower level is lower than the manhole cover in the street.

47. **MN2015 plumbing 402.5** Fixtures shall be set level and in proper alignment with reference to adjacent walls. 15" minimum each side of stool nor closer than 30" center to center to a similar fixture and 24" minimum in front of stool.

48. **Mn 2015 Plumbing code 408.7.1**

- a. Shower receptors shall be tested for water tightness by filling with water to the level of the rough threshold. The test plug shall be so placed that both upper and undersides of the sub-pan shall be subjected to the test at the point where it is clamped to the drain.

49. Bath exhaust fan must be vented directly to the exterior and insulated through non-conditioned spaces or the last 3 feet in a conditioned space.

50. **MN Mechanical Fuel and gas code**

Section 505 Domestic kitchen exhaust equipment

505.1 Domestic systems.

- a. Where domestic range hoods and domestic appliances equipped with down draft exhaust are located with-in dwellings, the hoods and appliances shall dis-charge to the outdoors through ducts constructed of galvanized steel, stainless, aluminum, or copper. The ducts shall have smooth inner walls and shall be air tight and equipped with a back draft damper. Domestic kitchen exhaust hoods ducted to the outdoors shall have make-up air provided according to the **Minnesota Rules, part 1346.0501**. Refer to part 1346.6010 for Table C-1, "Recommended Capacities for Domestic Kitchen Exhaust Hoods".

51. **Conclusion**

The home has a few cracked in the foundation with minimal reinforcing and grading will make this a structurally sound home.

Grounds:

The Grading around house shows either flat or negative grade, this flows water towards the foundation of the house it sits. To prevent water infiltration and expansion of cracks we recommend creating a positive grade around the building at 5 degree pitch or 6 inch fall in the first 10 feet. Downspout extension to remove the water away from the foundation.

Foundation Walls:

Cracks in the foundation suggests it is most likely caused by possible impact damage to wall.

Repair solutions for structural cracks include wall plate anchors, carbon fiber straps, and push piers.

Foundation cracks should also be filled in with either epoxy, or carbon fiber or mortar.





