

STRUCTURAL NOTES for 754 PAYNE AVENUE:

APPLICABLE CODE- Minnesota State Building Code,  
latest adopted edition.

DESIGN LOADS

A. Roof:

1. Snow Load

- Pg (ground snow load)= 50 PSF
- Pf (snow load on flat roof)= 42 PSF
- Ce (exposure factor)= 1.0, partially exposed/terrain category B
- Ct (thermal factor) = 1.2
- I (importance factor) = 1.0
- Snow surcharge per ASCE 7-05

2. Dead Load

Assumed roof total design dead load 18 PSF

B. Floor:

1. Live Loads (See plan for exceptions)

- a. Corridors, stairs, lobbies and exits- 100 PSF
- b. Decks (Servicing residential occupancy)- 40 PSF
- c. Decks (Balance)- 100 PSF

2. Dead Loads (Wood framing)- 18 PSF

C. Lateral: Earth- Typical cohesionless soil pressure assumed.

Wind- Per ASCE 7-05.

D. Seismic: No effect

E. Wind: 3-second gust speed at 33 feet = 90 MPH.

- Exposure B.
- Kd (directionality factor) = 0.85
- Kzt (topographic factor) = 1.0
- I (importance factor) = 1.0

SOIL PREPARATION AND FOUNDATIONS

A. Materials

1. Footings to bear on properly compacted fill or native soil capable of sustaining an assumed bearing pressure of 2000 PSF in accordance with IBC latest edition Section 1804 (Class 4 material or better). Allowable bearing pressure to be verified by an independent testing agency. If soil appears to be of questionable quality or in a loose state, contact Engineer before proceeding with the work.



**RWB**  
design



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TITLE	SHEET
ENLARGED STRUCTURAL NOTES	
PROJECT	<b>S3.1</b>
754 PAYNE AVENUE	
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2. All fill material to be granular soil or other cohesionless material approved by the soil testing agency.

B. Installation Notes

1. Prior to installing foundations, soil to be field inspected by an independent testing agency familiar with the site to assure that the compaction specifications have been satisfied. Provide Special Inspection and material tests per schedule (see attached "Special Structural Testing and Inspection" schedule). Submit all inspection reports, material test reports, etc. to the Architect.
2. All topsoil is to be stripped from building and pavement areas. All very loose sands and silt and clay soils also to be stripped.
3. All fill material to be spread in maximum 6" loose lifts and compacted with vibratory compactors to a minimum 98% of the maximum dry density as determined by ASTM D698, Standard Proctor. Moisture content at the time of compaction should be controlled to within +/- 3% of the optimum moisture content. Contractor to verify these values with the Geotechnical Consultant prior to construction.
4. Provide minimum 3'-6" soil cover for foundation frost protection along perimeter of heated areas, 5'-0" in isolated areas. Contractor to verify with Geotechnical Consultant prior to construction.

CONCRETE- SITE CAST

- A. Design Code: ACI 318, ACI "Manual of Standard Practice...", latest adopted edition.

B. Materials

1. Minimum concrete strength at 28 days (f<sub>c</sub>) for structural slabs, foundation walls and slabs-on-grade to be 4000 psi. For footings, 3000 psi.
2. Concrete supplier to submit concrete mix designs to Structural Engineer for all site cast concrete.
3. Concrete slabs on grade and toppings:  
Concrete supplier to verify that the concrete materials are appropriate for the use and exposure of the slabs/toppings.
4. Furnish 5-7% air entraining agent for all concrete exposed to freezing temperatures.
5. Reinforcing steel
  - a. Welded wire fabric- ASTM A185.
  - b. Deformed bars- ASTM A615, Grade 60.  
Reinforcing steel bars shall be marked physically with same designations as shown on the structural drawings.

- C. Provide Special Inspection and material tests per schedule (see attached "Special Structural Testing and Inspection" schedule). Submit all inspection reports, material test reports, etc. to the Structural Engineer.

- D. Submit shop drawings for reinforcing steel.

E. Installation notes:

1. All items to be placed in accordance with approved shop drawings.
2. Provide wire spacers, chairs and ties for support of reinforcing. Show on shop drawings.
3. Support reinforcement only with CRSI recommended bar supports (wood, brick, etc. not acceptable) or hang from top of forms. Use supports with sand plates or horizontal runners for slab-on-grade reinforcement.
4. Concrete cover per ACI 318, latest adoption.
5. Place and securely tie footing dowels in position prior to concrete placement (i.e.: do not embed dowels into wet concrete).

MASONRY

A. Design Code: Masonry Standards Joint Committee Code (MJSC), latest adopted edition.

B. Provide Special Inspection and material tests per schedule (see attached "Special Structural Testing and Inspection" schedule). Submit all inspection reports, material test reports, etc. to the Structural Engineer.

C. Submit shop drawings for reinforcing steel, mix designs for grout and mortar and written report of all required tests.

D. Materials (concrete masonry)

1. Design  $f'_m$  minimum 1500 psi (net area compressive strength of masonry). Compressive strength of concrete masonry shall be determined by IBC 2006 Section 2105.2.2.1 or 2105.2.2.2. Contractor to verify/coordinate.
2. Hollow unit concrete masonry- ASTM C 90, Grade N, heavyweight (sand & gravel) units, kiln cured by high pressure steam (autoclave) or low pressure steam with carbonation. 28 day compressive strength (net area) minimum 3,000 psi.
3. Minimum corefill-grout strength at 28 days ( $f'_c$ ) to be 3,000 psi.
4. Mortar- per ASTM C 270 and C 476. Minimum requirements:
  - a. Type "S" for all below grade masonry.
  - b. Type "N" for all above grade and interior masonry.
5. Reinforcing steel
  - a. Deformed bar- ASTM A615, Grade 60. Reinforcing steel bars shall be marked physically with same designations as shown on the structural drawings.
  - b. Joint reinforcement (single wythe walls)– Dur-O-Wall "D/A 320 LADUR" or approved equal conforming to ASTM A82 (hot dip galvanized).
  - c. For all types of joint reinforcing and masonry ties: Contractor to coordinate with architectural requirements.

E. Installation Notes

1. Block supplier shall provide test reports to Engineer

- showing compressive strength values for masonry units.
2. Provide joint reinforcement every block course in stack bond walls, every other course in running bond walls.
  3. Reinforcement lap splices shall be in accordance with Lap Splice Schedule on plan. Dowel vertical reinforcement to footings.

## STEEL- STRUCTURAL

- A. Design Code: "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" (AISC), latest adopted edition.
- B. Materials:
  1. ASTM A992- All W-Shape beams and channels deeper than 5"
  2. ASTM A36- Channels 5" and shallower, angles, plates, and bars
  3. Welding electrodes- ASTM A233 E-70 series.
- C. Installation Notes
  1. Shop and field welding to be per AWS D1.1, latest adopted edition, and performed only by certified welders.
  2. Paint steel per AISC Spec. Section M3.
  3. Provide corrosion resistant coating around all structural steel below grade.

## LUMBER

- A. Design Code: "National Design Specification for Wood Construction", latest adopted edition.
- B. Materials:
  1. All members designated as "LVL" to have the following minimum allowable design values:  
Fb=2,600 psi, Fv=285 psi, Fc (parallel to grain)=2,310 psi, Fc (perpendicular to grain, parallel to glue line)=750 psi, and E=1,900 ksi. Provide nailing/bolting connection for multiple piece beams per manufacturer's specifications. Verify top or side loading condition.
  2. PSL members- Minimum allowable design values:
    - a. Beams: Fb=2,900 psi, Fv=290 psi (210 psi when horizontal shear is parallel to wide face of strands),  
Fc (parallel to grain)=2,900 psi, Fc (perpendicular to grain, parallel to wide face of strands)=650 psi,  
Fc (perpendicular to grain, perpendicular to wide face of strands)=480 psi, and E=2,000 ksi.  
Provide nailing/bolting connection for multiple piece beams per manufacturer's specifications unless noted otherwise on plan. Verify top or side loading condition.
    - b. Columns: F=2,400 psi, Fc (parallel to grain)=2,400 psi, and E=1,800 ksi.
  3. Dimension Lumber
    - a. Joists, beams, and columns- Spruce-pine-fir #2 or better (GC to verify/coordinate with the Architect)
    - b. Wall studs- Spruce-pine-fir, stud grade or

- better (GC to verify/coordinate with the Architect)
    - c. Treated material- Southern yellow pine #2 or better (GC to verify/coordinate with the Architect)
    - d. All lumber to have maximum moisture content of 19%.
  - 4. Plywood
    - a. Plywood subfloor and roof sheathing to be C-D INT-APA- minimum thickness per IBC 2006 for loads and spans shown on plans or notes.
    - b. Underlayment to be 1/2 inch C-C PLUGGED EXT-APA.
  - 5. Fasteners and Connection Hardware
    - a. Provide fasteners per the "National Design Specification for Wood Construction", latest edition. Assume nails to be common nails meeting the requirements in ASTM F1667 unless noted otherwise.
    - b. All connection hardware by "Simpson Strong-Tie" or approved equal. Connectors in contact with treated lumber to be fabricated with material to resist corrosive reaction with wood treating chemicals.
    - c. All prefabricated metal connectors to be fully nailed per supplier's specifications.
- C. Installation Notes
  - 1. Protect all glue-laminated members from exposure to weather. Store "PSL's" or "LVL's" in a vertical position.
  - 2. Provide bridging in accordance with Part 4, Section 4.4.1 of the National Design Specification for Wood Construction, latest adopted edition.
  - 3. Extend all columns to foundation system. Block solid at all floors.
  - 4. All nailing performed according to IBC 2006, Table 2304.9.1 unless otherwise noted.
  - 5. Connect sill plate to foundation walls as shown on plan. Add 1 bolt within 12" of plate ends/joints.

## SHOP DRAWINGS/MISCELLANEOUS

- A. Engineer will review Contractor's shop drawings with respect to the ability of the detailed work, when complete, to be a properly functioning integral element of the overall system designed by Engineer. Before submitting a shop drawing or any related material to Engineer, Contractor shall: Review each such submission for conformance with the means, methods, techniques, sequences and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of the Contractor/approve each such submission before submitting it/and so stamp each such submission before submitting it. Engineer shall assume that no shop drawing or related submittal comprises a variation unless Contractor advises Engineer otherwise via a written instrument which is acknowledged by Engineer in writing. Shop drawing(s) called for are indicated in the material specifications. Engineer shall return shop drawings

with comments provided that each submission has been called for and is stamped by Contractor as indicated above. Engineer shall return without comment material not called for or which has not been approved by Contractor.

- B. Placement of mechanical units supported by roof or floor structure is subject to the approval of the Engineer.
- C. Verify all existing conditions and dimensions. Report all conflicts in construction documents or between construction documents and actual conditions to the Engineer before proceeding with the affected work.
- D. Contractor is responsible for bracing all structural elements, without overstressing, until project is complete. This includes bracing of existing adjacent structures and soils. Stockpiling of materials on supported levels is at Contractor's own risk.
- E. Install all anchors noted (expansion, epoxy, powder actuated, etc.) per Manufacturer's specifications.
- F. In no case shall dimensions be scaled from plans, sections or details on the structural drawings.