# Masonry

1. Masonry construction and materials shall conform to the more stringent provisions of Chapter 21 of the **2015 Michigan Building Code** And the requirements of THE **“Specification for Masonry Structures (TMS 602-13/ACI 530.1-13/ASCE 6-13)”** published by The Masonry Society, longmont, Colorado, except as modified by the requirements of these contract documents.
2. Contractor shall provide necessary labor, materials and equipment to lay masonry as shown or specified in these construction documents.
3. All work shall be laid true to a line, plumb and level in keeping with the tolerances given in **“Specifications for Masonry Structures (TMS 602-13/ACI 530.1-13/ASCE 6-13)**.
4. Employ hot or cold weather construction practices as defined in TMS 602/ACI 530.1/ASCE 6 when ambient air temperature exceeds 100°F or is below 40°F. No work shall be done subject to freezing temperatures or on frozen substrate.
5. Concrete masonry units shall conform to ASTM C90.
	1. The masonry assembly shall have a **minimum compressive strength (f’m) of 2000 psi**.
	2. Masonry assembly compressive strength shall be deemed to comply through the use of masonry units with a **net area compressive strength of 2000 psi** or through masonry prism testing with prior approval.
6. Mortar shall be of materials and proportioned in compliance with the proportion specifications of ASTM C270 AND SHALL BE OF THE FOLLOWING TYPE BASED ON APPLICATION:
	1. TYPE M OR S FOR MASONRY BELOW GRADE OR IN CONTACT WITH EARTH
	2. TYPE S FOR UNREINFORCED MASONRY ABOVE GRADE
	3. TYPE **[N] [S]** FOR REINFORCED MASONRY ABOVE GRADE
	4. TYPE N FOR VENEER MASONRY
7. TOOL MORTAR JOINTS TO A CONCAVE PROFILE, USING A JOINTER LARGER THAN JOINT THICKNESS, ON EXPOSED INTERIOR FACE OF WALL AND EXTERIOR EXPOSED FACE WHEN MORTAR IS THUMBPRINT HARD. STRIKE MORTAR JOINTS FLUSH ON EXTERIOR (CAVITY) FACE OF BACKUP WYTHE.
8. Sand for mortar shall conform to ASTM C144 and shall be measured in loose, damp condition.
9. Grout shall conform to the proportion requirements of ASTM C476. grout shall have a **minimum compressive strength (f’g) of 2000 psi** and meet or exceed the masonry assembly compressive strength (f’m).
10. Provide material submittals and/or test reports showing compliance with referenced standards.
11. All masonry work shall be laid in running bond unless noted otherwise.
12. All masonry work below grade shall be solid or have solid grouted cores.
13. Grout placement and consolidation shall conform to Section 3.5 in TMS 602/ACI 530.1/ASCE 6.
14. All grout shall be placed or supervised by masonry certified in grout placement by the International Masonry Institute, the Masonry Institute of Michigan, or an approved alternate.
15. All walls shall be adequately braced in accordance with MiOSHA Construction Safety Standard Part 2 and the “standard practice for bracing masonry walls under construction” (december 2012) published by the mason contractors association of america.
16. All walls shall receive the minimum specified vertical reinforcement at each side of openings, control joints, and all corners unless noted otherwise.
17. Contact the engineer for lintels over openings not shown in the plans.
18. **Control joints shall be installed as shown in the plans and per the following requirements:**
	1. **Maximum joint spacing shall be 25’-0” unless noted otherwise.**
	2. **Joints shall be constructed using grouted flanged units (Michigan Control Joint) or with preformed hard rubber gaskets in sash units.**
	3. **Do not place control joints at lintel ends unless specifically noted.**
19. Grout 24” wide by 24” deep at all beam bearing locations and at other point load locations except grouted bearing zone may terminate at a solid grouted bond beam course that is less than 24” below the bearing point.
20. Masonry joints shall be fully filled for solid units and face shell bedded with head joint depth equal to the face shell or greater for hollow units unless noted otherwise.
21. Provide ladder type joint reinforcement with (1) 9 GA deformed side rod in each face unless noted otherwise. Install joint reinforcement at 16” on center vertically FOR UNITS WITH A NOMINAL HEIGHT OF 8" AND AT 12" ON CENTER VERTICALLY FOR UNITS WITH A NOMINAL HEIGHT OF 4", unless noted otherwise.
22. Masonry construction conformance with the construction documents shall be verified in accordance with ‘**Table 4 – level b quality assurance**’ in “**Specifications for Masonry Structures (TMS 602-13/ACI 530.1-13/ASCE 6-13)** and be conducted by an ICC certified Structural Masonry Special Inspector.
23. the contractor shall allow a 3 day curing period of masonry construction prior to the application of surcharge loads.

# Masonry Reinforcement

1. All steel reinforcement shall be deformed bars conforming to ASTM A615 Grade 60 unless noted otherwise.
2. Tie wire shall conform to ASTM A82.
3. Horizontal joint reinforcement shall conform with ASTM A82 and be hot dipped galvanized in accordance with ASTM A153.
4. Detailing, bending and placing of steel reinforcement shall be in accordance with the provisions of **“Specifications for Masonry Structures” (TMS 602-13/ACI 530.1-13/ASCE 6-13)**.
5. SUBMIT SHOP DRAWINGS INDICATING SIZE, LOCATION, AND DIMENSIONS OF REINFORCING STEEL FOR ALL REINFORCED MASONRY WALLS.
6. All steel reinforcement shall be placed and supported as necessary to maintain proper position in accordance with **“Specifications for Masonry Structures” (TMS 602-13/ACI 530.1-13/ASCE 6-13)**.
7. All steel reinforcement marked or shown as continuous may be spliced with a lap splice as indicated in these construction drawings or conforming to **“Specifications for Masonry Structures” (TMS 602-13/ACI 530.1-13/ASCE 6-13)**.
8. joint reinforcement shall be lapped a minimum of 8”.
9. use prefabricated joint reinforcement sections for intersecting walls and corners, OR FOLLOW AN ESTABLISHED PROCEDURE FOR FIELD FABRICATING CORNERS AS SHOWN BY THE MASONRY INSTITUTE OF MICHIGAN.
10. All Horizontal steel reinforcement shall be continuous around corners to provide lap lengths in accordance with **“Specifications for Masonry Structures (TMS 602-13/ACI 530.1-13/ASCE 6-13)** or as indicated in these construction drawings, unless noted otherwise.
11. Continue all vertical steel reinforcement from footing to bond beam unless noted otherwise. Where termination occurs in bond beams engage bond beam steel with a standard 90- or 180-degree hook.
12. SUPPORT REINFORCEMENT TO PREVENT DISPLACEMENT CAUSED BY CONSTRUCTION LOADS OR BY PLACEMENT OF GROUT OR MORTAR, BEYOND THE ALLOWABLE TOLERANCES IN ACCORDANCE WITH "**SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 602-13/ACI 530.1-13/ASCE 6-13**".
13. **Discontinue all horizontal reinforcement at control joints except at diaphragm levels unless noted otherwise.**
14. Masonry reinforcement cover:
	1. Masonry face exposed to earth or weather, #6 bar or larger . . . . . . 2”
	2. Masonry face exposed to earth or weather, #5 bar or smaller . . . . . 1 1/2”
	3. Masonry not exposed to earth or weather . . . . . . . . . . . . . . . . . . . . . . . . . 1 1/2”
	4. Masonry joint reinforcement exposed to earth or weather . . . . . . . 5/8”
	5. Masonry joint reinforcement not exposed to earth or weather . . . 1/2”