

**ORROCK TOWNSHIP
SHERBURNE COUNTY, MINNESOTA
ROAD CONSTRUCTION STANDARDS**

The following Road Construction Standards are required for all public roads in Orrock Township. Special conditions outlined in the “Developer’s Agreement” must also be met before final road acceptance.

1. The minimum road right-of-way width shall be 66 feet.
2. The right-of-way shall be cleared of all brush, trees, and stumps. All debris shall be removed from the right-of-way. The width of clearing shall be as follows:
 - a. Rural street section – 66 foot width
 - b. Urban street section – 45 foot width
3. The roadway shall conform to the typical rural or urban section attached to these standards.
4. The ditch depth and width shall conform to the typical street section attached to these standards and shall convey all existing stormwater runoff from outside the development area. All ditches shall be designed to convey the 10-year design storm without causing flooding on roadways and adjacent properties. Where low points exist without drainage outlets adequate storage shall be provided to retain the 100-year frequency, 24-hour design storm without flooding adjacent properties. Any exceptions to the standard section will require a Certified Civil Engineer’s Plan, approved by the Town Engineer and Town Board, assuring adequate drainage of water from the road surface and ditches.
5. Urban design streets shall have storm sewer systems installed to provide for surface water runoff. Storm sewers shall be designed for a 10 year frequency storm event in conformance with the “Rational Formula” method of design. All detention pond areas and all storm sewers providing outlets for detention pond areas shall be designed for the 100 year frequency, 24 hour duration storm event in accordance with the “Soil Conservation Service” (SCS) method of design. Combination pipe and ditch pond outlets will be considered based upon suitable design data being furnished by the Developer’s Engineer and approval by the Town Engineer and Town Board.
6. Rural design streets shall be built to be free of snow traps and flooding. All ditches shall provide for the 10 year frequency storm event in accordance with the “Rational Formula” method of design without flood encroachment on the road shoulder or bituminous surface. Culverts under roadways and driveways shall be designed for the 50 year storm event without overtopping of the roadway; except when they are the outlet from a detention pond and then they shall be designed for the 100 year frequency, 24 hour duration storm event in accordance with the “Soil Conservation Service” (SCS) method of design, without overtopping the driveway.
7. All landlocked ponding areas without outlets shall be provided with drainage easements to encompass the elevation of the water surface computed by using the 100 year, 10 day rainfall amount and post development runoff conditions in accordance with the “Soil Conservation Service” (SCS) method of design. All stormwater basins shall provide an emergency overflow for all storms above the 100 year storm that directs water to existing drainage ways.

Drainage easements shall be provided for all retention and detention areas to provide for expected flood high water elevation.

All stormwater shall be treated to meet the current requirements of Sherburne County including, but not limited to, MS4 requirements. All post development runoff shall equal to less than the pre-development conditions. All stormwater calculations shall be provided in a Hydro Cad compatible format. All storm sewers shall be designed with the Rational Method.

8. Dead end roads shall have a minimum cleared right-of-way diameter of 120 feet and a bituminous road surface diameter of 96 feet for a turnaround, with a 3-foot shoulder comprised of Class 5 aggregate base. For roads that are laid out to be continued at a later date, there shall be a temporary turnaround built in the same manner as previously outlined, including bituminous pavement. Due to high maintenance costs, cul-de-sacs are to be kept to the minimum number possible. Temporary cul-de-sacs shall be constructed within temporary easements outside the 66-foot right-of-way rather than in platted right-of-way.

9. Roads shall be designed for a minimum 30 mph design speed. All finished grades shall be reasonable and justified, with a maximum 5% grade. A maximum 2% grade shall extend 100 feet from all intersections. The Board reserves the right to request a lesser grade when deemed necessary to assure safety and efficient road maintenance. This will be determined during the plan review process. A road profile and drainage plan shall be furnished to the Town Board in conformance to the Developer's Agreement. Exceptions to these design criteria will be allowed only when conditions justify and the Town Board approves the exception for public safety and/or environmental considerations. Before Class 5 aggregate base work is started, the edge of the road shall be staked and test roll of the subgrade performed. No bituminous paving shall be placed prior to written approval by the Township Engineer.

10. Class 5 aggregate based with a minimum 5% binder (subject to testing) shall be placed as per the typical street section with a minimum thickness of 4 inches. Additional thickness may be required depending on the soil conditions. All base work shall be inspected, test rolled, and approved by the Town's representative prior to placement of the bituminous surface. Class 5 shall be compacted to a minimum 95% of the Modified Proctor Density and shall be tested by the Developer at locations specified by the Town's representative. The minimum test frequency shall be every 300 feet.

11. A 6% oil content plant-mixed bituminous surface (or as per the approved job "mix formula") shall be placed in accordance with Standard Minnesota Highway Department Specifications 2331, Type 41B. The bituminous shall be placed as per the typical street section with a 2-inch compacted thickness with a minimum thickness of 1 3/4-inches being accepted at any location. There shall be a 12-inch wide, 2-inch thick apron 30 feet long where driveways or mailboxes are already established. All bituminous placement shall be inspected and approved by the Town's representative. The bituminous shall have a minimum specified density of 95% of the Marshal Density and shall be tested by the Developer at locations specified by the Town's representative. The minimum test frequency shall be every 300 feet.

All bituminous road surfacing shall be designed in accordance with the MnDOT design manual. The R-Value shall be supported by soil borings and traffic volumes should assume 10 trips per day per lot using the Sherburne County traffic volume projections for a 20-year design life. All bituminous mixtures shall be in accordance with the latest MnDOT 2360 specification and shall use Type "C" oil in the upper 4-inches of pavement. The minimum bituminous thickness shall be 3 1/2 inches. All pavements shall be 10 ton for the projected traffic volumes. All shoulders shall be paved to a width of 3-feet for a distance of 20-feet before each driveway to accommodate mail delivery. All bituminous shall meet the specified density requirements of MnDOT 2360 latest edition. No recycled bituminous will be allowed in the upper 2-inches of the pavement.

No bituminous paving shall be placed without written approval from the Township Engineer.

12. Shouldering, Class 5 (with a minimum 7% binders, subject to testing) shall be placed 3 feet beyond the edge of the bituminous mat and brought up to the level of the bituminous surface. All shouldering shall be inspected by the Town's representative prior to acceptance.

13. It shall be the responsibility of the Developer and/or Contractor to notify the Town's representative **a minimum of 72-hours** prior to paving so that adequate tests and inspections can be accomplished on the road construction. Failure to notify the Town's representative in time to perform proper inspection of the base or bituminous surface will result in one of the following:

- a. The right of the Town Board to refuse acceptance of said proposed road.
- b. The right of the Town Board to require test core-boring as requested by the Town's representative to determine if the specified gravel and bituminous depth, meeting the specifications were installed, together with density tests and oil content tests. Test core-borings for the entire project to average one (1) boring every 5,000 square feet and are to be paid by the Developer. The Town Board reserves the right to select the company to provide test core-borings. All borings and sample holes shall be repaired at the Developer's expense.

14. Culverts are required as follows:

- a. All private driveways shall have a minimum 12-inch diameter and 30-foot length, 16 gauge metal culvert with aprons installed in the roadway ditch alignment.
- b. All public roadway cross culverts shall be a minimum 18-inch diameter, 16 gauge metal culverts with aprons of the length required to match the roadway ditch and embankment conditions.

15. Special Requirements:

16. Amendments:

MIKE'S EDITS:

Urban street shall be 32-feet wide face to face with B618 curb and gutter.

24-foot paved with 3-foot shoulders

1:4 inslopes 4-foot ditch bottom and 1:3 backslopes. All ditches shall be 3 feet deep minimum.

All inslopes and ditch bottoms shall have a minimum of 6 inches of topsoil.

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All stormwater basins shall provide an emergency overflow for all storms above the 100 year storm that directs water to existing drainage ways.

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Minimum of 72 hours notice will be required prior to paving.