

**CITY OF ANDOVER
ENGINEERING DESIGN STANDARDS
2021 CONSTRUCTION SEASON**

The table is a brief summary of the design standards required by the City of Andover Engineering Department for all new development, both residential and commercial. Refer to the attached City of Andover Standard Details and the City of Andover Standard Specification for more specific information.

SANITARY SEWER

- Trunk Line Pipe
 - MaterialPVC
 - ClassSDR 35 (0-16')
 - ClassSDR 26 (16'-25')
 - ClassC900 / DIP CL 50 (25' +)
- Manholes
 - Type.....Pre-cast (see details)
 - Maximum inlet / outlet elevation difference 1'
 - Minimum manhole depth8'
 - Type of Castings.....R-1642-B
 - Outside Drop2' minimum (DIP)
- Services
 - MaterialPVC
 - ClassSchedule 40 (C900 – 25'+)
 - Wyes.....PVC Schedule 40 (C900 – 25'+)
 - Cleanout.....PVC Schedule 40

WATER MAIN

- Trunk Line Pipe
 - Material DIP
 - Class 52
 - Fittings.....Mech. Joint Ductile Iron - Megalugs
 - Minimum Diameter 8" (6" on hydrant leads and dead end cul-de-sacs)
 - Minimum Cover 8'
 - Side of street for water main varies
 - Insulation (2-2" thick layers)..... <8' cover or 3' on crossings
- Hydrant
 - Type..... Waterous Pacer or American Flow Control with Alpha Restrained Joint
 - Depth 9' bury
 - Spacing 200' radius
- Valves
 - Type Resilient Seated Waterous 2500 Series or American Flow Control with alpha restrained joint(<12")
 - Type..... Butterfly Dresser 450-01 (12" +)
 - Valve Boxes Tyler 6860, 3-piece cast iron with gate valve adaptor
 - Gate Valve Extension Rod..... Required

- Maximum spacing At all intersections and max. spacing of 500' commercial, 800' all other
- Services
 - Material..... 1" Type K Copper
 - Corp Stop..... FB600 Ballcorp
 - Curb Stop..... Ford Ball Valve B22-444M
 - Curb Box..... Ford EM2-80-56

STORM SEWER

- Pipe
 - MaterialRCP or HDPE
 - ClassManufacturers Recommendation
 - Minimum Diameter on CB Leads12"
 - Minimum Diameter on Laterals and Trunk.....15"
 - Minimum Culvert Size15"
 - Culvert MaterialRCP or CMP (private drives only)
 - ApronsRequired on all with Grates
- Catch Basins and Manholes
 - MaterialPrecast Concrete or HDPE
 - Minimum Depth4'
 - Casting (Storm Manhole)R-1642 B
 - Casting (Catch Basin – with curb offset on radii) ...R-3250 A (not used much anymore)
 - Casting (Catch Basin – Surmountable Curb)R-3501 TB
 - Casting (Catch Basin – Yard Inlet)R-2535 A
 - Casting (Catch Basin – in driveway).....R-3508C or R-3501 TB
 - Casting (Catch Basin – Barrier Curb)R-3067V, R-3067VB (low points)
- Design
 - Frequency10-Year Design for Storm Sewer
 - Minimum Storm Sewer Design Velocity3.0 fps
 - Design Frequency for Detention Basins.....100-Year Event - Atlas 14 (2-100 Year or 10- Day Snowmelt for Landlocked Basins)
 - HWL below adjacent structure low opening2'
 - Emergency Overflow swale below low opening.....2'
 - Minimum swale grade (vegetated)2.0%
 - Pond OutletsSkimmer manhole structures

STREETS

(Urban sections generally have City sewer and water available, within the MUSA boundary)

- Pavement
 - Width (Urban)33' back to back (parking allowed on both sides of roadway for non-MSA routes)
 - Width (Rural)31' back to back (parking allowed on both sides of roadway for non-MSA routes)
 - Cul-de-sacs93' diameter back to back (120' ROW)
 - Temporary cul-de-sacs80' diameter back to back (with 14.5' street, drainage and utility easement)

- Bituminous Wear Course (SP 9.5 (2,C)).....1.5”
- Bituminous Base Course (SP 12.5 (2,C))....1.5”
- Class V Aggregate Base5”
- Subgrade.....Must be approved granular
- Boulevard
 - Width (Urban)13.5’
 - Width (Rural)14.5’
 - Grade+ 2% from back of curb to right of way
 - Restoration.....4” Topsoil and Seed/Sod
- Concrete Curb and Gutter
 - Type.....Surmountable
 - Type.....B618 around radii and offset catch basins
- Bituminous Trails
 - Width.....8’ (10’ Regional)
 - Section.....2.5” Bit Wear Course, 4” Class V
 - Longitudinal GradesSee MnDOT Bicycle Design Manual
 - Pedestrian Curb RampsTruncated Domes at all intersections
- Concrete Sidewalks
 - Width.....5’ (6’ if adjacent to parking stalls)
 - Section.....6” concrete on approved subgrade
 - Longitudinal GradesSee MnDOT Bicycle Manual
 - Pedestrian Curb RampsTruncated Domes at all intersections
- Miscellaneous
 - Roadway Crown3.0%
 - Longitudinal Grades0.5% minimum, 7.0% maximum
 - Driveway Grades8% maximum
 - Maximum intersection approach grade2.0% within 30’ of an intersection
 - Horizontal Curves.....Minimum 50’ radius (minimum of 50’ tangent between reverse curves)
 - Vertical Curves.....MnDOT charts, 30 mph (55 mph rural)
 - Sight Triangle at intersections.....Based upon MnDOT Design Charts, Case IIIB and IIIC.
 - Maximum Cul-de-sac length.....500’
 - Minimum Cul-de-sac radius.....30’ (into bubble)
 - Minimum Intersection Radius.....20’ (30’ minimum at County Roads)
 - Minimum Bituminous WidthUtilize standard urban or rural typical section details. For PUD’s, minimum of 27’ (for emergency vehicle access)
 - Right-of-way60’ (120’ for cul-de-sacs)
 - Right-of-way Corners.....20’ radius City Street, 30’ abutting County Roads
 - Temporary Cul-de-sacs at plat lines.....80’ back to back (required if stub 210’ or longer).
 - Seed TypeMnDOT 25-151 (lawn areas) or 25-121 (roadside, non-lawn)
 - FertilizerMnDOT 3881, Analysis 20-10-10

DRIVEWAYS

- Areas with City Sewer and/or Water
 - Surface MaterialConcrete, Bituminous, Brick Pavers
 - SubsurfaceClass 5
 - Width30’ maximum at ROW, 24’ maximum in cul de sac
 - Section2.5” Bit Wear Course (Min), 4” Class V (Min.) or Geotechnical Engineer Recommendation

- Areas without City Sewer and/or Water
 - Surface Material (Street to ROW or Prop. Line).....Concrete, Bituminous, Brick Pavers
 - Surface Material (ROW or Prop. Line to Garage)...Class 5 minimum
 - SubsurfaceClass 5
 - Width30’ maximum at ROW
24’ maximum in a cul-de-sac
 - Section2.5” Bit Wear Course (Min), 4” Class V (min) or Geotechnical Engineer Requirement

PARKING LOTS (City Code 12-13-8)

- Required Parking Stalls contact Planning Dept and refer to City Code
- Stall Dimensions 10’ wide x 18’ long minimum
- Drive Aisle Width..... 24’ for 60-90 degree stalls. 20’ for stalls less than 60 degree angle.
- Drive Aisle Radii Minimum of 16’ for passenger vehicles and/or 25’ for truck access. Provide turning movement templates.
- Required Grades between 1% and 5%
- Surface Material..... Same as Driveway surfacing requirements
- Striping 4”wide white for parking stalls
- Curbing concrete curb and gutter required, except in areas where future parking expansion is planned.
- Parking Lot Setbacks 20’ (front); 10’ (side and rear); 20’ (side and rear if abutting ROW of a residential district)