Town of Clayton Design/Construction Standards
(UPDATED March 2026)

GENERAL ITEMS

1. All materials are to be manufactured domestically unless otherwise noted and approved by the Town.
2. The Standard Warranty on Projects to be 2 years from the date of substantial completion, with landscape restoration to have a 1-year warranty.
3. All lot numbers and/or addresses shall be located on the plans for identification and tie locations.
4. All right of way, roadway and easement widths shall be shown on all plan sheets for reference.
5. Watermain/Storm Sewer and Sanitary Sewer conflicts shall be shown on all plans.
6. Bid advertisements to be submitted to the Town by 10:00 AM on Wednesday of the week of posting of the advertisement in the Appleton Post-Crescent. This will result in a Friday posting.
7. All new services to have one tracer box with all three utility wires fed to one access point, including water service curb box. Install continuous tracer wire from main to tracer wire box to end of service. Provide 2' of slack wire at top of tracer wire box.
8. Advance Reader Boards to be included in traffic control plans for any collector & arterial roadways. Reader boards to be in place a minimum of seven (7) days prior to construction start. Town may request longer lead time on a case-by-case basis.

DRAWINGS

1. Drawings to be prepared at 1" = 20' scale on 22" by 34" plan sheets or at 1" = 40' scale on 11" by 17" plan sheets unless otherwise approved by the Town.
2. After the Bid Opening, create a pdf of the "As Bid" plan set include any revised drawings from addendums.
3. After construction is completed and record drawings are prepared, provide the Town with a PDF and electronic file of the record drawings and utility lateral cards. The drawings shall reflect the actual locations, slopes and elevations in the field without strikeouts of the As Bid information. Provide the Town with the CAD file of the record drawings.

WATER MAIN

1. Materials
    A. Main Piping, Fittings, and Related Components
        i. The Village of Fox Crossing Standards and Specifications shall be followed for water main piping, fittings, and related components.
    B. Valves
        i. The Village of Fox Crossing Standards and Specifications shall be followed for water utility valves.

C. Hydrants
    i. Hydrants shall be Waterous Pacer WB 67-250, color – hazard yellow.
    ii. Hydrant caps shall be painted relative to the flows as follows:
        a. Class AA – Greater than 1,500 gpm: Blue
        b. Class A – 1,000 – 1,499 gpm: Green
        c. Class B – 500 – 999 gpm: Orange
        d. Class C – Less than 500 gpm: Red
    iii. Hydrant Nozzles – 1- 5” Storz permanent hydrant adapter with cap, and 2 – 2 1/2” NST Hose nozzle.
    iv. Hydrants shall have Hydrant Markers – Flexi-Flag) FF-1 53” hydrant marker by Nordic Fiberglass, Inc.).
    v. Hydrant tracer wire access shall be Snakebite Cobra Hydrant Flange or approved equal.

D. Dry Hydrants:
    i. A dry hydrant shall be provided with all new stormwater wet ponds in areas not currently served by residential water. Construction of the dry hydrant components shall be in accordance with standard details provided by the Town of Clayton (Appendix A) and the following.
        a. All piping shall be Schedule 40 PVC with airtight connections. Piping below normal water level shall be 10-inch diameter, and piping above normal water level shall be 6-inch diameter.
        b. Strainer shall be bolted to a 45 degree 10-IFtCh PVC Schedule 40 long sweep elbow. Mating flanges and gasket shall be VAN STONE SOC FLG (P80VSSFI0), 1 0 RR 1/8 FF 150# GSKT (FNWRIFFGA10).
        c. Strainer shall be a 10 -inch Schedule 40 Barrel Strainer by ETT, LLC Dadeville, AL 9194-100. 36-inches of clearance is required around strainer on all sides.
        d. Transition from horizontal pipe to vertical pipe shall be made using two (2) 45- degree elbows with a 24” minimum pipe between the two elbows.
        e. A 12" long piece of 6" pipe shall be installed at ground level. Connected at both ends by flanges and gaskets. 6 PVC S80 VAN STONE SOC FLG (PFPSOVSSFU), 6 RR 1/8 FF 150# GSKT (FNWRIFFGAU).
        f. Provide a 45 Degree adapter with cap shall be Made by Kochek part number DHF612. The top of this adapter shall be 20" above adjacent roadways.

E. Water Services
    ii. The Village of Fox Crossing Standards and Specifications shall be followed for water utility services.

F. Bedding & Backfill
    iii. The Village of Fox Crossing Standards and Specifications shall be followed for bedding and backfill.

G. Miscellaneous

i. Wrap with polyethylene encasement, conforming to AWWA C105, all underground fittings, valves, curb boxes, portions of hydrants below grade, etc.
ii. All nuts and bolts below grade shall be 304 stainless steel with an anti-seize mechanism.
iii. Tracer wire on all water main, services, and hydrants. Tracer wire color shall be blue. Install tracer wire above grade access points at hydrants. Grounding rods shall be installed at any trace wire dead end, or access point. See attached details.
iv. For water reconstruction/rehab projects where services are installed without or away from sanitary and storm services, use Valvco Sewer Tracer Wire Access Box manufactured by C.P. Test Services-Valvco, Inc., reference: http://thewaterpartners.com/valvco.html or The Cathodic Test Box P200 series manufactured by Bingham & Taylor, reference: http://www.binghamandtaylor.com/cathodic.htm or Copperhead SnakePit Access Point, reference: https://copperheadwire.com/snakepit-access-point
v. Contractor to provide - Adjustable Hydrant Wrenches – 2 each.
vi. Contractor to provide - Valve Wrench Keys – 2 each.
vii. Contractor to provide - Flexible Curb Box Keys and Wrenches – 2 each.

2. Design & Construction
   A. Main
      i. Use bends in design of water main, or Contractor/Developer to request approval from Town to deflect pipe joints (allowable deflection is ½ the manufacturers recommended maximum deflection, typically two degrees per full pipe segment), if approved, Contractor/Developer is responsible if main leaks when pressure tested.
      ii. Water main lowering
         a. Design with bends, Contractor to request to deflect pipe. Town/Engineer to review each on a case-by-case basis.
         b. Contractor is responsible for deep valve boxes and hydrants, if deflected.
      iii. Water main minimum cover to be 6.5 feet.
      iv. Water main location (typical) - 7' off of property line.
      v. Plastic pipe bedding to be 4” below the pipe to 12” above the pipe.
   B. Valves
      i. Mainline valves to be placed 3 feet off of fittings unless conditions require otherwise. These conditions are to be reviewed and approved by the Town.
   C. Hydrants
      i. Hydrants 11.5' off of property line (5' behind curb and gutter) and at property corners and intersections, unless noted otherwise.
      ii. Hydrant leads to have a 6” valve.
      iii. Hydrant bury depths shall be shown on plans.
      iv. Typical Hydrant separation distance to be 400’ – 500’ based on the

layout, variation to be reviewed and approved by the Town.

v. Hydrant lead valves to be placed 3’ off the hydrant and fittings if watermain is in roadway. Hydrant lead valve to be placed 3’ off hydrant and 1.5’ off tee if watermain is 7’ off ROW unless it varies. If the distance is closer than stated, anchor tees may be required. This will be reviewed by the Town on a case-by-case basis.

D. Water Services
   i. Water services are to be installed to right of sanitary sewer when looking at lot with the curb stop located at the right of way line.
   ii. Curb stops to be installed at right of way line with no “pig tail” extended on private property side.
   iii. During reconstruction projects, curb boxes located in concrete driveways, sidewalks or pavement shall be encased inside of a 4” valve box riser with cover.
   iv. Final grade adjustments of valves and curb boxes shall be made by the Contractor after the final landscaping is completed.

E. QA/QC
   i. Field Quality Control Testing to be Pressure and Leakage Testing, Disinfection and Bacteriological Testing and Continuity Testing of tracer wire. Testing
   ii. Bacteriological Testing to include 2 Bac-T tests and chlorine residual tests. Chlorine residual testing will be completed by Town representative. Provide a minimum of 24 hours’ notice for chlorine residual testing.

3. Field Record Information
   A. Photographs are to be taken during construction of each fitting prior to placing the poly wrap and should contain an identifier tag in the photographs to include hydrants, valves, fittings, curb stops and corporations with an identifier tag labeling each.

SANITARY SEWER

1. Materials
   A. Gravity Main
      i. Sanitary Sewer gravity pipe material - <18" PVC
         8” – 15” up to 25 feet deep ASTM D3034, PSM SDR 35
         8” - 15” greater than 25 feet deep, ASTM D3034, PSM SDR 26
      ii. Sanitary Sewer gravity pipe material >18" PVC/RCP
         PVC 18” – 48”, up to 25 feet deep ASTM F679, PS46
         RCP CL III based on loading/soils.
      iii. Sanitary Sewer gravity pipe elastomeric gaskets conforming to ASTM F477 and Joints ASTM D3212, Solvent weld joints are not permitted.
      iv. Repair coupling shall be from ABS to PVC shall be Fernco with Stainless Steel Shear Rings. Repairs couplings for like materials shall be the same.
   B. Gravity Lateral
      i. PVC SCH 40 pipe.

ii. Service joints shall be solvent weld ASTM D2672.
iii. Service wyes shall be factory in-line wyes for PVC Pipe material.
iv. When tapping a lateral into existing PVC sanitary sewer, the lateral shall be installed into a cut-in inline wye. The spot repair to accommodate the cut-in inline wye shall be completed with Harco PVC Repair Couplings or approved equal.
v. When tapping a lateral into existing or new concrete sanitary sewer, the lateral shall be installed into an Inserta-Tee or approved equal.
vi. When tapping a lateral into existing ABS sanitary sewer, the lateral shall be installed into a saddle wye.

C. Forcemain
i. Forcemain pipe material to be 4" – 12" AWWA C900, Pressure Class 235, Thickness Class DR 18.
ii. Forcemain elastomeric gaskets conforming to ASTM F477 and Joints ASTM D3139.
iii. All forcemain fittings shall be AWWA C153 Short Body Fittings with fusion bonded epoxy coating in accordance with AWWA C116.
iv. Rubber gasket joints on forcemain fittings shall conform to AWWA C111.
v. All forcemain fittings shall be mechanically restrained.
vi. Wrap with polyethylene encasement, conforming to AWWA C105, all underground forcemain fittings, valves below grade, etc.
vii. All nuts and bolts below grade shall be 304 stainless steel with an anti-seize mechanism.

D. Manholes
i. Manhole base sections shall be an integral monolithic bottom extending a minimum 6" beyond the riser section and shall be constructed on a minimum of 6" base of ¾" aggregate base material. Manhole shall be a minimum of 6' height from the top of casting to the flow line.
ii. Manhole castings shall be Type 1 Frame and Cover Neenah Foundry R-1500, with a non-rocking and locking lid and concealed pick holes. When manhole adjustment is limited, provide Type 2 Frame and Cover Neenah Foundry R-1689. All lids shall be non-rocking, locking lids with concealed pick holes.
iii. Manhole steps shall be a minimum of 11 3/8" wide and project from the wall between 5" and 7".
iv. Provide Bolt Down Frame and Cover Neenah R1916-C with stainless steel bolts where shown on drawings.
v. Install Internal/Exterior Manhole Seals on all sanitary manhole chimneys. Acceptable manufacturer to be Adaptor Inc.
vi. Manhole barrel sections to be constructed with a butyl rubber joint sealant rope type configuration. Material to be Conseal CS-102 Butyl Rubber Sealant for all Precast Structures or equal. Strips to be 1 1/4" size applied along the outside edge of the joint between the manhole base/barrel/cone/top sections.
vii. Manhole rings and casting to be sealed between rings per ring

manufacturers recommendations.

viii. Manhole adjusting ring numbers to be minimized by utilizing thicker units with the top ring to be a "finishing" ring tapered to fit the cross slope of the roadway. A maximum height of 12" of rings is allowed. The top two rings must be plastic (EPP or HDPE) Rings greater than or equal to 6" thick can be concrete if chosen by the Contractor. Anything less than 6" thick must be plastic (EPP or HDPE). Seal per manufacturer's recommendations.

ix. Manhole connections shall use A-Lok or Z-Lok connectors cast into the concrete.

x. All Sanitary Manholes and Lift Stations to be constructed with a butyl joint wrap at each joint located on the outside of the manhole in addition to the butyl rubber sealant as listed above. Butyl Rubber joint wrap to be a minimum 6" in width.

E. Bedding and Backfill

i. Select Granular Backfill conforming to WisDOT 1 ¼" dense graded base course gradation is required above the specified bedding material in the following locations:

1. Roadway and up to 4 feet beyond the back of curb
2. Under sidewalk, within 1 foot outside of edges of sidewalk
3. Under driveways

ii. Plastic pipe bedding to be 4" below the pipe to 12" above the pipe with ¾" crushed stone.

iii. Concrete pipe bedding to be 4" below pipe to 1/6 of outside diameter with ¾" crushed stone.

F. Miscellaneous

i. Contractor to provide - Manhole Hooks – 2 each.

ii. Tracer wire on all sanitary sewer main, force main and sewer laterals. Access for tracer wire for sanitary sewer mains and force mains shall be at access boxes. Install tracer wire access boxes for sewer services. If sewer and water services are installed during the same project, use combination tracer wire box. Tracer wire color to be green. Contractor to leave a minimum of 3' of spooled tracer wire on top step of manhole.

iii. The Valvco Sewer Tracer Wire Access Box manufactured by C.P. Test Services-Valvco, Inc., reference: http://thewaterpartners.com/valvco.html The Cathodic Test Box P200 series manufactured by Bingham & Taylor, reference: http://www.binghamandtaylor.com/cathodic.htm or Copperhead SnakePit Access Point, reference: https://copperheadwire.com/snakepit-access-point.

2. Design & Construction

A. Gravity Main

i. Sanitary sewer location (typical) - Middle of the roadway.

B. Laterals

i. Sanitary sewer laterals shall be at a depth of 10’ at the property line unless conditions preclude that depth. Review with the Town. Laterals to extend to 12’ Utility Easement line.

3. QA/QC
   A. Field Quality Control Testing to be Pressure and Leakage Testing for pressure mains, low pressure tests for gravity pipes on new mains, Televising with a video, Deflection (Mandrel) Testing and Continuity Testing of tracer wire. All testing shall be provided in a report or form to the Town/Engineer.
   B. All sanitary sewers are to be cleaned prior to the televising.
4. Field Record Information
   A. Contractor to record with the Owner, elevations of all mainline stubs on sanitary sewer.
   B. Field Record Information - Photographs are to be taken during construction of each fitting prior to placing the poly wrap and should contain an identifier tag in the photograph to include laterals, risers, wyes and manholes.
5. Rehabilitation Projects
   A. When rehabilitating existing sewers, the following criteria shall apply after reviewing sewer televising performed within 24 months of the rehab work:
      i. Replace all pipe sags of greater than 40% and pipe sags of less than 40% if a history of backups at sag location is recorded.
      ii. Replace all offset and separated joints.

STORM SEWER

1. Materials
   a. Storm Sewer Main
      i. Storm Sewer Main pipe material – 8” - 10" - PVC
         1. 8” – 10” up to 25 feet deep ASTM D3034, PSM SDR35
      ii. 8” - 10” greater than 25 feet deep, ASTM D3034, PSM SDR 26
      iii. Storm Sewer Main pipe material 12" – 15” – PVC or RCP
         1. 12” – 15” up to 25 feet deep ASTM D3034, PSM SDR35
         2. 12” - 15” greater than 25 feet deep, ASTM D3034, PSM SDR 26
         3. RCP CL III based on loading/soils.
      iv. Storm Sewer Main pipe material 18" and greater - RCP.
         1. RCP CL III based on loading/soils.
      v. All Storm Sewer Inlet Leads – RCP.
         1. Minimum storm sewer diameter for mainline and catch basin leads to be 12” diameter.
      vi. Storm Sewer elastomeric gaskets conforming to ASTM F477 and Joints ASTM D3212, Solvent weld joints are not permitted.
      vii. Repair coupling shall be from ABS to PVC shall be Fernco with Stainless Steel Shear Rings. Repairs couplings for like materials shall be the same.
   b. Storm Sewer Laterals
      i. Storm Services 4” – 6” shall be PVC SCH 40 pipe.
      ii. Service joints shall be solvent weld ASTM D2672.

iii. Storm Sewer wyes branches.
    1. pipe size of 15" or less - PVC, use factory in-line wye with the material the same as the pipe.
    2. all pipe size - RCP, core-drill w/ expandable gasket to be an Inserta-Tee or approved equal.

c. Manholes and Inlets
    i. Manhole base sections shall be an integral monolithic bottom extending a minimum 6” beyond the riser section and shall be constructed on a 6” base of ¾” aggregate base material.
    ii. Manhole shall be a minimum of 6’ height from the top of casting to the top of the base section.
    iii. Manhole castings shall be Type 1 Frame and Cover Neenah Foundry R-1500, with a non-rocking and locking lid and open pick holes. When manhole adjustment is limited, provide Type 2 Frame and Cover Neenah Foundry R-1689.
    iv. Provide Bolt Down Frame and Cover Neenah R1916-C with stainless steel bolts where shown on drawings.
    v. Catch Basins shall be Type 11 Frame and Box with Type “L” grate except at sags, provide a Type “C” grate Neenah Foundry R-3067.
    vi. Catch basins to have a Type R grate with the Neenah R-3000-A EnviroNotice Plate – “Dump No Waste – Drains to Fresh Water”.
    vii. Catch basins to be Type “A” (2’ x 3’) in roadway, Type C-2 (30" diameter) inside/backyards unless a yard drain is approved by the Town.
    viii. Catch Basins shall be a minimum of 6’ height from the top of casting to the bottom of the base section.
    ix. Manhole and inlet adjusting ring numbers to be minimized by utilizing thicker units with the top ring to be a “finishing” ring tapered to fit the cross slope of the roadway. A maximum height of 12” of rings is allowed. The top two rings must be plastic (EPP or HDPE) Rings greater than or equal to 6” thick can be concrete if chosen by the Contractor. Anything less than 6” thick must be plastic. Seal per manufacturer’s recommendations.
    x. Manhole connections shall use flexible watertight connectors cast into the concrete.

d. Bedding and Backfill
    i. Select Granular Backfill conforming to WisDOT 1 ¼” dense graded base course gradation is required above the specified bedding material in the following locations:
        1. Roadway and up to 4 feet beyond the back of curb
        2. Under sidewalk, within 1 foot outside of edges of sidewalk
        3. Under driveways
    ii. Plastic pipe bedding to be 4” below the pipe to 12” above the pipe with ¾” crushed stone.
    iii. Concrete pipe bedding to be 4” below pipe to 1/6 of outside diameter with ¾” crushed stone.

e. Miscellaneous

i. Pipe to pipe connectors for reconstruction or rehab projects to be Strongback Fernco or approved equal.
ii. Tracer wire on all storm sewer laterals. No tracer wire on storm sewer main straight in alignment between manholes. Non-typical alignments of storm sewer (i.e. bends, deflections) to be determined by the Owner/Engineer. See general note 7 for new services. Tracer wire color to be brown.
iii. The Valvco Sewer Tracer Wire Access Box manufactured by C.P. Test Services-Valvco, Inc., reference: http://thewaterpartners.com/valvco.html or The Cathodic Test Box P200 series manufactured by Bingham & Taylor, reference: http://www.binghamandtaylor.com/cathodic.htm or Copperhead SnakePit Access Point, reference: https://copperheadwire.com/snakepit-access-point
iv. If not part of a sanitary sewer project, Contractor to provide - Manhole Hooks – 2 each.

2. Design & Construction
   a. Main
      i. Storm sewer location (typical) – 8' off of the property line.
      i. Mini Storm Sewer may be allowed upstream of public end walls, curb inlets, or catch basins, to be reviewed and approved by the Engineer/ Town.
   b. Laterals
      i. Lateral size shall be based on design. Duplex buildings shall be 6" min.
      ii. Each residential lot shall have its own individual storm lateral from the main extended:
         1. To the right of way line for reconstruction projects.
         2. To the right of way line or into the 12' utility easement.
      iii. Storm laterals to be installed to the left of the sanitary sewer lateral when looking at the lot.
   c. Manholes/Inlets
      i. Manhole/Catch Basin barrel sections to be constructed with a butyl rubber joint sealant rope type configuration. Material to be Conseal CS-102 Butyl Rubber Sealant for all Precast Structures or equal. Strips to be 1 1/4" size applied along the outside edge of the joint.
      ii. Manhole/Catch Basin adjusting ring numbers to be minimized by utilizing thicker units with the top ring to be a "finishing" ring tapered to fit the cross slope of the roadway. A maximum height of 12" of rings is allowed. The top two rings must be plastic (EPP or HDPE) Rings greater than or equal to 6" thick can be concrete if chosen by the Contractor. Anything less than 6" thick must be plastic. Seal per manufacturer's recommendations.
      iii. Manhole/Catch Basin connections shall use a non-shrink grout with concrete pipe. Plastic pipe connections shall be with a watertight boot, Kor-n-Seal or equal (for storm sewer only)

iv. All catch basins shall have proper inlet protection installed to prevent any soil erosion into the catch basin during construction. Inlet Protection must be installed to protect the back of the catch basin. Inlet Protection shall remain until the site is 70% vegetated.
v. Catch Basins to be over excavated a minimum of 24" for visual awareness to allow for backfilling with unwashed stone material and mechanically compaction.

d. Culverts crossing Town owned streets shall be designed on a case-by-case basis.

3. QA/QC
   a. Field Quality Control Testing to be Televising with a video for storm sewer that fail the lamping test, Deflection (Mandrel) Testing on all plastic pipe and Continuity Testing of tracer wire. All testing shall be provided in a report or form to the Town/Engineer.
   b. If the need to televise as noted above, all storm sewers are to be cleaned prior to televising.
4. Field Record Information
   a. Contractor to record with the Owner, elevations of all mainline stubs on storm sewer.
   b. Photographs are to be taken during construction of each fitting prior to placing the poly wrap and should contain an identifier tag in the photograph to include catch basins, wyes, laterals and manholes.

ROADWAYS/CURB AND GUTTER

1. Roadway Typical Sections
   a. Typical local roads shall have 66' Road Right of Way and consist of:
      i. Minimum 22' wide roadway measured from edge of asphalt to edge of asphalt.
      ii. Minimum 3' gravel shoulder (may be reduced to 2" per Town/Engineer's approval) on each side consisting of ¾" dense graded base course material. The shoulder shall be at the same elevation at the edge of asphalt, then slope away from roadway at 4% slope.
      iii. Local Roads Typical Section:
         1. 1 1/2 inches asphalt surface
         2. 2 1/2 inches asphalt binder
         3. 12 inches of 1 ¼ inch crushed aggregate base course. All aggregate used for street construction shall contain no more than 9.5% P200.
         4. Geogrid may be installed below the proposed pavement and shoulders. Geogrid can be substituted for 3" of lower base course material with Town/Engineer approval.
         5. Roadway cross slope to be 2%.
         6. All ditches shall be generally designed to be cut 2-1/4 feet below edge of pavement elevation with a foreslope of no more than 4 to 1, a back-slope of no more than 3 to 1, and graded to permit proper drainage with gradual slopes at a grade not less than 1.0%

per approved street plans. Variation from these standards required to accommodate existing topography shall be reviewed and/or approved by the Town/Engineer.

7. Typical Sections can change based on the soil conditions of the area. Changes are to be requested to be reviewed by the Town.

b. Collector and Arterial Roads shall have an 80' Road Right of Way and consist of:
   i. Minimum 24' wide roadway measured from edge of asphalt to edge of asphalt.
   ii. Minimum 3' gravel shoulder (may be reduced to 2" per Town/Engineer's approval) on each side consisting of ¾" dense graded base course material. The shoulder shall be at the same elevation at the edge of asphalt, then slope away from roadway at 4% slope.
   iii. Collector and Arterial Roads Typical Section:
      1. 2 1/2 inches asphalt surface, installed in 2 lifts unless otherwise approved by the Town/Engineer.
      2. 2 1/2 inches asphalt binder
      3. 15 inches of 1 ¼ inch crushed aggregate base course. All aggregate used for street construction shall contain no more than 9.5% P200.
      4. Geogrid may be installed below the proposed pavement and shoulders. Geogrid can be substituted for 3" of lower base course material with Town/Engineer approval.
      5. Roadway cross slope to be 2%.
      6. All ditches shall be generally designed to be cut 2-1/4 feet below edge of pavement elevation with a foreslope of no more than 4 to 1, a back-slope of no more than 3 to 1, and graded to permit proper drainage with gradual slopes at a grade not less than 1.0% per approved street plans. Variation from these standards required to accommodate existing topography shall be reviewed and/or approved by the Town/Engineer.
      7. Typical Section shall be determined in design of each road. Typical Sections can change based on the soil conditions of the area and the projected traffic volumes and type of use of the roadway. Changes are to be requested to be reviewed by the Town.

2. Driveway Typical Section:
   a. Concrete driveway aprons shall not be allowed within the Town's Road Right of Way.
   b. All driveways shall be constructed or reconstructed to have sloped sides. Such construction shall be accomplished using only soil materials. The side slopes of the driveway shall be sloped no more than a length-to-height ratio of 2:1.
3. Sidewalk: (all sidewalk constructed on 4" ¾ inch crushed aggregate base course)
   a. Standard sidewalk: 4-inch concrete.
   b. Curb Ramps: 6-inch concrete. All curb ramps shall have a minimum 6' wide opening unless wider is required by the Town.

c. Driveways: 6-inch concrete.
d. Typical Sections can change based on the soil conditions of the area. Changes are to be requested to be reviewed by the Town.

4. Temporary Cul de sac turn-arounds at the ends of roadways shall consist of a 50' graveled radius and a 47' paved radius.
5. Curb and Gutter
    a. Minimum of 0.40 % grade on curb and gutter.
    b. 30-inch (6" sloped) Type Wisconsin Department of Transportation standard mountable Concrete Curb and Gutter shall be placed on the radii of all road intersections. The Town reserves the right to require curb and gutter on any other portion of a Town Road for both ease of maintenance and public health and safety.
    c. Standard intersection radius in residential area is 20.00' to back of curb and gutter.
    d. Curb Reinforcement at all lateral trenches (20-foot length), also 10 feet length each way of inlets, or as designated by Owner. Dowel reinforcement into existing curb at all point repairs and tie-ins. Expansion joint shall be placed at the first joint outside of the reinforcement at inlets.
    e. Curb ramps shall be WisDOT Type 2, 3, or 4. WisDOT Type 1 curb ramps shall only be used with Town approval.
6. Concrete Mix
    a. 4,000 psi minimum 28-day compressive strength.
    b. The Town reviewed the amount of inorganic material allowed in the concrete mix design to prevent freeze thaw issues. Furnish liquid membrane-forming curing compounds composed of a blend of boiled linseed oil and high viscosity, heavy bodies linseed oil emulsified in a water solution conforming to AASHTO M 148, Type 2, Class B.
7. Asphalt Mix
    a. Determined by design.
8. Utilities in Roadways
    a. Manhole rims and valve box covers are to be adjusted to be constructed approximately ¼" to ½" below the final asphalt surface.
9. Fire Apparatus Access Roads.
    a. See Attachment titled "Appendix D."
        i. Amend D103.3 Turning Radius. To read:
            1. The minimum turning radius shall be:
                - Inside – 25'6"
                - Curb to Curb – 41'6"
                - Wall to Wall – 48'4"

LANDSCAPE RESTORATION

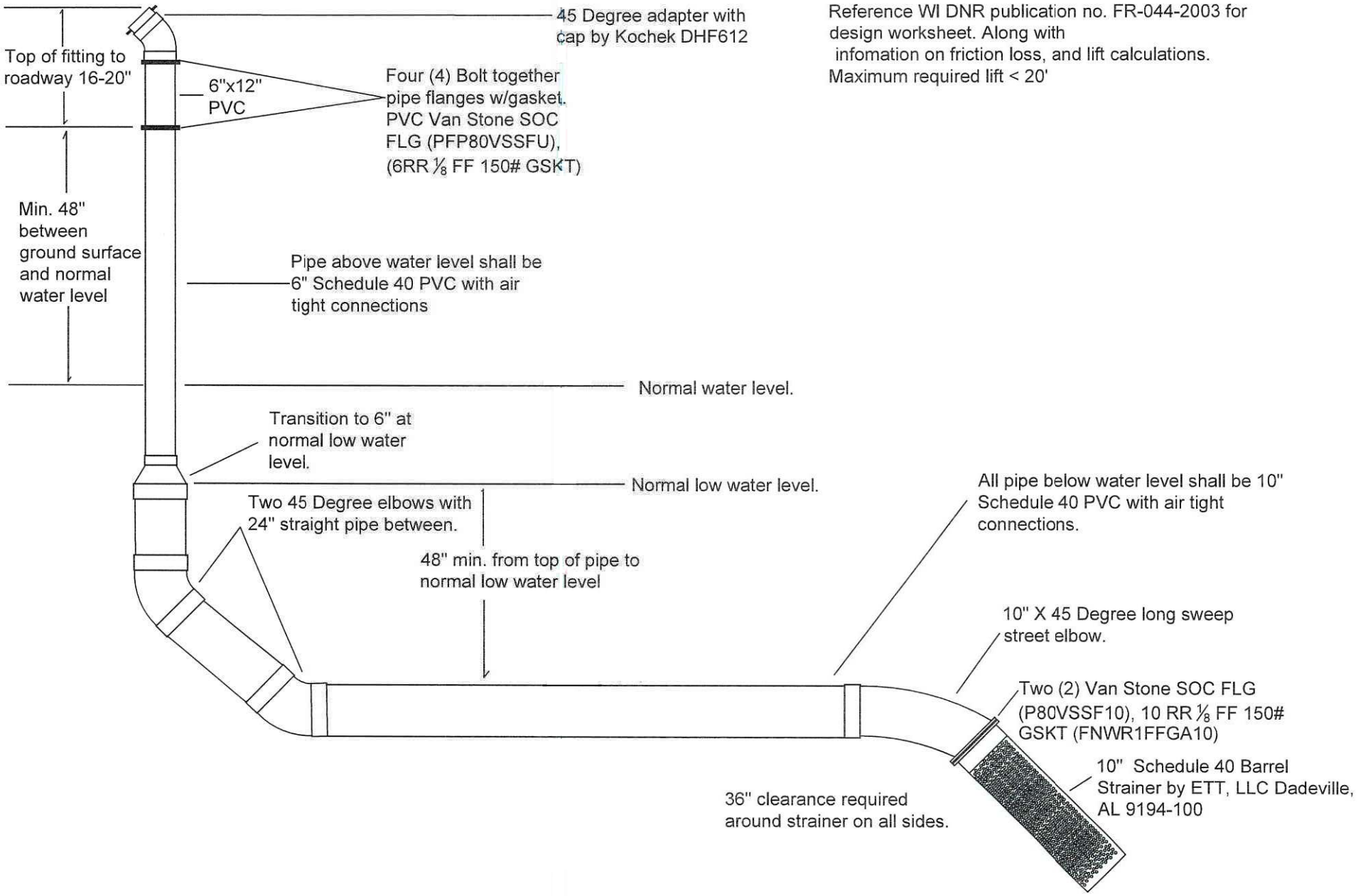
1. Provide seeding at double DOT standard seeding rates.
2. The Contractor shall provide (and incorporate into the soil) fertilizer to the areas indicated on the approved plans and specifications to be seeded. Type A Fertilizer per

shall be applied at the rate specified by the Town/Engineer.

SUBDIVISION PLAT/DESIGN STANDARDS

1. Road rights of way shall have a minimum 100' tangent between two curves of differing directions and/or radii.
2. Roadway profiles and subdivision grading plans shall avoid trapped low points. A trapped low point is a location where storm water runoff from the right of way and other areas has no overland flow path through publicly controlled property to a storm water management feature or natural drainage feature. It is preferred that low points in roadways have direct connection from public right of way to a public drainage feature capable of conveying flood waters. Should this not be possible, at a minimum a 20' wide drainage easement shall be provided and a grading plan minimizing ponding depths in roadways to less than 12" must be provided.
3. Provide grading plans with grades along all lot lines. Grades may be existing or proposed but must adequately convey water from private properties to public rights of way or drainage features. Designs shall avoid storm sewer catch basins in easements to an extent practicable.

Appendix A - Dry Hydrant Detail



Reference WI DNR publication no. FR-044-2003 for design worksheet. Along with infomation on friction loss, and lift calculations. Maximum required lift < 20'

Created by Clayton Fire Rescue 2017

APPENDIX D
FIRE APPARATUS ACCESS ROADS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.

User note:

About this appendix: *Appendix D contains more detailed elements for use with the basic access requirements found in Section 503, which gives some minimum criteria, such as a maximum length of 150 feet and a minimum width of 20 feet, but in many cases does not state specific criteria. This appendix, like Appendices B and C, is a tool for jurisdictions looking for guidance in establishing access requirements and includes criteria for multiple-family residential developments, large one- and two-family subdivisions, specific examples for various types of turnarounds for fire department apparatus and parking regulatory signage.*

SECTION D101
GENERAL

D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the *International Fire Code*.

SECTION D102
REQUIRED ACCESS

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an *approved* fire apparatus access road with an asphalt, concrete or other *approved* driving surface capable of supporting the imposed load of fire apparatus weighing up to 75,000 pounds (34 050 kg).

SECTION D103
MINIMUM SPECIFICATIONS

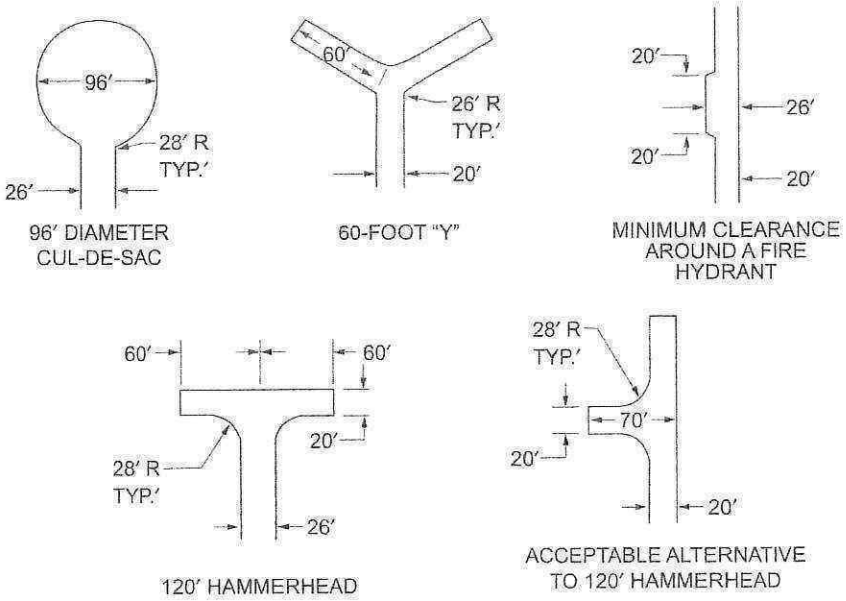
D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).

D103.2 Grade. Fire apparatus access roads shall not exceed 10 percent in grade.

Exception: Grades steeper than 10 percent as *approved* by the *fire code official*.

D103.3 Turning radius. The minimum turning radius shall be determined by the *fire code official*.

D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.



For SI: 1 foot = 304.8 mm.

FIGURE D103.1
DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND

TABLE D103.4
REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0–150	20	None required
151–500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot-diameter cul-de-sac in accordance with Figure D103.1
501–750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot-diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

For SI: 1 foot = 304.8 mm.

D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. Where a single gate is provided, the gate width shall be not less than 20 feet (6096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 12 feet (3658 mm).
2. Gates shall be of the horizontal swing, horizontal slide, vertical lift or vertical pivot type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be *approved* by the *fire code official*.
6. Methods of locking shall be submitted for approval by the *fire code official*.
7. Electric gate operators, where provided, shall be *listed* in accordance with UL 325.
8. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

D103.6 Signs. Where required by the *fire code official*, fire apparatus access roads shall be marked with permanent "NO PARKING—FIRE LANE" signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.

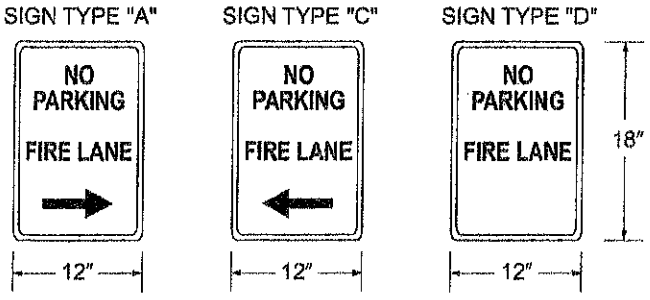


FIGURE D103.6
FIRE LANE SIGNS

D103.6.1 Roads 20 to 26 feet in width. *Fire lane* signs as specified in Section D103.6 shall be posted on both sides of fire apparatus access roads that are 20 to 26 feet wide (6096 to 7925 mm).

D103.6.2 Roads more than 26 feet in width. *Fire lane* signs as specified in Section D103.6 shall be posted on one side of fire apparatus access roads more than 26 feet wide (7925 mm) and less than 32 feet wide (9754 mm).

SECTION D104
COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

D104.1 Buildings exceeding three stories or 30 feet in height. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have not fewer than two means of fire apparatus access for each structure.

D104.2 Buildings exceeding 62,000 square feet in area. Buildings or facilities having a gross *building area* of more than 62,000 square feet (5760 m^2) shall be provided with two separate and *approved* fire apparatus access roads.

Exception: Projects having a gross *building area* of up to 124,000 square feet (11 520 m^2) that have a single *approved* fire apparatus access road where all buildings are equipped throughout with *approved automatic sprinkler systems*.

D104.3 Remoteness. Where two fire apparatus access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the lot or area to be served, measured in a straight line between accesses.

SECTION D105
AERIAL FIRE APPARATUS ACCESS ROADS

D105.1 Where required. Where the vertical distance between the *grade plane* and the highest roof surface exceeds 30 feet (9144 mm), *approved* aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.

Exception: Where *approved* by the *fire code official*, buildings of Type IA, Type IB or Type IIA construction equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and having fire fighter access through an enclosed *stairway* with a Class I standpipe from the lowest level of fire department vehicle access to all roof surfaces.

D105.2 Width. Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet (7925 mm), exclusive of shoulders, in the immediate vicinity of the building or portion thereof.