CITY OF BUFFALO STANDARDS

SUMMARY

GENERAL PLAN REQUIREMENTS

- Plans shall clearly indicate elevation datum and coordinate system being used for the project. Default datum shall be NAVD 88 unless there are project specific reasons to utilize other datum. Default horizontal coordinate system shall be Wright County Coordinate System, NAD83, 1986 Adjustment unless there are project specific reason to utilize another system.
- Include City Project No. on the plans. Obtain the City Project No. from the City Engineer.

SANITARY SEWER

- Provide full depth to plat line or beyond for future. Set manhole at plat line.
- SDR 35 for depths of 20 feet or less. SDR 26 for all depths over 20 feet deep. All service pipe shall be SDR 26.
- Precast manholes with integral base. Manhole shall NOT include steps.
- Casting Neenah® R-1733, labeled "sanitary sewer" with 2 concealed pickholes 180 degrees apart (no gasket on lid).
- All manholes shall have a 1.5" tall paving ring installed on the casting. Paving ring shall be glued in place with the manufacturer's recommended adhesive.
- Avoid green space crossings. Where specifically approved by the City Engineer, green space crossings shall begin and end in roadways unless otherwise approved. Avoid locating manholes in green space.
- Maximum distance between manholes shall be 400 LF unless otherwise approved.
- Services shall be stubbed to 10 LF beyond the R.O.W. line.
- A manhole shall be set at the end of each line. Having a manhole at the end of two lines flowing in opposite directions will not be allowed.
- Tracer wire shall be installed in accordance with Minnesota Rural Water Association tracer wire specifications and details located here: https://www.mrwa.com/PDF/TracerWireSpecGuideFinalweb9.pdf
- All new sanitary sewer mains shall be jetted, vacuumed, and televised prior to acceptance by the City. City shall be provided with an electronic copy of the televising video and report.

WATERMAIN

- Standard material shall be 8" PVC C-900 (DR 18). Larger watermains may be required to meet pressure and flow requirements.
- Fire Hydrants
    - Waterous® WB 67-250, Traffic Rated, Contemporary Style, Red
    - Grade 316 Stainless Steel Bolts
    - Left (C.C.W.) to Open
    - 1 ½" Pentagon Non-Weathershield Operating Nut
    - Pentagon style nozzle caps with chains
    - 2 Hose Connections – 2 ½" NST

    - 1 Pumper Connection – 4 ½" NST
    - 16" break off section
    - 8'6" bury depth typical
    - 6" MJ Base Connection
    - UL Listed
    - The hydrant lead shall contain a 6" gate valve.
    - Color and threads shall match City of Buffalo Standards.
    - Two (2) Hydrafinder fiberglass red/white hydrant markers manufactured by Radon shall be included, forward extra marker to City of Buffalo Water Superintendent.
- Watermain shall have 8' of cover, standard.
- Services shall be 1" PE pipe conforming to Grade PE-3408 or PE-4710 rated for 200 PSI working pressure, SDR-9. Pipe shall conform to ASTM D-1248 & D-2737 for Copper Tube Size, outside diameter controlled. Connections shall be compression type with type 304 stainless steel stiffeners at all connections.
- No services shall be located within driveways. No curb stops shall be located within any paved areas including driveways or sidewalks.
- Water service appurtenances shall be A.Y. McDonald®
    - Curb Box = 5614TW (Tracer Wire Lid) with 60" stainless steel rod and stainless steel cotter pin
    - Curb Stop = 76104Q
    - Corporation stop = 74701BQ
    - Tapping Saddle = Smith-Blair 372
- Curb stop box shall be set at 9' beyond the R.O.W. line and marked with a steel fence post with a blue painted top.
- Mega Lugs® are required for tying watermains.
- Valves shall be set as to provide isolation to each 15-20 lots and at all legs of an intersection. When tying into existing main begin with a valve, unless within multi-phased project.
- Valves shall be placed near the end radius of each leg of the intersection
- All nuts and bolts on valves shall be 316 stainless steel.
- Plan for and provide for complete flushing of all new watermain. No dead ends without a hydrant or temporary flushing capabilities.
- Avoid green space crossings. Where specifically approved by the City Engineer, green space crossings shall have valves in roadway at each end. Also plan green space crossings to avoid bends or mechanical joints in green space.
- Plan for 400 LF centerline measured spacing on hydrants. Set hydrants on right-of-way line at property lines and at intersections on opposite side of road from sidewalk. No hydrant valves shall be placed in sidewalk.
- All valve boxes shall be set so as to provide 6" of elevation adjustment each way.
- All valve boxes shall have a 1.5" tall paving ring installed on top of the box. Paving ring shall be glued in place with the manufacturer's recommended adhesive.
- Tracer wire shall be installed in accordance with Minnesota Rural Water Association tracer wire specifications and details located here: https://www.mrwa.com/PDF/TracerWireSpecGuideFinalweb9.pdf
- Hydrants installed below water table shall have factory plugged drain holes and shall be furnished with a blue pumper nozzle.
- All valve box assemblies shall be furnished with a valve umbrella anchorage assembly as manufactured by Adaptor, Inc., or equivalent.
- All fittings, restrained joint glands, valves and hydrants shall be coated with a 6-8 mil nominal thickness fusion bonded epoxy conforming to the requirements of ANSI/AWWA C550 and C116/A21.16.

- All fittings, valves, valve boxes, hydrants, and water service appurtenances shall be manufactured in the USA
- Two 6 oz. large sacrificial zinc anode caps shall be installed per each gland on every watermain fitting.
- All fittings shall be secured using Core-Blue-T-Bolts.
- All fittings, valves and hydrants shall be fully wrapped, taped and sealed with polyethylene encasement.

COMMERCIAL WATER SERVICES WITH FIRE SUPPRESSION SYSTEM

- If possible, the Riser Room should have a separate outside door accessible with Fire Department master key:
    - Allowed to bring one service into the building and split fire and domestic service inside riser room
    - Valves required inside riser room on domestic service and fire service after the split
    - No PIV or Wall Indicator Valve is required
    - One meter is allowed on the domestic water service
- If the Riser Room does **not** have a separate outside door accessible with Fire Department master key:
    - Requires a separate domestic and fire suppression service 5' outside of the building with a curb stop or gate valve on the domestic service 5' from the building and a Post Indicator Valve (PIV) or Wall Indicator Valve on the fire suppression service
    - One meter is allowed on the domestic water service

STORM SEWER

- All storm sewer pipe shall be RCP (No HDPE allowed).
- Storm sewer manhole castings shall be R-1733B-5001, labeled "Storm Sewer" with 2 concealed pickholes.
- All manholes in the pavement shall have a 1.5" tall paving ring installed on the casting. Paving ring shall be glued in place with the manufacturer's recommended adhesive.
- Catch basin castings in roadway shall be bicycle safe. Curb inlet castings shall be R-3067V for on grade catch basins and R-3067R for low point catch basins.
- Field catch basin casting shall be Neenah R-4342 or R-2561 castings.
- Riprap material shall be Granite.

CITY OF BUFFALO FIBER OPTIC

- The Developer shall extend the City of Buffalo Fiber utility to all lots within the subdivision in accordance with a City supplied fiber optic design and specifications.

CITY OF BUFFALO ELECTRIC & STREET LIGHTING

- The City of Buffalo will extend City of Buffalo Electric to all lots within the subdivision. The Developer shall coordinate with the City of Buffalo and adhere to all policies and procedures related to Buffalo Electric service.

- The City of Buffalo will install street lighting on all local residential roadways as part of the Buffalo Electric installation. The City will provide the design for the lighting system. The Developer shall show the proposed lights on the Development plans and coordinate with the City to avoid conflicts with Developer installed improvements.

STORM DRAINAGE PLAN

- A storm water management plan shall be submitted showing that all of the following requirements have been met.
- Hydraulic calculations shall be based on a 10-year 24-hour storm event using the most recently published NOAA Precipitation Frequency Atlas.
- Storm ponds shall be labeled with the bottom, NWL, HWL = 100 year and overflow elevations.
- Public storm ponds should be contained within outlots dedicated to the City of Buffalo
- All storm sewer lines located outside of the road ROW shall be contained within a utility easement a minimum of 30-feet in width or potententially wider for deeper storm sewer.
- Access must be provided to all storm sewer structures, flared end sections, pipes, and ponds. Access to public BMP's may be provided via drainage and utility easements such that gradients do not exceed 8.00%
- Model 2 year, 10 year, 100 year & 10-inch 24 hour rainfall events using the most recently published NOAA Precipitation Frequency Atlas. All developments shall be designed so that the rate of runoff shall not increase over the predevelopment 24-hour two-year, ten-year and 100-year peak storm discharges rates, based on the last ten years of how that land was used. The 10 inch rain event shall be used to show that no flooding of structures will occur during a 10-inch rain event. Also accelerated channel erosion must not occur as a result of the proposed activity.
- All ponds shall be sized according to MPCA criteria.
- All new development projects shall be designed so that there is a net reduction from pre-project conditions on an annual average basis for stormwater discharge volume (except where infiltration techniques are prohibited below). There shall be a net reduction from pre-project conditions for Total Suspended Solids (TSS) and Total Phosphorus (TP).
- All redevelopment projects shall be designed so that there is a net reduction from pre-project conditions on an annual average basis for stormwater discharge volume (except where infiltration techniques are prohibited below), Total Suspended Solids (TSS) and Total Phosphorus (TP)
- All new developments and site redevelopments where the sum of new and reconstructed impervious equals 1.0 acres or more shall be designed to include onsite volume reduction and treatment practices to retain the first 1.0 inch of rainfall runoff from the new and reconstructed impervious areas.
- Volume reduction practices (e.g., infiltration or other) to retain the water quality volume on-site must be considered first when designing the permanent stormwater treatment system. The City does not consider wet sedimentation basins and filtration systems to be volume reduction practices. If the General Permit prohibits infiltration as described below, other volume reduction practices, such as a wet sedimentation basin, filtration basin, or other practice may be considered. Treatment processes with the highest levels of treatment should be considered first.
- Infiltration systems are prohibited when the system would be constructed in areas:
  a) that receive discharges from vehicle fueling and maintenance areas, regardless of the amount of new and fully reconstructed impervious surface;
  b) where high levels of contaminants in soil or groundwater may be mobilized by the infiltrating stormwater. To make this determination, the Developer must complete the MPCA's site screening assessment checklist, which is available in the Minnesota Stormwater Manual, or conduct their own assessment. The assessment must be retained with the site plans;

c) where soil infiltration rates are more than 8.3 inches per hour unless soils are amended to slow the infiltration rate below 8.3 inches per hour;
d) with less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock;
e) of predominately Hydrologic Soil Group D (clay) soils;
f) in an Emergency Response Area (ERA) within a Drinking Water Supply Management Area (DWSMA) as defined in Minn. R. 4720.5100, Subp. 13, classified as high or very high vulnerability as defined by the Minnesota Department of Health;
g) in an ERA within a DWSMA classified as moderate vulnerability unless the Developer performs or approves a higher level of engineering review sufficient to provide a functioning treatment system and to prevent adverse impacts to groundwater;
h) outside of an ERA within a DWSMA classified as high or very high vulnerability unless the Developer performs or approves a higher level of engineering review sufficient to provide a functioning treatment system and to prevent adverse impacts to groundwater;
i) within 1,000 feet up-gradient or 100 feet down gradient of active karst features; or
j) that receive stormwater runoff from these types of entities regulated under NPDES for industrial stormwater: automobile salvage yards; scrap recycling and waste recycling facilities; hazardous waste treatment, storage, or disposal facilities; or air transportation facilities that conduct deicing activities.

See "higher level of engineering review" in the Minnesota Stormwater Manual for more information.

- Pretreatment devices shall be provided for all development and redevelopment projects to reduce the inflow of trash, debris, and coarse sediment into the MS4. Allowed forms of pretreatment are grass buffers, grass swales, forebays, and inlet sumps.
- For projects where site constraints limit the ability to provide the required control practices within the project boundary; the project may provide lesser onsite volume controls to the extent practical as determined by the City Engineer. Projects that have made reasonable effort but been unable to fully meet stormwater requirements within the project limits may upon authorization by the City Engineer utilize the following methods in order of preference to meet that portion not met onsite (mitigation project):
    a) locations that yield benefits to the same receiving water that receives runoff from the original construction activity;
    b) locations within the same Department of Natural Resource (DNR) catchment area as the original construction activity;
    c) locations in the next adjacent DNR catchment area up-stream; or
    d) locations anywhere within the permittee's jurisdiction.
- Mitigation projects must involve the creation of new structural stormwater BMPs, retrofit of existing structural stormwater BMPs, or the use of a regional structural stormwater BMP that have adequate available capacity to provide the required mitigation.
- Routine maintenance of structural stormwater BMPs cannot be used to meet mitigation requirements required above
- Offsite mitigation authorized above shall be completed within 24-months of the begin of construction on the permitted site.
- Applicants shall provide documentation showing compliance with stormwater requirements. Acceptable options shall be:
    a) Calculations shall be by a methodology listed in the MPCA Stormwater Manual or other method approved by the City Engineer or designee.
    b) For agricultural land subject to this section, the maximum runoff curve number (RCN) used in such calculations shall be 51 for Hydrologic Soil Group (HSG) A, 68 for hydrologic soil group B, 79 for HSG C, and 84 for HSG D.

c) Heavily disturbed sites will be lowered one permeability class for hydrologic calculations. Lightly disturbed areas require no modification. Where practices have been implemented to restore soil structure to pre-developed conditions, no permeability class modification is required.

- Where the City Engineer authorizes the construction of private stormwater management facilities, the applicant/developer shall designate the responsible party for inspection and maintenance of all private stormwater management facilities in an agreement to be recorded against the properties being developed. In addition, the agreement shall provide for:
    a) Description of anticipated maintenance activities and frequency.
    b) Access in perpetuity for inspection of the facilities by the City Engineer or designee.
    c) Access in perpetuity for maintenance of the facilities should the City Engineer or designee find that stormwater facility maintenance is required and upon written notice the property owners fail to take corrective action. If structural stormwater BMPs change, causing decreased effectiveness, new, repaired, or improved structural stormwater BMPs must be implemented to provide equivalent treatment to the original BMP. Any cost of such maintenance or new, repaired, or improved BMPs, including any administrative or legal costs incurred by the City, shall be paid by the property owner.
    d) If the expense is not paid, the expense will be made a special assessment against the property concerned. The property owner waives any rights to appeal the special assessment.

STREETS

- Street section design shall be for 9-ton on a collector and 7 ton on a local road based on the soils report.
- Through residential streets shall be 38-feet face to face. All other local residential streets shall be 32-feet face-to-face. All streets within commercial areas shall be 38 feet face to face. Collector streets shall be at a width and design as determined appropriate by the City Engineer. All street widths are subject to the approval of the City Engineer.
- All cul-de-sacs (including temporary cul-de-sacs) shall have a minimum radius of 50 feet to face of curb.
- Wear course shall be placed after 1 freeze-thaw cycle and at least 75% of the homes substantially complete.
- Islands in cul-de-sacs shall not be permitted.
- Sidewalks shall be located along one side of all streets; cul-de-sacs may be excluded if approved by the City Engineer.
- All manholes and gate valves covered by the base course shall be brought to grade immediately after the base course is placed. They shall be raised again just prior to the final lift of bituminous being placed.
- A Street Signage plan shall be included with all plans.
- All traffic signs including street name signs shall be installed by the developer in accordance with City standards.
- Provide 100’ of profile for existing streets proposed for extension.
- Roll tests shall be conducted on prepared subgrade prior to placing Select Granular Borrow and on prepared Class 5 aggregate base prior to paving bituminous base.
- Traffic control shall satisfy MN MUTCD Standards.

TRAILS

- Shared use trails shall be 10' wide and set back 6' minimum from the back of curb
    - Local trails with minimal use can be reduced to 8' width with City Engineer approval
- Shared use trails shall meet design criteria within the latest edition of the MnDOT Bicycle Facility Design Manual
- For ease of plowing and trail maintenance operations, no objects or finish grade elevation shall be higher than the trail elevation within 6-feet each direction of centerline of trail.
- Minimum horizontal curve radi shall follow design criteria in the MnDOT Bicycle Facility Design Manual but in no case shall the minimum centerline radius be less than 30 feet for maintenance purposes.
- Trail plans shall include plan and profile of all trail locations. Cross sections may be required in certain locations as determined by the City Engineer.

TURF ESTABLISHMENT

- All park areas shall be seeded with a seed mix containing no less than an 80% blend of fescue species with no less than 50%, of that blend, being turf type tall fescue

GRADING AND EROSION CONTROL

- Low openings shall be at a minimum of 3' above the E.O.F and the 100 year H.W.L. of adjacent ponds and wetlands.
- Low floor elevations for homes shall be 3' above the ordinary high water level or the highest known water level whichever is greater of all adjacent ponds and wetlands.
- Any wetland mitigation required for the project must be permitted prior to final plan approval and plans for on-site mitigation must be contained in the submitted project plans and specifications.
- Erosion control shall be in place prior to the start of any work.
- Provide at least two bench marks for each project.
- Provide a SWPPP for each project meeting all requirements in the MPCA NPDES Construction Stormwater Permit. The SWPPP, including but not limited to the site plan portion of the SWPPP, must be kept up to date by the developer throughout the project. The site plans shall incorporate the following erosion and sediment controls and waste controls as described in the MPCA NPDES Construction Stormwater Permit for Construction Activity No. MN R100001:
    a) BMPs to minimize erosion
    b) BMPs to minimize the discharge of sediment and other pollutants
    c) BMPs for dewatering activities
    d) Site inspections and records of rainfall events
    e) BMP maintenance
    f) Management of solid and hazardous wastes on each project site
    g) Final stabilization upon the completion of construction activity, including the use of perennial vegetative cover on all exposed soils or other equivalent means
    h) Criteria for the use of temporary sediment basins
- Construct storm ponds or temporary ponds early in grading. Install erosion control blanket or bonded fiber matrix hydro-seeding from the NWL to the top of pond and along any channelized inflow or overflow routes. After ponds have been completed, seed with a temporary seed mix or native seed mix in the case of permanent ponds.
- The minimum overland drainage grade, including back yard swales, shall be 2.00%.
- All slopes 3:1 or steeper shall be seeded and covered with appropriate erosion control blanket.

- Emergency overflows shall be clearly noted on grading plan sheets and street and utility plans. All EOF's shall be seeded, blanketed and protected with construction or silt fence so as to protect the finished grade during the home building process.
- Wetlands to be preserved shall be encircled with silt fence, prior to the start on any work.
- All wetlands shall have a vegetation buffer equal to the building setback as required by the zoning district and yard area in which the wetland is located, however, in no case shall the buffer zone be reduced to a distance of less than twenty (20) feet. The buffer shall be shown on the grading plans.
- All drainage and utility easements shall be shown on the grading plans.
- Rock entrance shall be installed for all new home construction sites.
- All erosion control shall be completed in accordance with the Minnesota Pollution Control Best Management Practices.
- All silt fence and erosion control shall be removed by the Developer after vegetation has been established and home construction is completed in that area.

OTHER

- Portable Biffs are required at all home construction sites. Each individual home construction site shall have a biff for use by construction workers.

PROJECT FINALIZATION

- A City of Buffalo representative will complete a final inspection and prepare a punch list. All punch list items must be completed and reviewed by the City representative.
- Record drawings shall be submitted in both digital and reproducible formats.
- A two year maintenance bond is required from the date of final project acceptance by the City. The maintenance bond shall be submitted to the City of Buffalo prior to the letter of credit being released. The bond amount shall be 50% of the total cost of all improvements, not including grading or erosion control costs.

RESPONSIBILITY FOR GOPHER STATE ONE CALL LOCATES

- The Developer shall be responsible for completing the locating of all sanitary sewer, watermain, storm sewer, and draintile items per the Gopher State One Call requirements within the project area until all public improvements have been completed and the City has approved the record drawings for the project.

RECORD DRAWINGS

- A Record Grading Plan shall be submitted by the Developer and include the following:
    - Location and finished grade elevations along all swales, berms, and ditches.
    - Location and finished grade elevations for all pond cross sections and emergency overflow locations.
    - City Project Number
- A Record Street and Utility Plan shall be submitted by the Developer and include the following:
    - As built elevations of all sanitary and storm sewer manhole and catch basin rims and inverts and flared end sections.
    - As built elevations, grades and locations of all utility lines.
    - Detailed location sketches of any services not installed exactly per the plan.
    - Benchmark elevations within the development.
    - Contractor's Name and Construction Completion Date.

    - City Project Number
- The Record Drawing plan shall include all Construction Plan sheets with the above record drawing items included on the plan sheets.
- All plan sheets shall be labeled as "Record Drawings"
- Upon completion of the improvements, the Developer shall promptly deliver to the City Engineer a PDF of draft Record Drawings for review. Upon review and after any required changes have been made, the Developer shall deliver the following to the City Engineer:
    - One electronic copy of all plan sheets in a PDF format and one electronic copy of the AutoCAD base drawing in a .dwg format. The base drawing shall include property lines, easement lines, all proposed utility lines, street names, and other information that may be required by the City Engineer.

OTHER APPLICABLE CITY CODES

- CHAPTER 40 – SUBDIVISIONS, PLANNING AND DEVELOPMENT
- You can find the City Code online at https://library.municode.com/mn/buffalo/codes/code_of_ordinances

*Note: Trademarked materials may be replaced by an approved equal, approved by the City of Buffalo Engineer.