UTILITY AND STREET CONSTRUCTION PLAN REQUIREMENTS

SECTION 1

February, 2024

ENGINEERING STANDARDS FOR UTILITY AND STREET CONSTRUCTION PLANS

JANUARY, 2020

CONSTRUCTION PLAN SHEET FORMAT REQUIREMENTS

REPRODUCIBLE MYLAR

1. All construction drawings must be submitted in pdf format or with GIS shape files as a record drawing upon completion of the project. For record drawing specifications, see *Construction Record Drawing Requirements* section #19.
2. The maximum plan sheet size shall be 24" x 36".

ELECTRONIC FORMAT

1. All construction plans approved after January 1, 2006 must be submitted electronically at the time of plan approval. The electronic version must include coordinates for all items using the City point code list as follows:

#	Description
101	Curb Stop
102	Fire Hydrant
103	Junction Box
106	Water Meter Vault
109	Water Valve
110	Waterline ARV (Air Relief) MH
111	Waterline Bend
112	Waterline Corp
114	Waterline Cross
115	Waterline Curb Box
116	Waterline Hydrant Valve
117	Waterline Plug
120	Waterline Sleeve
121	Waterline Tee
122	Waterline Wet Tap
202	Pump
204	Sanitary Sewer Cleanout
206	Sanitary Sewer FM ARV MH
208	Sanitary Sewer Manhole Invert
209	Sanitary Sewer Manhole Rim
210	Sanitary Sewer Plug
211	Sanitary Sewer Service Bend
212	Sanitary Sewer Service Tee
213	Sanitary Sewer Service Wye
301	Arch Pipe - Flared End
302	Arch Pipe – Invert
306	Corrugated Metal Pipe (Invert)
307	Corrugated Metal Pipe (Top)
308	Environmental Manhole
313	Reinforced Concrete Pipe Invert
314	Reinforced Concrete Pipe Top
317	Storm Drop Inlet Top/Grade
319	Storm Sewer Beehive

320	Storm Sewer Bend
321	Storm Sewer Box Culvert Invert
322	Storm Sewer Boxed Culvert Rim
323	Storm Sewer CB INV
324	Storm Sewer CB Rim
325	Storm Sewer Flared End Section
327	Storm Sewer Manhole Invert
328	Storm Sewer Manhole Rim
351	Drain Tile Bend
352	Drain Tile Clean out
353	Drain Tile Invert
355	Drain Tile Plug
356	Drain Tile Wye

2. The electronic file must be in AutoCAD.DWG or *.DXF and pdf format.
3. The electronic file must have layered designations for various items and text as indicated by the table named "Minimum Layering Requirements."
4. The intent of the layering requirements is to separate various items of the drawing. The general concept of the layering is to separate:
   - Proposed features from existing features
   - Proposed text labeling from existing text labeling
   - Different utilities of the construction project
   - Proposed lateral and trunk features from utility services
5. Additional layering from that indicated by the Minimum Layering Requirements is encouraged, and can be completed according to your needs and/or company policy.
6. All electronic files must be accompanied by a **"layer description list"** that identifies the elements of each layer or level.
7. Horizontal control of the Construction Record Drawings must be on Dakota County Coordinate System.
8. Vertical control of Construction Record Drawings must be on the City's Benchmark System. The vertical control loop tying the project to the City's benchmark must be submitted with the Record Drawings.
9. Construction record drawings (As-Builts) must be submitted electronically. The as-builts must be drawn to indicate the as-constructed locations of the utilities. The coordinates for the listed items must be included in the drawing as-builts.
10. All x referenced drawings, linetypes, fonts etc. shall be included with drawing files and submitted on cd-rom.
11. See Standard Plate LV-ST-11 for MnOps requirements.
12.

Minimum Layering Requirements

Layer/ Level	Items
1.	Legend, bar scales, north arrows, headings and sheet numbers, match lines and text, sheet references and other general information
2.	Removals, hatching, shading, etc.
3.	Existing underground utilities (gas, electric, telephone, cable TV)
4.	Existing property lines, right-of-way lines and easements
5.	Existing sanitary sewer and services
6.	Existing sanitary sewer text
7.	Existing watermain and services (Format, move to above 8 and below header)

Layer/ Level	Items
8.	Existing watermain text
9.	Existing storm sewer
10.	Existing storm sewer text
11.	Existing draintile and draintile service stubs
12.	Existing draintile text
13.	Existing curb line or edge of pavement
14.	Text for miscellaneous existing items
15.	Proposed sanitary sewer, sanitary sewer service and appurtenances
16.	Proposed sanitary sewer, sanitary sewer service, text
17.	Proposed watermain and water service and appurtenances
18.	Proposed watermain text and water service
19.	Proposed storm sewer and appurtenances
20.	Proposed storm sewer text
21.	Proposed draintile and appurtenances
22.	Proposed draintile text
23.	Proposed curb lines, walks, trails, etc.
24.	Proposed street construction text
25.	Centerline
26.	Proposed vertical alignment
27.	Proposed vertical alignment text
28	Proposed underground private utilities (electric, gas, telephone, cable) conduit locations
29.	Points with x,y,z, Dakota County coordinates for all listed items using the City point code list
For grading plans or when applicable:	
30.	Existing contours
31.	Existing contour text
32.	Proposed contours
33.	Proposed contour text
34	Garage and lowest floor elevations
35	Spot Elevations

As noted previously, additional layering is encouraged. However, placing similar items on multiple layers is not acceptable.

CONSTRUCTION PLAN SHEET REQUIREMENTS

OVERALL LAYOUT PLAN SHEET:

A. One plan sheet shall show the overall layout of existing and proposed streets, sanitary sewer, watermain, storm sewer and draintile.

The following items must be shown on the cover sheet:

1. North arrow and scale (1”=100’) – Maximum sheet size = 24” x 36”
2. Construction plan and profile sheet numbers
3. Street names
4. Legend with sheet numbers and description

SANITARY SEWER AND WATERMAIN PLAN SHEETS:

A. May be shown on separate sheets or combined on one.

B. The following information shall be shown (North arrow up or to the right all sheets):
1. Scale: 1"=50' horizontal and 1"=5' vertical – Maximum sheet size = 24" x 36"
2. Sizes of mains
3. Types of mains, class of pipe including services
4. Lengths of mains
5. Sizes and types of manholes (if other than standard)
6. Proposed grades of sewer mains
7. Invert elevations of manholes must be from center of manhole to center of manhole. Include rim elevations and manhole builds.
8. Elevations on inverts of all sanitary sewer stubs
9. Arrows indicating the direction of flow on the sanitary sewer plan views
10. Number of each sanitary sewer structure on both plan and profile views, stationing of sanitary sewer structures on profile view
11. Proposed mainline pipe crossings on the profile views
12. Proposed storm sewer shown in plan views
13. Service locations and wye stationing on the plan view (from the main line to the utility easement line) and proposed invert elevations 15' past the right-of-way line. Risers must be listed for each lot if needed. Elevation of the top of the water service stop box at the right-of-way line.
14. Hydrant and valve locations on the plan view, stationing of all fittings and size, Top Nut Hydrant Elevations
15. Existing profile over mainline pipe
16. Finished profile over mainline pipe
17. Street names
18. Lot and block numbers must be included on all As-built plans
19. Location of all existing utilities within 150 l.f. of project
20. Existing and proposed easements
21. Proposed street widths of curb and gutter

STORM SEWER AND STREET PLAN SHEETS:

A. May be shown on separate sheets or combined on one.

B. The following information shall be shown (North arrow up or to the right on sheets):
1. Scale: 1"=50' horizontal and 1"=5' vertical – Maximum sheet size 24" x 36"
2. Sizes of storm sewer pipe
3. Types of storm sewer pipe, class of pipe
4. Lengths of storm sewer pipe
5. Sizes and types of manholes and catch basins (if other than standard)
6. Proposed grades of storm sewer pipe
7. Proposed drainage swale locations, elevations and typical section
8. Elevations on all inverts and elevations of castings of all storm sewer structures
9. Arrows indicating the direction of flow on the storm sewer plan views
10. Number of each storm sewer structure on both plan and profile views

11. Proposed watermain and sanitary sewer shown in plan views
12. Proposed storm sewer pipe crossings on the storm sewer profile views
13. Existing profile over storm sewer pipe
14. Finished profile over storm sewer pipe
15. Show concrete walks and bituminous paths
16. Typical street sections
17. Finished centerline street elevations every 50 feet, vertical curve data and stationing
18. Top of curb elevations at the beginning, mid-point and end of all radii at all street intersections
19. Pedestrian Curb Ramp design details including spot elevations along ramp meeting ADA and PROWAG requirements.
20. Street names
21. Lot and block numbers must be included on all As-built plans
22. Existing and proposed easements/right-of-ways
23. All conduit crossings for private utility installation to be completed by contractor

C. Draintile information to be shown:
1. Size, type and location of pipe
2. Length and stationing of service wyes and clean-outs. Clean-outs to be installed every 150 l.f. and at all dead ends of tile. Draintile street crossing to be installed every 400 l.f. of street, at intersections and at low points. Clean-outs installed at the ends of crossings 3-feet behind the curb only if not connected to a structure, and at the end of all draintile services.
3. If depth of draintile is other than City Standard (Detail Plate LV-STM-9), show top and invert elevations of clean-outs and invert elevations of service stubs at their terminus. Identify slope of the draintile.
4. 6-inch PVC perforated draintile will be required for all mainline applications with 4-inch service stubs provided to back edge of easement line.
5. Public rear yard draintile systems are not permitted. Any necessary rear-year draintile services shall extend from manholes or tees connecting to RC pipe.
6. Arrows indicating the direction of flow on the draintile

MISCELLANEOUS

A. Residential streets shall be 32 feet back-to-back when surmountable curb is used, unless approved otherwise during the platting process.
B. Minor collector streets shall be 40 feet face-to-face when surmountable curb is used, unless approved otherwise during the platting process.
C. A 15 foot radius (typical) to back of curb shall be used at residential street intersections and 25 foot radius on collector streets
D. A 45 foot radius (typical) to back of curb shall be used for cul-de-sacs
E. A soils report shall accompany all street and underground construction plans submitted for review
F. A flexible pavement design must be submitted for all public streets to be constructed. The pavement design shall meet the minimum street section requirements show in City Detail Plate LV-ST-8, or as recommended by the geotechnical reports, whichever is greater.
G. Show the locations of existing underground public and private facility crossings on both the utility and street construction plan and profile views
H. Stormwater drainage calculations including a map of stormwater sub-districts within the project area shall accompany all plans submitted for review

I. The approved final grading, drainage and erosion control plan and the approved tree preservation plan must be included with the construction plans. Maximum sheet size 24" x 36J. An itemized bid tabulation is required for all costs associated with utility and street construction. This information is required at the time of plan approval.