

Polk County Public Works

Civil Review Checklist



Site/Plat Name: _____

Date: _____

Construction Drawings

A. Title Sheet

- Project name and vicinity map showing general location
- Jurisdiction's name
- Index (a complete sheet index is to be shown)
- Engineer's firm name and address
- Sheet number
- All official plans should be certified according to the requirements set forth by the Iowa Engineering and Land Surveying Examining Board
- Owner/developer (if applicable)

B. Title Block

- The name of the project
- Project engineer
- Sheet title
- Date
- Space that denotes revisions
- Page number
- Names or initials of persons designing, detailing, and checking plans

C. General Information

- Legend
- Note that projects should be constructed according to the SUDAS Standard Specifications and any applicable supplemental specifications provided by the jurisdiction
- A bar scale is required on each drawing
- Beginning (B.O.P.) and ending (E.O.P.) of project
- Street names
- Right-of-way widths and legal descriptions as required
- Adequate witnesses and horizontal and vertical controls so surveyor can lay out project plans. Show all controls at actual locations on the plans. Benchmarks and ties
- Lot numbers, subdivision names, and project numbers, as applicable
- Lot dimensions (along right-of-way or easements)
- North arrow up or to the right, when applicable
- Existing and proposed utilities, including type, size, quality level, and location
- Proposed improvement locations, dimensions, and stations
- Station Bar (reference all improvements to same stationing).
- Existing trees, fences, walks, drainage structures, open channels, pavements, buildings, and other obstacles or improvements that could reasonably affect the work area

- Survey line or reference line shown on plan view with stations increasing from west to east or south to north, when practical
- Quantity estimate - separate sanitary sewer, storm sewer, other utilities, and paving quantities shown if they are detailed on same plan. Include estimate reference information listing any special requirements for each bid item
- Easements, both temporary and permanent
- Cross-sections - for subdivisions, existing and proposed, finished contours may also be used
- Special details and special notes when required
- Plan view and profile. Profile should line up with plan stations whenever possible
- Traffic control signs and markings will follow the latest edition of the MUTCD. When it is required to maintain traffic during construction, show stage construction and special requirements on the plans. If required, show signing, street closures, and/or detours on traffic control sheet
- Permanent signing
- SWPPP and temporary and permanent erosion control measures proposed
- Other information deemed necessary by the engineer certifying the plans

D. Detailed Sanitary and Storm Sewer Plans

- Stationing, location, and type of all manholes, intakes, or other structures
 - o Show structure designation on the plans
 - o Show location on the plans and reference survey line or centerline
 - o Comply with the SUDAS Specifications for the type of structure required
- Details should be shown for all structures that are not standard in the SUDAS Specifications
- Plan and profiles of all sewer lines and existing and proposed ground line above sewer
- Size, length, and grade (maximum slope of 7%) of sewers in profile
- Type of pipe materials and strengths, if different from SUDAS Specifications, or if specific materials are required. The following materials will not be used for sanitary sewer mains: solid wall PVC 8-15", corrugated PVC, closed profile PVC, VCP.
- Invert elevations at all intakes, manholes, and other structures in profile
- Location, size, and type of all sewer stubs, wyes, or tees. Reference stub locations to lot corners. When risers are to be installed, show riser location and size
- Estimates should include all length of pipe stubbed out from structures
- Rim elevations of manholes, intakes, and other structures
- Manholes should be identified with a numbering system on plan and profile. Structure sizes and casting sizes to be included by schedule or note on the plans
- Manholes not located in mowed areas or streets shall be marked with a green painted T post. Add note to plans
- All two-piece and three-piece manhole casting shall be bolted down to the structure. Add note to plans
- Ends of service stubs shall be marked with one buried 48-inch long #6 reinforcing bar and steel T post. Add note to plans
- Molded shields (top hats) shall be used for infiltration barriers on sanitary sewer manholes. Add note to plans
- Concrete adjustment rings shall not be used. Add note to plans

- Class of pipe bedding
- Existing utilities or other underground features that could reasonably affect the construction and maintenance of the sewer
- Show storm sewer outlet protection dimensions and locations where apron guards are required

E. Detailed Open Channel and Drainageway Plans

- Stationing and flow line elevation at beginning and end of open channel construction
- Plan and profile of drainage open channel
- Size, type, length, and grade of open channel and alignment
- Typical sections showing open channel dimensions, backslopes, and invert and slope treatment
- Invert elevations at all structures
- All special structures detailed on plans
- Cross-sections and contour map showing existing ground and finished grade
- Permanent erosion control such as TRM or ditch checks if applicable

F. Stormwater Management Features

- Easements
- Seeding, landscape information
- MPEs (100 HWL plus one foot)
- Overflow/emergency flow paths
- BMPs
 - o Planting plan
 - o Cross sections (underdrain details, etc.)
 - o Overflow path
 - o Adequate notes to ensure proper construction
- Detention/Retention
 - o Grading
 - o Cross sections
 - o Outlet structure details
 - o 100 Year HWL
 - o NWL (if wet)
- Flood zones (both line work and elevations)

G. Detailed Paving Plans

- Minimum 100 feet station intervals and profile elevations at a minimum of 50 feet intervals on tangents and 25 feet intervals at curves. Show station of the centerline of all intersecting streets
- Show street profiles and existing ground elevations in the profile view and the curb line in the plan view. The profile should show top of curb tangent grades, vertical curve data, and grade break data. Label any cross-slope transitions and special shaping areas.
- Pavement width (back-to-back)
- All radii at returns (may be specified in general note if all radii are same)
- Expansion joint locations, if applicable, on plan view
- Horizontal curve data should include centerline PC, PT, PI, delta angle, arc length, degree of curve, tangent length, and radius

- Typical cross-section showing baseline, referenced profile, subgrade treatment, pavement thickness, jointing, sidewalk, parking slope, foreslopes, backslopes, cross slopes, any break in ground line or grade, right-of-way line, and dimension of the location of the roadway with the right-of-way line
- Vertical curve data should include station and elevation of PI, PC, PT, K-value, low point, and length of curve. Elevations should be given on curves at 25-foot spacing
- Intersection details showing drainage and typical joint patterns, if applicable.
- Special subgrade or pavement treatment
- Location of existing pavement, including elevation and grades
- Pavement marking plan, if applicable

H. Grading Plans/Erosion Control Plans

- Survey control data
- Cross-sections and/or existing and proposed contours and spot elevations, as required
- Storm sewer/detention appurtenances
- Vicinity map showing haul routes with dates, if any, and borrow areas
- Total site area (disturbed area) with construction staging to minimize the area disturbed at any one time
- Stationing as it relates to paving plans, sewer, or drainageway plans
- Geometric dimensions
- Soils data and soil boring location(s) when applicable
- Erosion control information and location of any special erosion control measures such as silt fences, silt traps and basins, rip rap or gabions, vegetation and trees to remain, stockpile areas, terraces, contour furrows, temporary diversions, grading phases, etc. See Chapter 7 for a detailed listing of the required contents of Iowa DNR Stormwater Pollution Prevention Plan
- Topsoil stockpile and stabilization measures and vegetation areas to be preserved

I. Water Main Plans

The plans for water mains and appurtenances should show all appropriate physical features adjacent to the proposed water mains along with horizontal and vertical controls and hydrant coverage. Other utilities such as sanitary and storm sewers, manholes, etc. should be shown on the plans with horizontal and vertical separation distances. Design details for other utilities that do not affect the water main should not be shown on water main plans.

- Stationing, location, and type of all fittings, valves, and fire hydrants
- Details should be shown for all items that are not standard in the SUDAS Specifications
- Plan and profiles of all water lines and the existing and proposed ground line above the water main
- Size, length, and grade of water mains in profile
- Type of pipe materials and strengths if different from the SUDAS Specifications or if specific materials and fire hydrants are required
- Elevations at all structures in profile
- Location, size, and type of all water service stubs. Stub locations should be referenced to lot corners
- Estimates should include length of pipe stubbed out from valves
- Fire hydrants should be identified with numbering system on plan and profile
- Class of pipe bedding if different than the SUDAS Specifications

- Existing utilities or other underground features that could reasonably affect the construction and maintenance of the water main

J. Railroad Crossings

If a railroad crossing is within the project limits, the project engineer should notify the railroad with a copy of the plans and specifications a minimum of 4 months prior to the project letting. If the project limits contain construction of railroad facilities that will be performed by the railroad's forces, the project engineer will state this in the contract documents. The contract documents will state the contractor's limits of responsibility and allow sufficient time in the schedule for the work to be accomplished by the railroad; and that the contractor must coordinate its activities with the railroad or any subcontractors the railroad mandates using during construction. The contractor must be made aware of any permit and insurance requirements imposed by the railroad. The project engineer should notify the railroad of the following, immediately after awarding the contract:

- Federal Railroad Administration (FRA) crossing number
- Jurisdiction project number
- Contractor's name, mailing information, and phone number
- Contractor's contact person
- Anticipated start date
- Number of working days
- Number of days it is believed the contractor will impact the railroad.
- Date of preconstruction meeting

Stormwater Management Plan

K. Cover Sheet

- Project Name, Owner, and Engineer
- Address
- Certification Statement from Iowa Registered PE

L. Site Characteristics

- Vicinity Map
- Area in Acres
- Ground cover (wetlands), vegetation, topography
- Drainage paths
- Floodplains (floodway/zone)
- Proposed land use and site activities/operations
- Groundwater soil characteristics
- Existing & proposed basin characteristics and flow patterns
- Conditions of any existing drainageways and waterways

M. Design Criteria

- Discuss applicable standards and regulations
- Previous studies, master plans, site constraints
- Hydrology
 - Runoff calculation methods
 - Curve numbers or runoff coefficients
 - Hydrograph (SCS Type II, etc.)
 - Storm recurrence intervals (1-, 2-, 5-, 10-, 25-, 50- and 100-year)
- Hydraulics
- Methods and software used to determine conveyance capacities

N. Stormwater Management Facility Design

- Stormwater Conveyance
 - Discuss general conveyance concepts
 - Discuss proposed drainage paths and how they differ from existing
 - Storm sewer design
 - Outfall locations and downstream conveyance capacity
 - Energy dissipation for outfalls (show velocity and peak flow)
 - Open channel and swale design
 - Allowable street capacities (street classifications)
- Storage Facilities (detention and retention)
 - Allowable and proposed release rate table
 - Discuss detention pond design including: release rates, outlet structure design
- Water Quality Best Management Practices
 - Design including: area treated, sizing, soils information (including infiltration rates and groundwater table)
- Discuss what happens to BMPs in larger storms, what is overflow path

- Floodplains (if applicable)
 - Discuss resources and methodology for delineation

- Discuss any floodplain encroachment
- Discuss modification studies if applicable (CLOMRs or LOMRs)
- Discuss applicable floodplain development permits applied for (Local, DNR)
- Any Additional Permitting Requirements (e.g., 404/401 permit, endangered species act, sovereign lands, etc.)

O. Conclusions

- Compliance with standards (Polk County, SUDAS, ISWMM)
- Variances or Waivers if applicable
- Summarize overall concept

P. Appendices

- Hydrologic Computations
 - Runoff coefficient or curve number calculations
 - Time of concentrations (no assumed values higher than 5 minutes)
 - Peak flow rates for subbasins for all applicable storms
 - Rainfall data, modeling outputs, and connectivity data
- Hydraulic Computations
 - Culvert Capacities and created HW
 - Storm sewer capacities and HGLs
 - Street and inlet capacities / spread
 - open channel and swale capacities (flow depth and velocities)
 - Outlet velocities and energy dissipation calculations
 - Any stabilization or grade control improvements (ditch checks)
 - Stage-area detention data
 - Detention outlet discharge calculations (weir, orifice, etc.)
 - Emergency spillway calculations
 - Downstream capacity calculations
 - Floodplain modeling
 - BMP calculations
- BMP Maintenance plan
 - Discuss operation and maintenance aspects of the design
 - Show recorded maintenance agreement if required
- Existing/Predeveloped and Proposed Basin Map
 - Subbasins and flow patterns
 - 1-foot contours
 - existing features: wetlands, drainageways, etc.
 - Proposed Improvements (roads, buildings, storm sewer, etc.)

Q. Soil Management Plan (this could be part of the erosion control plan as well)

- Existing site soil conditions
- Areas identified where soils and vegetation will not be disturbed
- Areas of topsoil strip and stockpile
- If soil quality restoration (SQR) is proposed, describe method and where used
- Tillage depth if used
- Types and quantities of materials needed for SQR
- Methods for establishing vegetation