DEVELOPMENT ENGINEERING SUBMITTAL GUIDE

VILLAGE OF MOUNT PLEASANT
RACINE COUNTY, WISCONSIN

March 2020

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Chapter 1 – Submittal Overview Development Engineering Submittal Guide

1.0 INTRODUCTION

The purpose of this Handbook is to provide a guide for the steps and requirements needed for the developer's engineer to prepare and submit engineering plans for proposed subdivisions and non-residential development within the Village of Mount Pleasant.

This handbook is not intended to list every established design standard but rather to help ensure an expeditious approval process, since it is the Village's policy not to initiate a review until all required information is submitted. Complete submittals should help reduce the applicant's cost by accelerating the approval process.

1.1 OTHER REFERENCES

In conjunction with this Handbook, the developer should reference the following which have planning and design guidelines.

a. Village of Mount Pleasant Subdivision Ordinance,

b. Construction Site Erosion Control Zoning Ordinance,

c. Post-Construction Storm Water Management Zoning Ordinance,

d. Village of Mount Pleasant Floodplain / Wetland and Shoreland-Wetland Ordinance,

e. Wisconsin Department of Natural Resources (WDNR) Chapters NR 110, 151, and/or 811 of the Wisconsin Administrative Code or other chapters as applicable,

f. WDNR Technical Standards:
http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm,

g. WisDOT Facility Development Manual (FDM),

h. WisDOT Standard Specifications for Highway and Structure Construction,

i. American Association of State Highway and Transportation Officials (AASHTO); A Policy on Geometric Design of Highways and Streets,

j. Standard Specifications for Sewer & Water Construction in Wisconsin,

k. American Society for Testing and Materials (ASTM),

l. American Water Works Association (AWWA), and

m. Manual of Uniform Traffic Control Devices (MUTCD).

1.2 PLAN SUBMITTAL / GENERAL PROCEDURES

The following outlines the general procedures for the plan submittal and review process:

a. Plan submittals should be addressed and mailed to the following address or personally delivered to the Village Hall.

Village of Mount
Pleasant

Village Hall

8811 Campus Drive
Mount Pleasant, WI 53406
Attn: Mr. Anthony Beyer, P.E.
Director of Public Works/Village Engineer

b. The submittal must include a cover letter by the applicant indicating the review request and a listing all items being submitted.

c. The submittal must contain all required plan(s) and supplemental information.

d. Once a submittal has been received by the Village, the Village or their designated engineer will conduct an initial review of the application to check the submittal for completeness and accuracy.

e. If the submittal is found to be incomplete, a letter of incompleteness will be sent to the applicant indicating additional items which need to be submitted prior to a plan review being initiated. If the additional items are not submitted within 30 calendar days from the date of the deficiency letter, the submittal will be considered null and void and discarded. A complete separate submittal will then need to be made by the applicant upon readiness.

f. If the submittal is found to be complete, the Village's engineer will conduct an office review of the plans, specifications, and submitted materials and provide plan review comments or a recommendation of approval to the Village. The Village will then forward review comments or an approval letter to the applicant. At the discretion of the Village, the applicant may be carbon copied on review letter(s).

g. Review comments must be addressed by the Engineer of Record for the project or Developer as applicable. Plans may be re-submitted only once all review comments have been addressed. Re-submittals must include a cover letter addressing each review comment, item by item, and revised plans and requested material(s) or the re- submittal will be considered incomplete and a review will not be initiated.

h. Once a plan review has been initiated the applicant may expect to receive correspondence from the Village within 3 work weeks.

i. Review fees are based on the Village Engineer's current hourly rate schedule and actual time spent reviewing plans and/or the Village's Consulting Engineer's current charge out rates.

j. The applicant shall execute a pre-development agreement with the required minimum escrow deposit credited to the Village as specified in the agreement prior to initiating the review process. Escrow amount(s) are subject to the complexity of the project. The developer is responsible for costs of actual time spent for the review of plans submitted if they exceed the escrow amount. An appropriate refund will be made if the cost is below the escrow amount.

k. After the plan submittal, review and if necessary further re-submittal(s) and review(s), approval is considered granted for the plans, specifications, and/or associated reports when written approval from the Village is provided to the applicant.

l. After written approval from the Village is provided to the applicant:

i. Any changes, modifications, or deviations made to the approved plans, specifications, and/or associated reports shall require the applicant to notify the Village and allow for the Village to review, comment, and approve said documents. The applicant shall follow the submittal guidelines for providing the modified documents to the Village.

ii. And field conditions necessitate a revision, said condition and revision shall be reported to the Village by the applicant, design engineer, developer, or inspector within 24 hours of the occurrence.

- Should the Village consider the required changes significant, the Village shall issue a stop work order until revised drawings, computations and/or necessary reports are submitted and approved by the Village.

- In the event the Village deems the changes insignificant, work may proceed under the verbal authorization of the Village pending written documentation of the revision.

1.3 ENGINEERING PLAN AND SUBMITTAL FORMAT STANDARDS

The Village has established the following standards for engineering plans submittals.

a. All plans and materials shall be submitted at one time, in duplicate, and separated into two packages for distribution. One package will be kept by the Village and the second package will be forwarded to the Village's Consulting Engineer for review.

b. Engineering plan sheets should be standard 24-inch x 36-inch, 22-inch x 34-inch, or smaller if clearly readable, and must be bound.

c. Engineering plans should include a dated title/cover sheet and shall be sealed by a Wisconsin Registered Licensed Professional Engineer.

d. Engineering Plans shall in general conform to the following as defined within this guide:

i. Title Sheet,
ii. Alignment & Overview Sheet(s),
iii. Grading and Erosion Control Sheet(s),
iv. Sanitary Sewer and Water Main Plan and/or Profile Sheet(s)*,
v. Roadway and Storm Sewer Plan and/or Profile Sheet(s)*,
vi. Traffic Control and/or Detour Sheet(s),
vii. Existing and/or Proposed Signing & Pavement Marking Sheet(s),
viii. Lighting and/or Landscaping Sheet(s),
ix. Traffic Signal Sheet(s),
x. Detail Sheet(s),
xi. Typical Section Sheet(s) and/or
xii. Cross Section Sheet(s).

* Projects containing public utilities, such as sanitary sewer, storm sewer, and/or water main shall show the proposed public improvements in both plan and profile views.

e. Reports including storm water management plan(s) and construction specification manual(s) should be comb bound, dated, with page numbers noted, and shall be sealed by a Wisconsin Registered Licensed Professional Engineer.

f. The initial submittal for a subdivision engineering review must include the appropriate number of copies of the preliminary plat.

g. The final submittal for a subdivision engineering review must include the appropriate number of copies of the final plat.

h. Plans for non-residential development must include, within the bound plan set, a dimensioned site plan and landscaping plan.

Chapter 2 – Engineering Plan Requirements
Development Engineering Submittal Guide

2.0 ENGINEERING PLAN TITLE SHEET CHECKLIST

The following is a checklist of the general requirements and items to be contained on the title/cover sheet of the submitted engineering plans.

a. The official project title and a location map with north arrow.

b. Name of property owner, developer, and contact information of owner or owner's representative.

c. Identification of horizontal and vertical control and coordinate system used with a listing of project benchmark(s).

d. A legend of symbols and index of sheets.

e. Date of preparation and applicable revision date(s) indicating month, day, and year.

f. Stamp and signature of the Wisconsin Licensed Professional Engineer under which the plans were prepared.

g. A note warning that Diggers Hotline must be contacted to locate underground utilities prior to the start of construction.

h. If the plan contains the construction of any public road, storm sewer, sanitary sewer, or other Village owned facility the following note should be provided: "Prior to construction, a pre-construction conference must be held at the Village Hall. The preconstruction conference shall be scheduled and moderated by the designing Engineer of Record".

2.1 ENGINEERING PLAN GENERAL CHECKLIST

In addition to specific design and plan item requirements for Grading and Erosion Control, Storm Water Management, Storm Sewer, Sanitary Sewer, Water Main, and Roadway plans the following shall be standard to all plans:

a. North arrow and plan scale (plan scale shall be 1" = 10', 20', 30', 40', 50', 60' or a factor of 10 thereof. Scales such as 1" = 80' or 1" = 120' are not acceptable).

b. Abutting roadway and/or railroad right of way lines, widths, and names.

c. Property lines, Project boundary, and Disturbance limits.

d. Proposed (temporary and permanent) and existing dimensioned access point location(s).

e. Tax Identification numbers, Lot numbers, or address identification of properties within or immediately adjacent to project.

f. Existing impervious (roadway edges, shoulders, curb and gutter, sidewalks, retaining walls) and pervious surfaces features.

g. Existing utilities and utility structures such as: storm sewer, sanitary sewer, water main, and appurtenances, electric, gas, phone, cable, fiber, television or other private "dry" utilities.

h. Existing or proposed easement location(s), type(s) and width(s).

i. Wetlands, waterways, floodplain, or other natural resource features.

Chapter 3 – Non-Residential Site Plan Development Engineering Submittal Guide

3.0 NON-RESIDENTIAL SITE PLAN CHECKLIST

The following is a checklist of the general requirements and items to be contained on the site plan sheet for non-residential development (business, commercial, industrial, etc.).

a. Building footprint and all setback lines with dimensions to the nearest point of the property line.

b. Property lines with all survey dimensions.

c. Existing and proposed utility, drainage, and cross-access easements.

d. Dimensioned site layout.

e. Landscape buffer areas.

f. Property zoning classification, required number of parking spaces, and actual proposed parking spaces.

g. Property size (acreage).

h. Site calculated amount of building and pavement impervious surface areas and the amount of open space landscape area(s).

3.1 LANDSCAPING PLAN CHECKLIST

a. Private development shall follow and submit the required information in Village Ordinance 90-430 Landscape and Screening.

b. Public rights of ways and roadways shall conform to Village requirements for landscaping and plantings.

Chapter 4 – Grading / Erosion Control Plan Development Engineering Submittal Guide

4.0 GENERAL GRADING / EROSION CONTROL DESIGN REQUIREMENTS

a. Grading plans shall accommodate offsite drainage; not block, impede or alter storm water surface drainage upstream of the project site; and/or adversely affect adjacent or downstream properties.

b. Grading plans shall provide enough detail such that the contractor is able to construct the intended design while adhering to the project specifications.

c. Erosion Control plans shall detail specific best management practices (such as track out prevention, slope interruption, perimeter control, inlet protection, settling basins, sediment traps, staging, and schedule) to limit sediment from being removed from the construction site onto or into adjacent properties, structures, systems, or specific environments.

d. Berms shall not impede vision at roadway intersections; shall be outside vision triangles; and have a maximum slope of 3:1.

e. Storm water ponds shall have:
- a minimum of 20’ top berm width at slopes no greater than 4% in a uni-directional manner, or 2% maximum in a crowned (bi-directional) manner providing vehicle access to the outlet structure and emergency overflow device, in no case shall the top berm width be less than 10’,
- a maximum 2:1 slope below the safety shelf and 3:1 maximum slope above the safety shelf,
- a typical 10’ wide (8’ minimum width) safety shelf at maximum 10:1 slope, and
- a total of 5 vertical feet of designed permanent wet pool depth of which 2 vertical feet minimum is for sediment storage.

f. Grading plans for storm water ponds shall label the 100-year elevation on the plan.

g. A cross-section of the storm water best management practice shall show and label the following:
- The normal water, 2-year, and 100-year elevations,
- The pond bottom elevation,
- Emergency spillway width, location, and elevation,
- Embankment material (and keyway if applicable),
- Pond liner: material, thickness/depth, location (plan and elevation), design permeability limits,
- Slopes (outside, inside above normal water, safety shelf and below safety shelf),

- Top of berm width and applicable slope and pattern,
- Safety shelf width and slope,
- Restoration limits and materials, and
- Outlet pipe, outlet structure, and anti-seep collar.

h. Details shall be provided to show the best management practice primary outlet structure and emergency outlet structure. Any additional outlet structures shall also be included in the applicable details.

i. All rear and side yard drainage swales shall have a typical 1.0% longitudinal gradient. In specific circumstances when 1.0% is not attainable, additional discussion between the Village and the Design Engineer (Engineer of Record) shall be had and other restrictions or design requirements may be imposed on the project to mitigate the potential future water ponding.

j. When practicable center rear and side yard drainage swales on property lines.

k. The maximum grading slope is 4:1, except for berms and storm water ponds as above noted.

l. A minimum of 12" of cover from the top of utility pipe(s) (including driveway culverts) to the subgrade shall be provided.

m. All grading plans shall match existing grades at the project limits or property lines with a slope no greater than 4:1, unless approved by the Village.

n. Typical topsoil depths in restored pervious areas shall be a minimum of 4" and shall not exceed 12".

4.1 GRADING / EROSION CONTROL PLAN CHECKLIST

Erosion control measures during construction shall meet the requirements set forth in the Village's Construction Site Erosion Control Zoning Ordinance.

The following items should be provided within the grading and erosion control plan(s):

a. Existing and proposed topographic contours at intervals of 1-foot. Topography information should extend at least 25-feet onto the adjoining properties. Drawings should be based on USGS Elevations and the State Plane Coordinate System.

b. Location and contours of proposed water quality detention and infiltration facilities with normal and high water (100-year) elevations indicated and 100-year flow paths identified.

c. Location and design of emergency overflow weirs and direction of emergency overland flow paths with details of control structures.

d. The limits of any wetlands, lakes, ponds, streams, or primary environmental corridors and limits of applicable protective area setbacks.

e. The limits of floodplain and floodway boundaries with appropriate base flood elevations noted.

f. Proposed top of foundation elevation(s) and finished grade elevation(s) at the foundation of proposed buildings. Building design for habitable living space below the first floor elevation shall indicate the floor elevation of that space.

g. Earthwork calculations for the entire development with the engineer's estimate of the amount of import or export of fill needed for the site grading plan. Offsite borrow areas and surplus disposal areas must be addressed and identified.

h. Copies of Applicable permits as prepared for submittal: WDNR Notice of Intent, WDNR and/or Army Corps of Engineers Wetland and/or Waterway Permit, applicable Department of Safety and Professional Services (DSPS) or DNR/SEWRPC sanitary sewer extension permit, DSPS/DNR/Racine Water Utility water main and/or water extension permit, Racine County Highway and/or WisDOT permits.

i. Location of temporary soil stockpiles.

j. Erosion control provisions, meeting WDNR standards, including details and calculations of erosion control treatment practices.

k. A construction sequence schedule.

Chapter 5 – Storm Water Management Plan
Development Engineering Submittal Guide

5.0 STORM WATER MANAGEMENT PLAN CHECKLIST

Storm water management is regulated by requirements set forth in Chapter NR 151 of the Wisconsin Administrative Code, in addition to Village's Post-Construction Storm Water Management Zoning Ordinance.

The following is a list of items which should be included in the bound storm water management plan.

Storm Water Management Plan Narrative

a. Title sheet with official project name, date of preparation, and applicable revision dates. The title sheet must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Narrative of required storm water management performance goals for the development. This includes goals and technical standards set forth in the Village's Post-Construction Storm Water Management Zoning Ordinance and the Wisconsin Department of Natural Resource's Chapter NR 151 of the Wisconsin Administrative Code.

c. Description of project site location and existing conditions including, land use, topography, existing drainage patterns, existing downstream structures, points of discharge, identification of navigable streams, wetland(s), floodplain(s), and other relevant features effecting storm water drainage of the development including areas draining to or through the development site.

d. Description of site soil type(s) and identification of the Hydrologic Soil Classification(s) used (Type A, B, C, D).

e. Description of the proposed development and post-construction site conditions including storm water management facilities being used to meet the performance goal(s), drainage patterns, points of discharge, protective areas, and other relevant features effecting storm water drainage of the development including any relevant impacts to upstream contributory or downstream receiving areas.

f. Description of the analytical procedures used to quantify the pre-developed and post-developed storm water runoff rates, volumes, and water quality performance standards.

g. Summary of the pre-developed and post-developed hydrologic and hydraulic parameters used in the evaluation including runoff curve number(s), time of concentration(s), drainage basin and sub-basin delineations.

h. Summary of the project site's pre-developed and post-developed peak storm water runoff rates for the 2-year, 10-year, and 100-year frequency, 24-hour duration design rainstorm event(s) and comparison with the peak flow performance goal(s).

i. Summary of the post-developed water quality analysis results and comparison with the performance goal.

j. Summary of the post-developed storm water infiltration analysis and comparison with the performance goal.

k. Maintenance plan / agreement covering all privately owned storm water management facilities.

Storm Water Management Plan Appendices

a. Pre-developed and post-developed drainage area maps with topographic contours, time of concentration path(s), basin identification numbers and acreages. In the post-developed condition, 100-year flow paths into and out of the best management practices shall be identified.

b. Hydrologic computer model printouts with page numbers including a model schematic, table of contents, model input summary sheets, time of concentration calculations, model output summary sheets. Note: Each model run should be separated by a divider sheet with an appropriate description heading.

c. Water quality computer model printout including input parameters and output results.

d. Infiltration design worksheets, if applicable.

e. Soil investigation report(s), if applicable.

f. A recordable Storm Water Maintenance Agreement pursuant to the requirements of Village Ordinance 74-233.

5.1 STORM WATER MANAGEMENT DESIGN CRITERIA

The design criteria for Storm Water Management is listed in the Village Ordinance 74-233 and shall be followed. In addition to the ordinance, below are listed items to aide designers, providing additional clarification:

a. Storm water management detention basins shall have a minimum 1-foot of freeboard from the calculated 100-year high water elevation to the top of the pond embankment and shall have a designed emergency overflow spillway.

b. The emergency overflow spillway shall be designed assuming the primary and if applicable secondary or greater outlet device is not functional and thus the proposed depth of the emergency overflow spillway will be within the proposed berm.

c. See parameters listed within the Grading chapter of this Guide for additional detention basin geometric requirements.

d. The maximum allowable sheet flow distance in the pre-developed and post-developed condition shall not exceed 150 linear feet.

e. The minimum allowable Time of Concentration shall be 5 minutes.

f. Time steps for modeling shall not be greater than 0.05 hours and the time step in the pre-developed condition shall equal that of the post-developed condition.

Chapter 6 – Storm Sewer and Overland Drainage Development Engineering Submittal Guide

6.0 STORM SEWER AND OVERLAND DRAINAGE

Storm sewer facilities may be privately or publicly owned as deemed appropriate by the Village. Storm sewers conveying runoff from public roads shall be pubic facilities covered by an easement or public right-of-way. Publicly owned facilities will be owned and maintained by the Village unless determined otherwise. Privately owned facilities must have a maintenance agreement with the Village designating the owner and long term maintenance responsibilities.

6.1 STORM SEWER AND OVERLAND DRAINAGE GENERAL REQUIREMENTS

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. In general, all storm sewers shall be designed for a 10-year recurrence frequency storm event as defined by the Southeastern Wisconsin Regional Planning Commission (SEWRPC).

c. Storm sewers shall be designed to provide a minimum velocity of two (2) feet per second and a maximum velocity of twelve (12) feet per second for the 10-year design storm event.

d. Public storm sewers alignments within new public roadways should be on the west and south side(s). Storm sewers should be aligned parallel to the sanitary sewers and generally 10-feet away from but no closer than 8-feet from the sanitary sewer within the limits of the roadway pavement. Manhole casting location should be considered such that the design does not place the castings within the traveling public wheel path.

e. Manhole castings within new public roadways shall initially be constructed flush with the base course and subsequently adjusted at the time both the asphalt binder and surface courses (or concrete pavement section) are placed.

f. Catch basins at low points shall be placed at the binder elevation with a temporary asphalt curb to the nearest curb joint to gap the curb. Final adjustments and concrete curb and gutter installation shall be completed as part of the Village's paving program for installation of the final layer of asphalt. In the event concrete pavement is provided in place of asphalt, catch basins shall be set to the final grade and adjusted as necessary to accommodate the concrete paving operations. Temporary asphalt curb is not anticipated when using concrete pavement.

g. Sewers crossing existing Village roads shall be backfilled using slurry backfill, unless otherwise specified by the Village. Roadway pavements must be sawcut and replaced

"in kind" to a minimum of 1-foot beyond the top of trench limits. All pavement replacement limits shall be sawcut parallel or perpendicular to the pavement centerline.

h. New sewer connections to existing manholes shall be cored.

i. Drainage shall not adversely affect adjacent or downstream properties or cause upstream ponding or back-water problems. Design shall accommodate increased runoff created onsite and also consider potential for increased runoff from upstream areas, where applicable.

j. Storm water management performance standards shall meet Village Ordinances and the WDNR Chapter NR 151 of the Wisconsin Administrative Code.

k. Storm sewer pipe for public sewers shall be reinforced concrete pipe (RCP). Minimum sewer size is 15-inches for mains and 12-inches for catch basin leads.

l. Inlets / outfalls greater than 12-inches in diameter shall have trash grates and apron endwalls. Grates shall be in conformance with the Village detail, unless specific designs require variation, to be reviewed and approved by the Village.

m. Catch basin spacing on public roadways shall be provided such that a no greater than ½ the traveled lane is inundated during the 10-year storm event. Regardless of the runoff spread, at a minimum double inlets shall be provided at sag curves within public roadways.

n. For parking lots and other large paved areas, a minimum of one catch basin should be provided for every 20,000 square feet of impervious surface area, or as determined by the Village.

o. Roof drainage for commercial, industrial, or multi-family residential buildings shall be connected to an available storm sewer system or an approved point of discharge. If an appropriate point of discharge is not available, roof drain piping shall discharge to a grassed area or discharged to minimize icing problems on paved surfaces, as approved by the Village.

p. Downspouts from single-family residential houses shall discharge to grassed areas. Downspouts may be connected (by coring) to an available storm sewer manhole / catch basin with Village approval. Direct discharge to a curb and gutter section shall not be permitted without Village approval.

q. Roadways and isles should be crowned where possible, to prevent icing problems in cold weather.

r. Side slopes for open channels and swales should be 4:1 typically but no steeper than 3:1.

s. Grassed swales (ditches) shall be designed to contain the 10-year recurrence frequency with a minimum of 0.5' of freeboard and checked for the 25-year recurrence frequency. In the event the 25-year event is not contained within the designed system, Village approval will be required.

t. Grassed swales shall be designed to maximize water quality features. A minimum slope of 0.5% and maximum slope of 2.0% are required. Steeper slopes may be allowed if channel bottoms and side slopes are protected from erosion. Minimum and maximum Manning's values will be discussed on a case by case basis.

u. Culverts under driveways, where required, shall be a minimum of 15-inches in diameter, but not less in diameter than adjacent upstream and downstream culverts, unless otherwise approved by the Village. Applications for culvert installations must be accompanied by culvert sizing calculations.

v. Storm sewer outfalls and culverts should have flared end sections with grates. Grates are applicable for storm sewer outfalls greater than 12" in diameter, driveway culverts larger than 18" in diameter, and for culverts larger than 15" unless determined otherwise by the Village. Where required by the Village, typically when the design shear is greater than or equal to 2.0 lbs./s.f., geotextile fabric and riprap, turf reinforcement matting, or other erosion treatments shall be placed at the outlet for erosion protection.

w. All storm manholes shall be a minimum of 48-inches in diameter. All catch basins shall be a minimum 36-inch diameter or rectangular meeting the dimensions and specifications found in the Village's standard special provisions and details with a typical 2-foot sump depth. Sump depths other than 2-feet, shall be approved by the Village.

6.2 SUMP PUMP LATERAL STANDARDS

a. Sump pump laterals must be provided within new subdivisions.

b. All new lots shall have a 6-inch storm lateral extended from a public storm sewer to the lot line, unless otherwise approved by the Village. Laterals may be extended from the storm sewer in the adjacent road (or from the side / rear yard when such storm sewers are available). Storm laterals may also be directly connected to catch basins, by coring.

c. Storm laterals shall be PVC Schedule 35 and shall be connected to the storm sewer by coring and installation of an approved boot (such as Kor N Seal). No debris from the coring or connection shall be left in the storm sewer.

d. All storm laterals shall be capped at the lot line and shall have a wooden marker installed for future location & connection purposes, with the capped lateral location and depth recorded on the as-built plans.

e. Laterals over 100-feet in length from the main storm sewer to the lot line shall have a cleanout installed. Cleanouts shall meet DSPS requirements.

f. On portions of roadways not requiring storm sewer for surface drainage, a minimum 12-inch diameter sump outlet storm sewer shall be extended in the roadway from the end of the downstream storm sewer. These storm sewers shall be RCP and shall be constructed the same as the main storm sewers. A manhole shall be provided at the upstream end for access / maintenance and/or at typical distance of 300' between manholes. Manhole spacing in excess of 400' shall be approved by the Village.

g. New minor land divisions where storm sewers are not available may be required to provide alternative collection systems as determined by the Village.

6.3 PLAN SUBMITTAL CHECKLIST

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Identification of public versus private facilities must be indicated on the plans.

c. Sizing computations and storm sewer drainage area map.

d. Rim and invert elevations of all proposed drainage facilities. Existing facilities located within project limits (adjusted or connected due to project or not) shall also be identified with rim and invert elevations.

e. Sewer diameter, class of pipe, distance, and percent grade between manholes.

f. Profiles of the main line and catch basin/inlet pipe leads in conjunction with plan views shall be provided for all public storm sewers within public right of ways and/or easements. Sump pump laterals do not have to be shown in profile view.

g. Typical trench section showing the proposed storm sewer along with details of the bedding and backfill material.

h. Sump pump lateral locations and invert elevations at the right of way and main line.

i. Manhole and/or inlet/catch basin structures shall show size, material, frame/grate type, reference point (northing/easting or station & offset).

j. Limits of gravel, spoil, and/or slurry backfill.

k. Material and size of any existing storm sewers to be connected.

l. Proposed public right-of-ways and/or easements (20-foot minimum) shall be shown on the plans. Copies of complete easement documents must be provided, if applicable.

m. Manhole, catch basin, frame and grates/lids, end section, pond outlet structure, and riprap details.

n. Swale or open channel detail(s).

o. Project construction and specification manual for public storm water facility construction.

Chapter 7 – Sanitary Sewer
Development Engineering Submittal Guide

7.0 SANITARY SEWER

Public sewers within the Village of Mount Pleasant are owned and maintained by the Village. Wastewater flows are treated by the City of Racine Water / Wastewater Utility.

New sewer extensions must be approved by the Village, City of Racine Water / Wastewater Utility, Southeastern Wisconsin Regional Planning Commission, and the WDNR. Plan submittals to the Village and City may be done concurrently. City approval must be obtained prior to final Village approval of the plans. Plan submittal to the WDNR must be done **after** Village approval of the plans.

7.1 SANITARY SEWER GENERAL REQUIREMENTS

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Sewers along public roadways shall follow the centerline of the right-of-way. Additional manholes shall be provided in curvilinear roads to closely follow the centerline.

c. Sewer alignments along existing roads or in easements shall be approved on a case-by-case basis. Alignment must be approved prior to completing / submitting construction plans.

d. Sanitary sewer access and maintenance easements shall be a minimum of 20-feet wide. In the event the easement has additional utilities within the same sanitary sewer easement or the sanitary sewer is greater than 15-feet in depth, the easement width shall be increased at the direction of the Village.

e. Sanitary sewer within permanent easement may require a paved or gravel access path to permit utility vehicles access to maintain the sewer. Said access path shall be designed at a minimum width of 10’ (12’ typical) and to accommodate HS20 vehicular loading.

f. Sanitary laterals shall not be directly connected to manholes. Standard laterals for single-family residential lots shall be 4-inches in diameter. Laterals for multi-family, commercial, business, or industrial lots must be sized based upon anticipated wastewater flows.

g. Risers shall be provided for all laterals over 14 feet in depth, in accordance with the Village’s standard details.

h. Outside drop manholes may only be used where the proposed drop exceeds 3.0 feet.

Inside drops are not allowed on new manholes and will be reviewed by the Village on a case by case basis for a connection to an existing manhole. Inside drops are discouraged for existing manhole connections.

i. Manhole castings within new public roadways shall initially be constructed flush with the base course and subsequently adjusted at the time both the asphalt binder and surface courses are placed.

j. Manholes shall typically have invert elevation drop of 0.1-foot for 180 degree pipe runs and up to 0.25-foot for orthogonal pipe geometrics. The Village will evaluate conditions where adequate grade is not available on a case by case basis.

k. Sewers crossing existing Village roads shall be backfilled using slurry backfill. Roadway pavements must be sawcut and replaced "in kind".

l. New sewer connections to existing manholes shall be cored.

m. A temporary plug must be installed in the downstream manhole during construction to prevent sediment / debris from entering the downstream sewer. All plugs must be removed prior to the Village acceptance of the new services.

n. Sewer mains shall be extended to the far property boundaries for future connection. In the event the adjacent property is already serviced by sanitary sewer, the sewer main limit will be established by the Village on a project by project basis.

o. Sewer depths for new residential areas must accommodate gravity basement service.

p. Minimum sewer depth is 6-feet at all locations, unless approved by Village.

q. Sewer lateral grades shall be in conformance with NR 110 and DSPS requirements, with typical grades of 2.08%.

r. Cleanouts on laterals shall be installed and labeled on the plans when laterals exceed 100-feet in length and placed at 100-foot maximum intervals, in concert with NR 110 and DSPS

s. Sampling manholes are required for all industrial developments or as determined by the Village. Sampling manholes shall be located such that access is provided to Village staff within pavement area, not a parking stall. Alignment changes are not allowed at a sampling manhole.

7.2 SANITARY SEWER PLAN SUBMITTAL CHECKLIST

Plans

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Identification of public versus private facilities must be indicated on the plans.

c. Sizing computations and sanitary sewer ultimate service area map with details of topography, future sewer sizes, elevations, sewer depths, calculated system design and peak flows, and system capacity. The basis and assumptions used in the design shall accompany the submitted engineering plans.

d. Pipe size, pipe invert and rim elevations of all sewers manholes (existing and proposed).

e. Sewer diameter, distance, pipe type, and percent grade between manholes.

f. New sewer material and class of pipe.

g. Lateral locations and invert elevation(s) at the right-of-way. Locations and length of any risers.

h. Material and size of any existing sanitary sewer to be tied into.

i. Profiles of all public sewers.

j. Proposed public right-of-ways and/or easements (20-foot minimum) should be shown in plan view. Copies of complete easement documents should be provided, if applicable.

k. Limits of gravel, spoil, and/or slurry backfill and typical trench section with bedding and backfill materials specified.

l. Separation distances (horizontal and vertical) between sanitary sewer and other utilities (such as storm sewer and water main).

m. Manhole, frame and lid, and riser detail(s).

Documentation

a. A completed signed copy of the WDNR submittal form with a corresponding sewer service area map must submitted along with a copy of the SEWRPC "208" letter. Submittal to the WDNR shall not be made until approval is given by the Village.

b. A copy of the Racine Water/Wastewater Utility approval letter shall be provided prior to Village approval of the plans.

c. A copy of the WDNR Sewer Extension approval shall be provided prior to the start of construction, or scheduling a pre-construction conference.

d. Project construction and specifications manual.

Chapter 8 – Water Main
Development Engineering Submittal Guide

8.0 WATER MAINS

Public water within the Village of Mount Pleasant is supplied by the Racine Water/Wastewater Utility. New water mains are owned and maintained by the Racine Water / Wastewater Utility.

New water main extensions must be approved by the Racine Water / Wastewater Utility and the WDNR. Plan approval from the Racine Water Utility must be obtained prior to final Village approval of the plans.

Plan and submittal requirements should be obtained from:

Racine Water / Wastewater Utility
100 Hubbard Street
Racine, WI 53402
Contact: Chad Regalia, P.E.
Chief Engineer

8.1 WATER MAIN GENERAL REQUIREMENTS

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Water main alignment along new Village roads should be located 10-feet east or north of the roadway centerline. Appropriate bends / fittings should be provided to maintain the alignment on curvilinear roads.

c. Water mains shall be extended to the far property boundaries for future connection and "looped" when possible. The Village and Water Utility will approve alignment and extents prior to submitting construction plans.

d. Water main alignments on existing Village roads or in easements shall be approved by the Village on a case by case basis. Alignment must be approved prior to completing / submitting construction plans.

e. Water mains crossing existing Village roads shall be backfilled using slurry. Roadway pavement must be sawcut and replaced "in kind".

f. Water main access and maintenance easements shall be a minimum of 20-feet wide. In the event the easement has additional utilities within the same water main easement or the water main is greater than 8-feet in depth, the easement width shall be increased at the direction of the Village and Water Utility.

g. The Village of Mount Pleasant Fire Department approval must be obtained for all proposed hydrant locations prior to construction.

h. Water main size is determined by the City of Racine Water Utility. All water mains serving residential developments shall be a minimum of 8-inches in diameter and mains serving commercial or industrial developments shall be a minimum of 12-inches in diameter.

i. Water mains shall be designed to have a minimum cover depth of 6-feet.

j. Valves shall be provided at all branches within intersections, located at the right of way extended.

k. Valve distances shall be in conformance with DNR NR 811 and shall not be greater than 800 feet in residential districts and not greater than 500 feet in commercial or industrial districts.

l. Hydrant spacing shall be in conformance with DNR NR 811 and shall typically be placed at roadway intersections and at 400 foot spacing. In districts with the need for additional fire protection, the 400 foot typical spacing may be reduced at the discretion of the Village or Utility.

m. All installation of water main meeting the criteria to obtain a right-of-recovery shall comply with the requirements of the municipal intergovernmental agreement for water service and the right-of-recovery procedures required by the Village of Mount Pleasant.

8.2 WATER MAIN PLAN SUBMITTAL CHECKLIST

For Village information and general review.

Plans

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Identification of public versus private facilities must be indicated on the plans.

c. Grade breaks, bends, fittings, valves and hydrants should be labeled on the plans with stations and elevations.

d. Grade breaks shall be designed to only occur at a fitting or bend.

e. Profiles are required for all public water mains.

f. Water main size, distance, and percent grade between grade breaks.

g. Material, location, and size of existing water main being connected into the proposed

system.

h. Material specifications and details of new water main must meet the City of Racine Water Utility specifications, including: pipe material, joint restraints, hydrant type/model, valve type, curb stops, corporation stops, tracer wire access boxes, and anode protection (if required).

i. Lateral locations and invert elevation at the right-of-way.

j. Limits of gravel, spoil and/or slurry backfill and typical trench section with bedding and backfill materials specified.

k. Material and size of existing water main to be connected into.

l. Separation distances (vertical and horizontal) between water main, sanitary sewer, and storm sewer.

m. Proposed public right-of-ways and/or easements (20-foot minimum) should be shown in plan view. Copies of complete easement documents should be provided, if applicable.

Documentation

a. Copy of completed and signed WDNR Water Main Extension form(s) and fire flow calculations.

b. Copy of the Racine Water / Wastewater Utility approval letter.

c. Copy of any other applicable County, WisDOT, or WDNR permits.

d. Project Construction and Specification Manual.

Chapter 9 – Roads
Development Engineering Submittal Guide

9.0 ROADS GENERAL REQUIREMENTS

a. Road cross sections and cul-de-sac details must meet Village standards as applicable to the proposed road classification and design speed. New facilities will be classified by the Village based on the anticipated traffic and surrounding land uses.

b. Roadways shall be centered within the public right of way.

c. Horizontal curves shall be in accordance with AASHTO and WisDOT FDM guidelines.

- Horizontal curves shall be introduced when deflections are in excess of the below listed maximums relative to the specific design speed. Designers shall confirm the below table is in concert with current WisDOT design standards, prior to design and submittal.

Design Speed (mph)	20	30	35	40	45	50	55	60
Maximum Deflection	3° 45'	2° 45'	2° 15'	1° 45'	1° 15'	1° 00'	1° 00'	0° 45'

- Tangent distances between reverse horizontal curves will be reviewed by the Village on a case-by-case basis. Variables considered include: existing environment, anticipated traffic and land use, design speed, required super elevation, and vertical geometrics.

d. Vertical centerline grades shall not exceed 5% and not be less than 0.5% without Village approval.

e. Vertical curves meeting the WisDOT design standards must be provided at all changes of profile that exceed a total changes as described within the FDM based on the facility's design speed. Designers shall confirm the below table is in concert with current WisDOT design standards, prior to design and submittal.

Design Speed (mph)	20	30	40	45	50	60	65	70
Maximum %Grade Change	1.20	1.00	0.80	0.70	0.60	0.40	0.30	0.20

f. Roadways shall intersect as close to perpendicular as possible. Offset intersections shall not be permitted. Maximum deflections are below listed. Designers shall confirm the below table is in concert with current WisDOT design standards, prior to design and submittal.

Posted Speed (mph)	25	30	35	40
Maximum Deflection	7° 30'	5° 30'	4° 15'	3° 45'

g. Intersection geometric configuration shall be dictated by the proposed traffic, Traffic Impact Analysis (TIA), and/or Village input. Turn lanes, multi-lane facilities, lane additions or drops, and deceleration/acceleration tapers in conformance with WisDOT standards should be provided on existing roads at the intersections of new roads unless the existing road has been reconstructed to its ultimate cross section. The need for bypass lanes, turn lanes, and/or other geometric modifications at all new intersections with existing roads will be evaluated by the Village on a case by case basis.

h. Intersection sight vision must be evaluated and appropriate restrictions provided as necessary.

i. All intersection curb radii in residential areas shall have a minimum 25' flange radius. Existing conditions, current and proposed land uses, horizontal geometrics, and modeled turning movements may require radii with varied geometrics.

j. Temporary sloping easements outside the development limits must be shown on the plans. Copies of all approved sloping easements must be provided.

k. Traffic signal plans meeting WisDOT design requirements should be provided for any proposed signalized intersection.

l. Permanent cul-de-sacs shall meet Village standards and Village Ordinances for geometric, length, and signing requirements.

m. Sidewalks shall be designed in conjunction with Village standards and a 1.5% cross slope.

n. Bicycle and pedestrian accommodations shall be in conformance with Village Ordinances.

o. Proposed signing, pavement marking, street lighting, and/or signal plans in conformance with Village standards and ordinances and applicable WisDOT standards must be provided.

n. A geotechnical report including geotechnical recommendations shall be prepared and

submitted for roadway designs and must be stamped/sealed by a Registered Wisconsin Professional Engineer.

p. A project construction and specification manual must be provided.

q. Construction of public roadways meeting the criteria to obtain a right-of-recovery shall comply with the requirements of the right-of-recovery procedures required by the Village of Mount Pleasant.

9.1 GENERAL ROAD SCHEDULE

r. The following three year road buildout schedule is Village Policy for public road(s):

Year 1: After the installation of all utility and storm water drainage improvements, the Village shall require the developer to proceed with grading and installation of the base course of all roadways and streets proposed to be dedicated in accordance with plans and specifications as reviewed by the Village Engineer.

Year 2: Curb and Gutter - During the second year of construction, the Village shall require the developer to proceed with the installation of concrete curb/gutter in accordance with the approved plans and specifications as reviewed by the Village Engineer.

Year 2: Asphalt (lower level) - During the second year of construction, the Village, at the developer's cost, may proceed with the installation of the asphaltic lower level course in accordance with the approved plans and specifications as reviewed by the Village Engineer. The installation shall only occur after the base course has been proof rolled and any necessary improvements or repairs have been completed to the satisfaction of the Village Engineer.

Year 3: Asphalt (upper level) - During the third year of construction, the Village at the developer's cost, may proceed with the installation of an asphaltic upper level in accordance with the approved plans and specifications as reviewed by the Village Engineer. The installation shall only occur after a complete inspection of the lower level course by the Village Engineer and any repairs as called for as a result of said inspection have been completed to the satisfaction of the Village Engineer. Third year installation of the asphaltic upper level may be delayed by the Village after review of the lot sales and the number of new buildings under construction.

9.1 PLAN SUBMITTAL CHECKLIST

a. The plan sheet (or Title sheet if part of a larger set) must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Road plan and profile(s) with vertical and horizontal geometry (alignments) displayed and annotated. Annotation must show the proposed geometry and conformance to standards based on design speeds for the project for both vertical and horizontal

geometrics including curve information. Alignment data shown in tabular format is required.

- A separate sheet showing the alignment data along with a project overview sheet is recommended.

c. List the horizontal and vertical control used to create the plan.

d. List the design speed for the proposed roadway.

e. Right-of-way limits/lines, Lot lines, frontages, existing and proposed utilities, and permanent or limited easements required by the project shall be shown.

f. Typical road cross-section and curb detail(s) must be provided. Typical section shall include the following as applicable: pavement types and thickness including base course(s), shoulder dimensions and type, curb and gutter size and type, utility placement, landscaping locations and type, lighting, signage, sidewalk (thickness, width, and base course), and existing and proposed right of way widths.

g. Where sidewalks are constructed, handicap accessibility ramps shall be provided at all cross walks; type 2 ramps are preferred. An accessibility ramp detail must be provided for each ramp as additional detail and design consideration is required to ensure the proposed accessibility ramps are in conformance with current ADA and Village standards.

h. Actual road cross-sections must be provided at a minimum of 50-foot intervals, 25-foot intervals are typical for urban designs. Additional cross sections are required at the tie-in points, intersections, and driveways. Cross-sections should include the following:

- Proposed and existing utilities (both public and private, i.e. electric, gas, fiber, water main, storm sewer, and sanitary sewer)
- Offset and elevation callouts at the edge of lane(s), shoulder or curb and gutter points, sidewalk, main grade breaks (i.e. ditch foreslope, low point, and backslope match point), and slope intercept point.
- Label right of way off set.

i. Radii of all intersections must be provided. Complete intersection details must be provided for intersections with existing road(s) and/or as deemed necessary by the Village. Details must include existing and proposed elevations on all pavement edges or curb and gutter top of curb elevations at all intersections.

j. Plans must contain actual proposed street names as approved by the Village.

k. Temporary T-turnarounds and end of road markers should be shown on the plans. End of Road markers shall be installed in accordance with the Village's standard detail for end of road markers.

l. Traffic Control and/or Detour sheets as required to conduct the proposed work, following the Village, WisDOT (if applicable), and MUTCD requirements.

m. Existing and/or proposed signing and pavement marking sheets. Proposed signing and pavement markings shall following the Village, WisDOT (if applicable), and MUTCD requirements.

n. Lighting and/or landscaping sheets. For Landscaping requirements see the applicable Village Ordinance and Chapter 3 of this Guide.

o. Traffic signal sheets following the Village, WisDOT (if applicable), and MUTCD requirements.

p. Any applicable details related to the proposed work.

Chapter 10 – Construction and Specification Manual Development Engineering Submittal Guide

10.0 CONSTRUCTON AND SPECIFICATION MANUAL

A Project Construction and Specification Manual (Project Manual) is required for all Village owned public facility construction, including storm sewers, sanitary sewers, and roadways. Project bidding and construction contract administration is the sole responsibility of the Developer and/or their agents.

The Project Manual format and specific agreements / contract with the Contractor is left to the Developer's and/or their agent's discretion; however, the following items, at a minimum, must be included in the Project Manual for public infrastructure construction.

The Village standard construction specifications and details must be used and are available by request from the Village. Any changes, alterations, or additions to the Village standard specifications must be specifically referenced and approved by the Village prior to project approval and project construction.

10.1 PROJECT MANUAL REQUIREMENTS

a. Title sheet with official project name, date of preparation, and applicable revision dates. The title sheet must be stamped / sealed by a Registered Wisconsin Professional Engineer.

b. Contract Documents.

c. Insurance requirements and Certificates of Insurance with the Village named as additionally insured.

d. Bid forms with item quantity schedule. Note: the actual bid costs for public infrastructure shall be provided to the Village prior to infrastructure acceptance.

e. Standard Construction Specifications (available upon request from Village).

f. Project Manual must be comb bound.

g. Projects which include Public Improvement Projects, in which the Village, or their authorized agent, bids, constructs and performs contract administration, will require the below minimum additional components to the project manual:

- Official Notice to Bidders (Advertisement for Bids),
- Contractor's Qualification Application,
- Instruction to Bidders,

- Bid Form (including Bid Schedule, Affidavit of Organization and Authority, and List of Subcontractors),
- Bid Bond,
- Agreement (including Performance Bond and Payment Bond),
- Standard General Conditions of the Construction Contract, EJCDC C-700, and
- Supplementary Conditions to EJCDC C-700.

Chapter 11 – Policy Procedure for Right-of-Recovery Development Engineering Submittal Guide

11.0 PROCEDURES

In order for a developer to be eligible for a right-of-recovery from adjacent properties having the ability to benefit from the installation of public improvements, the following must be done.

a. A cadastral map must be provided which delineates the area impacted by the right of recovery.

b. Construction and engineering costs must be documented and verified by the Village.

c. A cost recovery breakdown by tax parcel number must be provided for all properties impacted by the right of recovery.

d. The Village shall be responsible for the collection and accounting for the right of recovery.

e. The right of recovery shall expire 15 years from the date of the improvement(s) being publicly accepted.

f. Simple interest shall be charged after the first year at the prime rate at the time the public improvement(s) were installed.

g. The Village shall charge an administrative fee of $500 per parcel payable upon the initial payment.

h. The right of recovery payment must be made before the property connects into or utilizes the public improvement(s).

i. The right of recovery provisions shall be included in the developer agreement.

j. All requests for right of recovery must originate by request to the Village and completed prior to execution of the developer agreement.

k. The developer shall notify all properties impacted by the right of recovery within 7 days of execution of the developer agreement. Copy of the notification shall be provided to the Village.