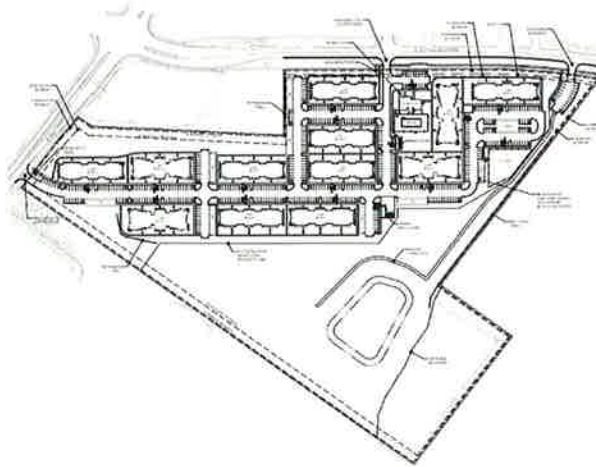


ENGINEERING REVIEWER:

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DATE:

May 6, 2021



Proposed Authentix Cottage Grove

REVIEW COMMENTS

MSA has reviewed the Precise Implementation Plan submitted for the Authentix Cottage Grove Development received on April 22, 2021.

INCLUDED

1. Engineering Plans
2. Stormwater Report
3. Traffic Impact Analysis
4. Signage Plan
5. Lighting Plan

MSA has the following comments for the Development. MSA anticipates that these comments can be addressed within the site plan and will work with the Developer to address the comments.

Site Comments and Requirements:

1. A CSM of the property will be needed to dedicate the park area.
2. Developer will be responsible for MMSD fees based on the developable area and areas dedicated to the Village shall be designated as environmental corridors.
3. On the Layout and Paving Plans the Heavy Duty HMA Pavement and the Regular HMA Pavement are noted as the same thicknesses. The asphalt notation of the E-0.3 should be updated to the current WisDOT asphalt nomenclature.
4. Verify the site layout and sidewalk widths. Minimum ADA requirements for sidewalk width is 4' wide.

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5. ADA stalls are not shown in the dog park parking area.
6. Areas of reject curb should be noted on the plan as currently it appears areas of the parking areas collect water.
7. The monument signs will require a separate permit per the Village ordinances. The location of the signs will be reviewed with the final plans to not impede visibility for safe pedestrian and/or vehicular movements.
8. Provide the structural design of the retaining walls to verify that the associated tie backs as necessary for the wall design will remain on the property along the easterly side of the property.
9. Areas of riprap should be replaced with scour stop for Village maintenance.
10. The noted secondary construction access should not be used during peak school hours.

Traffic Comments and Requirement:

The traffic study and its recommendations for the Authentix development were reviewed. In general the procedures and processes outlined in the study follow closely to WisDOT Traffic Impact Analysis (TIA) Guidelines which are considered as best practices throughout the state. There are a few minor discrepancies and procedures that could have been improved on, but these items would have little impact to the results of the study's operational analysis and would likely not change the recommendation included in the study.

The results of the report show that operations at the studied intersections are acceptable when the development opens and is at full capacity. In addition, the locations of the access points do not appear to have impacts to the operations of the signal at Cottage Grove Road and Main Street. The study did not include any future year analysis, which is not uncommon for developments of this size, if following WisDOT TIA guidelines. A future year analysis would provide a sensitivity analysis at the studied intersection, but may not impact the recommended improvements included in the report.

The recommended improvement in the report do not recommend turn lane installation at either entrance to the development based on the following reasons:

- The anticipated delay and queuing with development traffic are within acceptable levels
- Both Left Turn Lane and right turn lane warranting criteria utilized by the industry, and specifically the State, was reviewed are only met for one minor condition for the SB left turn on Main Street.
- It would be out of character for this corridor for a left turn lane to be installed at this location.

At the time of the traffic counts, the current school pattern was utilizing the hybrid model and was not at full capacity. The study did reflect anticipated pandemic adjustments that seemed appropriate. The AM peak hour analyzed in the study overlaps with what we would expect as the AM school traffic peak during the hybrid operation. It should be noted that school traffic is difficult to model due to heavy fluctuations of traffic at drop off/pick up or in some cases traffic controlled by crossing guards. However standard procedures were followed in the study, and confirm that operations of the Main Street driveway will not be detrimental in the AM Peak under the study conditions. The study does not include an afternoon peak that would correlate to school traffic.

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However, trips entering or exiting the development during that time would be well below what was assumed in the PM peak hour that was analyzed. It seems likely that the development alone would have little impact to the increase in the heavy short term traffic and lower operations that occur when school ends in the afternoon.

MSA will work with the Developer but may require some changes to the striping on Main Street as necessary to alter the painted median in front of the driveway entrance.

Utility Comments and Requirements:

1. Easements will be required to be provided for access and maintenance by the Village for any public water and sanitary sewer.
2. Sheet 1.1 notes the water should be a minimum of 5'6" deep and should be a minimum of 6'6" deep.
2. The water looped through the site should have at a minimum of one of the loops connecting Cottage Grove Road and Main Street as an 8" main.
3. The plan shows for a single service to each of the buildings anticipated to be paid by an association.
4. Verify utility crossings as it appears that some storm and sanitary crossings could conflict. (Near ST 1-38, ST1-36, and ST 1-7 were noticed.)

Stormwater Comments and Requirements:

Storm Sewer Design

1. No storm sewer or inlet capacity design calculations have been provided so MSA is unable to review the design for capacity. Noting that nearly all of the pipes appear to be 12" diameter (there is a mismatch of pipe sized between ST1-3 and ST1-2; a pipe is shown as 12" on sheet 2 of the storm sewer plan, but is shown as 30" on adjoining sheet 4) suggests that the information is 'placeholder' only at this time. MSA will need to be provided design calculations demonstrating that the proposed stormwater drainage system has sufficient capacity to collect and convey 100-yr peak flow to the proposed stormwater management ponds so that the ponds will provide 100-yr peak flow control in accordance with Village ordinance standards.
2. The dog park parking area should have storm sewer to prevent the entire parking area from draining directly to the roadway.

Stormwater Management System

There are several issues associated with the development of stormwater management calculations which need to be addressed before MSA can complete a review of the site for compliance with Village ordinances.

1. Peak Discharge Rate Control
 - a. There are some (small) off-site watersheds to the south that flow onto the site which need to be factored into collection system and stormwater management system designs.

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- b. Times of concentration values for both existing and proposed conditions are well over the 100-foot maximum required by current NRCS guidance (and indicated on the provided calculation spreadsheets)
 - c. Predeveloped runoff curve number values do not appear to be provided in the report or indicated in provided calculations. Review of data within the calculations suggests a uniform RCN value of 68 has been applied to the site; while this is appropriate, per Village ordinance for cropland on HSG B soils, the site contains some wooded area and some grassland/range area which needs to be factored into the calculations.
2. Water Quality Treatment
- a. Calculations have been provided which appear to indicate 80% TSS reduction for the 1-yr 24-hr storm; however, no calculations have been provided demonstrating compliance with the 54% TP reduction standard. This really needs to be completed using the WinSLAMM computer model. This model will also be useful in development of the infiltration calculations.
3. Infiltration design.
- a. Infiltration performance is based upon a RECARGA rain garden model of a large sand filter severed by a drain tile.
 - i. The design ponding depth for the infiltration BMP is 30" which is well above design standards, depending on BMP classification:
 - 1. WDNR *Biofilter* guidance indicates a maximum ponding depth of 12-inches (possibly as much as 18-inches).
 - 2. WDNR *Infiltration Basin* guidance indicates a maximum ponding depth of 24-inches (possibly as much as 18-inches).
 - b. Infiltration rates assigned in the model have not been determined following the required guidance of CPS1002. The values used are much higher than allowable.

Long Term Maintenance Agreement

We recommend that the proposed maintenance activities regarding the stormwater management system be replaced with information combined from the attached documents which are applicable to wet ponds and biofilters (infiltration ponds).

Wetlands

The site plan indicates the boundary of a delineated wetland. This wetland report is reported to have a date of 2015 which is more than the WDNR standard 5-year applicability duration. WDNR has in certain instances allowed use of wetland boundary delineations more than 5-years old; but regardless, the developer should obtain specific concurrence that the wetland delineation is still valid.

EXHIBIT "A"

STORM WATER FACILITY SYSTEM COMPONENTS

The stormwater facility system components include the following:

- One (1) biofilter stormwater management device
- All on-site storm sewer pipes, inlets, outfalls, and flumes designed to collect and convey stormwater runoff to the wet detention pond.

INSPECTION AND MAINTENANCE

All components of the stormwater management system shall be inspected at least semiannually in early spring and early autumn. Repairs will be made whenever the performance of the system is compromised as described below.

- Vegetation
 - Plants within the biofilter shall be watered as needed during first growing season.
 - Woody vegetation (trees and shrubs) shall not be allowed to grow within the biofilter and shall be removed when discovered.
 - After initial establishment of vegetation, any area in excess of 1 square foot where vegetation has died or is missing shall be revegetated.
- Soils
 - Side slope areas should be inspected for occurrences of erosion and slumping of bank material. Evidences of failure will require regrading and stabilization.
 - Once every year the surface (surface is the top of the mulch and stone covered engineered soil layer) of the biofilter shall be inspected for accumulated sediment. If at any one location along the surface of the biofilter there is noticeable sediment accumulation it should be removed using hand tools to restore the original biofilter surface.
 - The horizontal surface of the biofilter is intended to provide a high level of infiltration. As such the infiltrative capacity of the soils in the surface of the biofilter need to be protected.
 - Any evidence of compaction of the soils or accumulation of fine sediment which may clog the biofilter must be corrected by tilling to alleviate soil compaction. Soil should not be compacted after tilling other than that which results from pedestrian foot traffic. After tilling if the average depth within the infiltration storage area is less than XX inches as measured from the bottom of the overflow section (as originally planned) the excess soil should be removed from the biofilter and disposed of in a stable, non-eroding manner. Tilling is only necessary in areas where compaction is identified and may be completed using hand tools in between plants where feasible.
 - Once every 5 years the biofilter bottom shall be tested in at least two locations for soil infiltration rates. If infiltration rates are less than 66% of original design infiltration rates (the planned surface infiltration rate was X.XX inches/hour at the time of project approval) surface soils within the biofilter shall be corrected as described below.
 - If standing water of any depth is observed in the biofilter over more than 50% of the surface area more than 72 hours after cessation of rainfall/runoff it may be indicative of failure of the engineered soils to infiltrate water. If such a situation occurs, water should be removed from the surface of the biofilter by pumping. Surface soils should then be allowed to dry naturally for several days and shall be corrected as described below.
 - Soil Correction. When conditions described above necessitate soil corrections, soil from the biofilter surface should be removed in one-foot layers and replaced with new engineered soil per the original construction specification. Vegetation disturbed by soil restoration activities will need to be replaced in accordance with the original construction specification.
- Inlet and outlet structures.
 - These types of structures shall be inspected monthly for obstructions that may reduce their hydraulic capacity. Structure openings should immediately be cleared of any accumulated debris. Debris should be properly disposed of outside of biofilter storage areas. Evidence of structural or foundation material failure should be repaired immediately.

- *Trash and Debris*
 - *The biofilter shall be inspected monthly for trash and debris. Trash and debris shall be properly disposed of outside of biofilter storage areas*

The owner shall maintain records of the dates and findings of inspections of the stormwater management system and the cleaning and replacement of system components. The owner shall provide copies of all records to the City upon request.

PROHIBITIONS

Heavy equipment should not be used within the biofilter beyond the minimum required for initial construction of the facilities. Any use of heavy equipment within these areas must be followed up with deep tilling activities to mitigate soil compaction.

Applications of fertilizers are prohibited in the biofilter.

EXHIBIT "A"

STORM WATER FACILITY SYSTEM COMPONENTS

The stormwater facility system components include the following:

- One (1) wet detention stormwater management pond
- All on-site storm sewer pipes, inlets, outfalls, and flumes designed to collect and convey stormwater runoff to the wet detention pond.

INSPECTION AND MAINTENANCE

All components of the stormwater management system shall be inspected at least semiannually in early spring and early autumn or more frequently as described below. Repairs will be made whenever the performance of the system is compromised as described below.

- **Vegetation**
 - Turf along the side slopes and top of containment berms for the detention pond shall be watered as needed during first growing season.
 - Woody vegetation (trees and shrubs) shall not be allowed to grow within the detention pond and shall be removed when discovered.
 - After initial establishment of vegetation, any area in excess of 1 square foot where vegetation has died or is missing shall be revegetated.
- **Earthworks**
 - Side slope areas of the detention pond shall be inspected for occurrences of erosion and slumping of bank material. Evidences of failure will require regrading and stabilization.
- **Inlet and outlet structures.**
 - These types of structures shall be inspected monthly for obstructions that may reduce their hydraulic capacity. Structure openings should immediately be cleared of any accumulated debris. Debris should be properly disposed of outside of stormwater storage areas. Evidence of structural or foundation material failure should be repaired immediately.
- **Trash and Debris**
 - The stormwater pond shall be inspected monthly for trash and debris. Trash and debris shall be properly disposed of outside of stormwater storage areas
- **Pond Storage Volume**
 - The owner shall complete an 'as-built' survey of the pond at the time that the site is substantially stabilized. The survey shall be sufficient to determine the as-built volume of the pond permanent pool and live storage areas. Additionally, the survey shall identify the pond average bottom elevation and at least two full depth cross-sections. If the pond does not substantially conform to the approved design the pond shall be modified until it conforms to the approved plan and meets the approval of the City engineer.
 - Every 10 years after the pond's initial construction, and any time ownership of the property where the pond is located is sold, the pond shall be surveyed in accordance with the previous paragraph. This survey shall be provided to the City engineer. If accumulated sediment has resulted in any portion of the 'sediment storage area' (those areas beyond any safety shelf) to be within three (3) feet of the normal pool elevation the pond shall be dredged to restore the original planned sediment storage volume. The City engineer shall be notified at least two weeks in advance of any scheduled dredging and shall be notified again on the day that dredging is to occur. Record of the dredging including documentation of sediment volumes removed shall be provided to the City engineer within one month of completion of dredging.
 - The City engineer may adjust the required time interval (longer or shorter) between scheduled surveys depending upon the observed rate of sediment accumulation within the pond.

The owner shall maintain records of the dates and findings of inspections of the stormwater management system and the cleaning and replacement of system components. The owner shall provide copies of all records to the City upon

request.

Applications of fertilizers are prohibited for areas below the top of slope of the wet pond.