PROJECT REVIEW | HIGHLAND VILLAGE AT COTTAGE GROVE

Village of Cottage Grove, WI

ENGINEERING REVIEWER:

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DATE:

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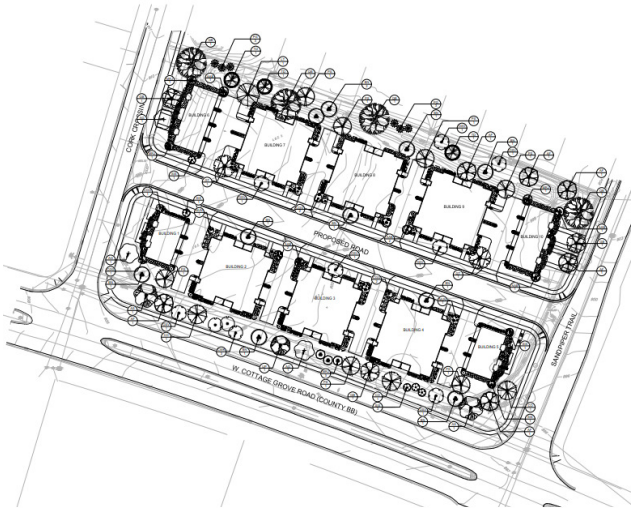

Proposed Highland Village at Cottage Grove

REVIEW COMMENTS

MSA has reviewed the Precise Implementation Plans submitted for Highland Village at Cottage Grove Development received on December 23, 2020.

INCLUDED

1. Final/Preliminary Plat
2. Preliminary Engineering Plans
3. Stormwater Management
4. PIP Submittal

MSA has the following comments on the final plat and engineering plans and is recommending approval noting these comments are addressed with the construction plans.

Final Plat Comments:

1. Verify the overall lengths of lines and curves with the individual lots. Due to rounding some of the overalls do not add up to the individual lots by 0.01'.
2. The note for the release of the storm sewer easement should refer to being completed by a separate document.
3. Please mask some of the bearings and distances beneath the no access hatch for readability.

Site Plan Comments:

1. The sanitary laterals should be connected to the main with a wye and not directly in the manholes. Lot 3 and Lot 8 can come straight out parallel to the water services. Lot 5 and Lot 6

may need the sanitary to be extended to the west a distance to allow the lateral connections outside of the manholes.

2. Review the northwest corner of the intersection of Highland Drive and Sandpiper Trail as an area of reject curb and gutter may be necessary to avoid a low point along the curb and gutter.
3. Please provide scourstop stabilizing mat instead of rip rap at endwalls for ease of maintenance for the Village.

Stormwater Comments:

1. Large scale – For their November 9, 2020 submittal they indicated a 100-yr peak runoff rate from the site of 23.05 cfs across 3.14 acres. This results in a unit discharge rate of 7.3 cfs/acre – and is inclusive of some larger areas of turf (i.e. the impervious density is at a comparative lower point). The current submittal is looking at only storm sewer, which will be serving an area with a higher impervious density, but their flows are less
    a. West system (P100): Total area = 1.16 acres, Q100 = 5.5 cfs (4.7 cfs/acre)
    b. East system (P109): Total area = 1.21 acres, Q100 = 5.7 cfs (4.7 cfs/acre)

    Much of this may be due to the fact that they've assigned an inlet time of concentration of 10 minutes which therefore results in a very low rainfall intensity. This appears very liberally low, I calculated a time of concentration for the whole length of street and found a value less than 5 minutes. Since 5 minutes (or perhaps 6) is the standard minimum, it would seem appropriate to use that value – this would increase their rainfall intensities from ~ 7.5 in/hr to 10.5 in/hr, which would be a 40% increase. This would move unit peak flow rates right up to what they had indicated in their November submittal.
2. Smaller scale – Some of the routing may be incorrect.
    a. It is indicated as subcatchment A draining to pipe 106, however, pipe 106 originates across the parking lot from that pipe.
    b. Similarly, it is indicated subcatchment B as draining to pipe 105, but that would logically be where subcatchment A should drain. (A and B are the same size, so maybe this is a typo…)
    c. Subcatchment F is indicated as draining to pipe P100 – which is likely the ultimate discharge location; however, there is no actual connection shown to the roof comprising watershed F.
    d. The same condition under 2.c. exists for really all the roof areas – what is the actual point of connection, and is there adequate capacity. Since any lack of capacity of these roof drain systems will result in overflow to the street, it is important to have an understanding of how this will function.
    e. Calculations for on-grade inlets indicate approximately 1.4 cfs capacity per inlet, which appears reasonable. Howevever, considering questions about estimates for peak flow rates, it seems like there is a need for one additional inlet each at the street for the west system. There will be some bypass from the development off the east system, but that is probably unavoidable without some excessive and low cost-return changes to the system.
3. The 48" RCP intake to the west of Sandpiper trail has an invert of 895.47. This means, when flowing full there'll be a headwater of 899.47 – this will become the tailwater on the proposed eastern storm sewer system. The proposed top of curb casting elevations within Highland Drive

are 899.39 – which is below the tailwater. Construction of this system as proposed will likely result in an 'outlet' of flows from the swale during a major event prior to the 48" pipe being full which would drain down the street.

4. It should be noted that the low floor elevation of the buildings in Lots 9 and 10 are 900.75. Any overflow of the 48" pipe at the northeast corner of the site will come through the parking area between Lots 9 and 10 that has a crest height of 900.55. Very minimal freeboard exists for the building and it possible it may benefit to raise the floor elevations of the building for additional protection of a major storm overflow.