

**Village of Cottage Grove, WI****CLIENT LIAISON:**

Michael Maloney, P.E.

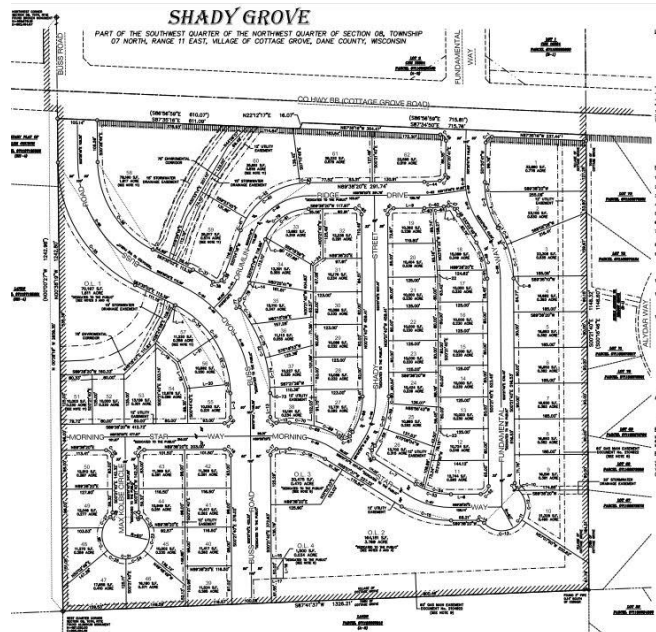
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**DATE:**

July 29, 2019



Proposed Shady Grove Subdivision

**SHADY GROVE FINAL PLAT**

MSA has reviewed the Final Plat and related engineering drawings and calculations submitted by JSD Professional Services, Inc. on July 22nd, 2019, for the proposed residential subdivision located along Cottage Grove Road.

The Plans for the proposed development included the following:

1. Title Sheet
2. Existing Conditions
3. Site Layout Plan
4. Grading Plan
5. Utility Plan
6. Plan and Profile Sheets of Street and Utility
7. Typical Roadway Cross Sections
8. Pump Station Details & Forcemain Plan & Profile

**SUBMITTAL REVIEW NOTES**

MSA recommends the proposed submittal be approved, contingent on the following conditions:

**Site Layout Plan**

1. Label and dimension all easements on plan sheets, including easements for drainage.
2. Show location of all curb stops on plan sheets
3. Provide Intersection detail sheets for clarification of drainage patterns and ADA compliance at curb ramps.
4. Provide landscape/planting plan sheet.

**REVIEW COMMENTS**

## Engineering

5. Provide pavement marking and signage sheet.
6. Coordination with Village/MSA required for proper grade and alignment of Fundamental Way and Buss Road for future extension of CTH BB (Cottage Grove Road). Temporary pavement may be necessary to currently match existing CTH BB.
7. Note, current edition of Village of Cottage Grove Standard Specification for Public Works Improvements shall supersede.
8. **Sheet C0.0**
  - a. Update contact information for Frontier Communications.  
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9. **Sheet C1.0**
  - b. Revise paving note 4.1; 2' x 5' Neenah truncated dome panel or equal, natural patina (no color).
10. **Sheet C1.1**
  - c. Revise utility note 4; Village of Cottage Grove "Standard Specifications for Public Works Improvements".
11. **Sheet C3.0**
  - d. Label all easements
12. **Sheet C4.0**
  - e. Add typical sections for Fundamental Way
  - f. Correct reject curb size to match dimensioning, 24-inch, labeled as 30-inch.
  - g. Revise note, concrete sidewalk to be 5-inches thick.
13. **Sheet C6.0**
  - h. Add ramps crossing Fundamental Way, temporary end of median can stop prior to ramp crossing for future tie-in to CTH BB.

### Grading Plan

1. **Sheet C6.1**
  - a. SW corner Fundamental/Drumlin Ridge ramp exceeds maximum cross slope of 2% for a controlled intersection. Revise.
  - b. Clarify labeling, Rim at inlets = Flowline or Top of Curb?
  - c. Clarify labeling, EC at ramps = Flowline or Back of Curb?
  - d. Add drainage arrows to determine drainage pattern.
2. **Sheet C6.2**
  - a. Revise ramp grades to comply with ADA guidelines, several exceed, 12:1 maximum (8.33%).
  - b. (Left detail) West curb line and center line of Morning Star Way if flat for approx. 15 feet, is there a high point between? If not revise for minimum 0.5% slope.
  - c. Add drainage arrows to determine drainage pattern.
3. **Sheet C6.3**
  - a. Revise ramp grades to comply with ADA guidelines, 12:1 maximum (8.33%).
  - b. Add high point and drainage arrows to determine drainage pattern.
4. **Sheet C6.4**
  - a. Revise ramp grades to comply with ADA guidelines, 12:1 maximum (8.33%).

5. **Sheet C6.5**
  - a. Revise ramp grades to comply with ADA guidelines, several exceed, 12:1 maximum (8.33%).
  - b. Add drainage arrows to determine drainage pattern.
6. **Sheet C6.6**
  - a. Revise ramp grades to comply with ADA guidelines, 12:1 maximum (8.33%).
7. **Sheet C6.7**
  - a. Revise ramp grades to comply with ADA guidelines, 12:1 maximum (8.33%).

#### Master Utility Plan

1. Dimension horizontal separation between utilities.
2. Sanitary manhole plug shall be installed in the downstream manhole in the outlet pipe until the project has been accepted. The plug must be installed in the presence of the engineer and may be removed only in the presence of the engineer. Water that has accumulated in the downstream manhole must be pumped out prior to removal of the plug. Add note to plans.
3. All manhole castings to be R-1710, Neenah, type B self- sealing, gasket non-rocking lids with concealed pick holes, revise on structure table sheets C8-14 and C9-15 .
4. All C900 watermain requires tracer wire with termination boxes, show locations on plan.
5. All water services on C900 pipe require saddle connections.
6. Storm sewer design to match at crown of pipes.

#### Plan and Profile Sheets

1. All water crossings (including main and services) with storm having less than 5' of vertical separation require insulation. Show insulation on plan sheets.
2. When watermain profile does not follow street profile, (typical 6.5' bury and 7' bury on cul-de-sacs) provide top of pipe elevations in profile.
3. Provide complete lot numbers on all plan/profile sheets
4. Revise watermain profile on Fundamental Way to minimize extreme depth.
5. Please darken line weights in plan/profile for ease of readability.
6. Clarify need for 1 ½-inch water services.
7. **Sheets C8.0 - C8.13**
  - a. Storm sewer constructability will be reviewed after adjustments made per storm water comments.
8. **Sheet C8.10**
  - a. Coordinate centerline profile build with MSA/Village for proposed CTH BB. Match point to be 100+00. Temporary pavement may be required to match existing CTH BB grade.
9. **Sheet C8.14**
  - a. Revise Structure table, all manhole castings to be R-1710 Type B, self- sealing, non-rocking, with concealed pick holes, per Village of Cottage Grove Standard Specification 502.7.
10. **Sheet C9.0**
  - a. Revise centerline profile build per above note 16. Currently proposed centerline profile for CTH BB at Fundamental Way is 940.5. Match point to be 151+00. Temporary pavement is required to match existing CTH BB grade.
  - b. No sanitary stub allowed, construct to next upstream manhole.
  - c. Add hydrant on SW corner CTH BB and Fundamental Way intersection.
  - d. Extend sidewalk 5 feet beyond R.O.W. and add ramp crossings at end, crossing Fundamental Way.
  - e. Extend San. MH B-2 south if needed to avoid conflict with ramp crossing.

- f. Water vales to have minimum 10 ft. separation for ability to compact area around valves.
  - g. Show insulation at all storm/water crossings, including water services.
  - h. Revise watermain profile to limit extreme depth, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile.
  - i. Revise location for Lot 2 sanitary lateral, should be perpendicular to main.
11. **Sheet C9.1**
- a. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile.
  - b. Add 8-inch valve on main at hydrant tee.
12. **Sheet C9.2**
- a. Clarify need for sanitary and water services to Outlot 2, (stormwater management) as shown on plan sheet, delete if not needed.
  - b. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile.
  - c. Add 8-inch valve on main at hydrant tee.
13. **Sheet C9.3**
- a. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile.
  - b. Add 8-inch valve on main at hydrant tee.
14. **Sheet C9.4**
- a. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile.
15. **Sheet C9.5**
- a. Clarify depth of vertical offset, (18-inch separation) if needed, provide top of pipe elevations for top and bottom of vertical offset ( sta. 175+43- 175+71)
16. **Sheet C9.6**
- a. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile. Verify need for extreme depth.
  - b. Relocate sanitary and water services for lot 61 out of intersection, curb stop would be in ramp.
  - c. Correct lot number for lot at NW corner Fundamental/Drumlin intersection. ( LOT 62)
17. **Sheet C9.7**
- a. Relocate hydrant (sta. 125+26) to temporary hydrant at end of Morning Star Way
  - b. Relocate sanitary lateral for lot 53 out of ramp
  - c. Tee intersection to have minimum 2 8-inch valves spaced a minimum of 10 ft. apart, add 1 valve.
  - d. Extend road base 10 ft. beyond end of pavement.
  - e. Label Type III barricades at end of Morning Star Way.
  - f. SDR 26 PVC required between sanitary MH A-2.9 and MH A-2, MH A-2 and MH A-2.1, depth over 15 ft.
18. **Sheet C9.8**
- a. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile.
  - b. SDR 26 PVC required between sanitary MH A-2 and MH A-2.1, depth over 15 ft.
  - c. Extend sanitary sewer MH A-2.1 to approx. sta.131+30, and eliminate MH A-2.2, parallel watermain to sanitary sewer eliminating several bends, sta. 131+19, 131.65,134+55, and 135+08, replace with (1) 45 degree by each MH.
  - d. Add possible water and sewer services to OL 3-Park for future build.

19. **Sheet C9.9**
  - a. Eliminate water and sanitary service to O.L. 2 (stormwater management).
20. **Sheet C9.10**
  - a. Verify/clarify water and sanitary extension west to O.L.1.
  - b. Add temporary hydrant on end of watermain north side of CTH BB
  - c. Revise watermain profile for 6.5 ft. bury, if depth is greater than 6.5 foot bury top of pipe elevations are required in profile. Verify need for extreme depth.
  - d. Add 8-inch valve on main at hydrant tee.
  - e. SDR 26 PVC required between sanitary MH A-7 and MH A-6, depth over 15 ft.
21. **Sheet C9.11**
  - a. 18-inch separation required between bottom of storm sewer and top of watermain, revise watermain depth at approx. sta. 104+80-0105+36.
  - b. SDR 26 PVC required between sanitary MH A-6 and MH A-3, depth over 15 ft.
22. **Sheet C9.12**
  - a. SDR 26 PVC required between sanitary MH A-3 and MH A-1, depth over 15 ft.
23. **Sheet C9.13**
  - a. SDR 26 PVC required between sanitary MH A-2.9 and MH A-2.9.1, depth over 15 ft.
  - b. Revise watermain profile for 7 ft. bury on Cul-de-sacs, if depth is greater than 7 foot bury top of pipe elevations are required in profile. Verify need for extreme depth.
  - c. Relocate service connection to watermain for Lot 48 off of hydrant lead, not allowed.
24. **Sheet C9.14**
  - a. SDR 26 PVC required between sanitary connection and MH B-1, depth over 15 ft., Note; contractor to verify invert elevation and material prior to connection.
  - b. Coordination with Village/MSA required for grade of future extension of CTH BB (Cottage Grove Road). Temporary casting height may be necessary.
25. **Sheet C9.15**
  - a. All manhole castings to be R-1710, Neenah, type B self- sealing, gasket non-rocking lids with concealed pick holes, revise on structure table sheet C9.15.

### Stormwater Management

1. The designs submitted for the Chapter 163 requirements appear to work within the platted land. There are issues with the functionality of the proposed design.
2. MSA is requiring revisions to the south detention basin and infiltration area and associated storm sewer design in the vicinity of the pond. JSD has agreed to make adjustments per MSA's comments.
3. The land disturbance permit will become an exhibit of the Developers Agreement. Execution of both documents and all permitting is required prior to start of construction.

### Lift Station & Forcemain

1. Lift Station and forcemain shall comply with all provisions of Section 505-519 of the Village of Cottage Grove Standard Specifications for Public Works Improvements (called standard specifications herein). The review included herein does not comment specifically on all requirements included in that section. Plans shall provide enough detail to verify that they are consistent with the standard specifications.
2. Hydromatic model S4NVX is acceptable. However, design should be based upon the full/untrimmed 8.0" impeller, which will also require a 7.5HP rated motor. Flow will likely range from 145-200 gpm depending on the assumed C factor (120-200 used for MSA's analysis).
3. It is likely that a 7' minimum diameter wet well is necessary to comply with the 12" hatch clearance requirement (comment #10 on preliminary review). In addition, a larger wet well will provide better compliance with detention and cycle times. See comment #4.

## Engineering

4. With the larger pump (145-200 gpm), the wet well operating volume will need to increase to limit the number of starts/hour. Based on MSA's hydraulic modeling, a 7' diameter wet well with a 1.5' operating depth will provide a cycle time of approximately 8.5 mins (7 starts/hr) @ 200 gpm, and 19 mins (3 starts/hr) @ 145 gpm. It is our understanding that the motor is rated for approximately 10-12 starts/hr. In addition, it appears a <30 min detention time can still be maintained.
5. The electrical design appears to be incomplete and not applicable to this project. Examples of nonapplicable items: bubbler level control system, forcemain pressure transducer, and 10 HP pump motors. Designer should review the electrical & control system specifications for requirements. Particularly, Section 507 and 508.
6. The 4" flanged pipe with quick-connect in valve vault shall extend vertical to just below the bottom of the hatch. The plans do not clearly indicate this.
7. Provide a spare case of vent scrubbers to the Village.
8. Per sheet C9.12, the hydrant is currently planned for the terrace near the roadway. Fire hydrant lead should be extended so the hydrant is located on the lift station site.
9. Wall supports are called out as epoxy coated. However, floor supports are not. Update as appropriate.