Engineering Review Memorandum

To: Alan Brixius, Delano City Planner

From: Shawn Louwagie, Delano City Engineer

Date: April 09, 2024

Reference: Parkview Hills North: Final Plat Review Comments

Final Plat documents have been received for the proposed Parkview Hills North development. The following comments are generated from the review of the submitted plans.

Submitted Documents: Project Narrative; Response to City Comments; CV Plans (04/05/2024); LA Plans (04/05/2024); SWM Report (04/04/2024); Conservation Easement; Trail Easement; Wright County review letter (05/12/2023).

General

1. Provide a comment response memo addressing the following items.
2. The Wright County comment letter provided is from May 12, 2023, and was based on a prior plan submittal. The revised documents shall be provided to Wright County staff for updated comments.
3. Include and follow Standard Detail Plate Gen-7 in documents, see attached.
4. Show wetland numbers, currently only Wetland #1 is numbered.
5. Show proposed wetland buffer signage locations around all wetlands.
6. Existing well and septic system for the existing lot (Lot 9, Block 1) shall be removed, provide a removals plan showing these removals and others needed for the development work.
7. Confirm all scales and north arrows are accurate. (C5-5)

Plat

8. The proposed intersection of 84th Street SE and Parkhills Drive is skewed and does not align correctly. Adjust the layouts to remove the jog within the intersection.
9. Ensure the existing house in Block 1, Lot 9 is out of the drainage and utility easement, currently some of the sidewalk is in the easement.
10. Ensure utility easement width over sanitary, storm, or water infrastructure is a minimum of 2x the utility bury depth or 20', whichever is greater.
11. Ensure D&U easements are a minimum of 10' from edge of storm sewer line in rear yard storm sewers, see rear yards of Block 1 and future phase of Block 3.
12. D&U easements shall be provided over common drainage swales through backyards.

Streets

13. Misaligned intersection of Parkhills Drive and 84th Street is not allowed, reconfigure to remove skew, see Plat note above.
14. Add note to match existing aggregate base and pavement thicknesses for the patches in C.S.A.H 16.
15. Show high back curb on the radii at the intersection of 84th St. SE and Parkhill Dr.
16. Show high back curb on Parkhill Dr from the intersection of 84th St. SE and Parkhill Dr. to 85th St. SE.
17. Show crosswalks at the intersection of 84th St. SE and Parkhill Dr.
18. Provide signage along 84th St. SE and Parkhill Dr. Showing crossway ahead and at the intersection.
19. Provide stop signs and identify locations. Place stop signs on south leg of Parkhills Dr/82nd St intersection, and east/west legs of Parkhills Dr/84th St intersection.

Site Grading

20. Provide detailed plan on how future phases will be graded.
21. Ditch conveyance should be placed in the drainage and utility easement and moved to back of lot. Currently the drainage from Lot 1 to Lot 10, Block 7 is not in the drainage and utility easement.
22. All slopes need to be 3:1 or less and 4:1 is preferred. The slopes between Lots 10 and 11, Block 7 and between Lots 1 and 5, Block are greater then 3:1.
23. Revise grading between Lot 11, Block 1 and Lot 1, Block 5, currently three contours' lines are coming together.
24. What is proposed for the impact to existing fences along CSAH 16?
25. Provide temporary cul-de-sac or equal at phasing dead ends.
26. Flat driveway at STA 14+50 on 82nd street.
27. Looks to be missing topo data in front of existing homes along CSAH 16. Private utilities are note shown.

Sanitary Sewer

28. Sanitary main pipe material shall follow the following standards, see detail Gen-07.
    a. SDR 35: Depth 0’ to 16’
    b. SDR 26: Depth 16’ to 25’
    c. C-900: Depth over 25’
29. Sanitary sewer mains with utility services connected to them that are not part of a future phase must terminate within a manhole. See sanitary line west of MH 10.
30. Proposed utility corridor from Honeytree Drive along the west side of CSAH 16 appears to be congested with small utilities and will require a permanent D&U easement from the adjacent property owners. Minimum easement width over a sanitary or watermain shall be 2x the utility bury depth or 20’, whichever is greater.

a. A sanitary sewer connection to the existing structure shown in the clip below would provide a more effective angle for sewer flow from the sewer extension, explore extending sanitary sewer along the east side of CSAH 16 and crossing at the location proposed on the plans near the development area.

31. Sanitary sewer structures shall include 0.1' of drop between inlet and outlet pipes.

Watermain

32. See sanitary note above regarding utility easement widths.
33. Place hydrants at property corners, dead ends, and high points in the watermain.
34. Add WAT-8, intersection layout detail. Update plans.
35. Add callouts for valves along CSAH 16 where the tee is placed.
36. Remove high point in water main crossing of CSAH 16.
37. Coordinate connections to existing watermain system with Delano Municipal Utilities staff. Any water shutdowns necessary for connections shall be coordinated by the developer.

Storm Sewer

38. Lateral from 106 to 105 is in the road section, lower storm crossing below typical section.
39. Revise storm sewer run to minimize conflicts with water and sewer. Water offsets only acceptable as a last option.
40. Street inlet capacity shall be limited to a maximum of 2 CFS. Additional catch basins should be added in line for catch basins exceeding this requirement.
41. C-value for 104-103 is above 1 which isn't possible.
42. Double inlets may be required at low points, see note above.
43. 606 flow will need to be recalculated after comments are addressed on back to back storm modeling.
44. CB 604 should have inlet flow area but shows as 0 ac in table.

45. Pipe 101-100 is over capacity. Also, how does cumulative allow decrease from pipe 102-101 (8.5cfs) to pipe 101-100 (6.5cfs)
46. Show pipe inverts and cover over pipe on storm sewer table.
47. Do not change pipe material between structures CBMH 604 and FES 605.
48. Show FES800 to FES801 in a profile.
49. Provide a detail on FES 605.
50. Additional easement needed for Block 6 Lots 4 & 3 for storm sewer. Also, for backyards for CB607 through FES 606.
51. Provide sump in structures which have a vertical drop coming into the structure.
52. Show storm sewer labels in plan view outside phase.
53. Provide low point castings at low point inlets.
54. Add Riprap on FES 500.

Stormwater Management

55. D&U easement required over all swales and storm sewer pipe as well as stormwater facilities up to at least the 100-year HWL.
56. Provide a minimum separation of 1' from the EOF to top of pond. Pond 3 currently only has 0.7 feet between EOF and Top of Pond.
57. Compare peak discharge at each discharge location, not wholistically for the site.
58. Outlet is required for Wetland 2/85th Street so that 85th street is not overtopping during 100-year event.
59. Low opening elevation of lots must be 1 foot above adjacent EOF. EOF between lots 1 and 2 is 938.0 but lot low opening is 932.0/392.5.
60. Draintiles are at calculated at approximately 0.19% and 0.09% slopes. Mn Stormwater Manual recommends at least 0.5% slopes.
61. Draintiles shall have a minimum of 3 inches of washed #57 stone above and on each side of the pipe (stone is not required below the pipe). Above the stone, two inches of choking stone is needed to protect the underdrain from blockage.
62. Show time of concentration flow paths so they can be evaluated. Many proposed time of concentrations are much higher in proposed conditions than existing for similar or smaller drainage areas which is typically not the case. Additionally, some time of concentration calculations are not possible. For example, 404S shows a 244 foot sheet flow which is not possible given the dimensions of the subcatchment. Most of the proposed basins have a similar issue.
63. Please utilize a single method (i.e travel time) for calculating time of concentration. Currently using travel time and lag/CN. Calculate proposed time of concentration using a series of sheet flow and

shallow concentrated flow for each subcatchment. A direct entry TC of 7 minutes can be used for proposed conditions.

64. Provide scale on existing drainage figure.
65. Show proposed contours on proposed drainage figure and existing contours offsite to verify drainage boundaries.
66. Impervious acreage shown in table (7.564) versus narrative (7.98/ 8.105) for calculating abstraction volume differs. Please rectify or explain the discrepancy.
67. Length of trench calculation doesn't compute as shown in narrative/table.
68. Provide low opening EL. for existing house.
69. Deadpool should be at least 5 ft deep for Pond 3.
70. Need to provide gravel/rock layer around draintile.
71. HydroCAD Comments
    b. Provide electronic HydroCAD files.
    c. Infiltration should not be modeled in areas that have encountered groundwater within 3 feet of the surface. (i.e. Pond 2 and Pond 3)
    d. It is not clear how the back to back 100 year flows were modeled based on the information provided. As noted provide HydroCAD models for all scenarios.
    e. Existing Conditions
        i. Agriculture Crops should be modeled with a CN of 75 reflecting Straight Row with Crop Residue - Good Condition.
        ii. Proposed depression 41P should also be modeled in existing conditions or not at all since it is offsite and would exist in both conditions.
    f. Proposed
        i. 40S/P and 41S should be modeled same as existing conditions since nothing will change. Currently modeling agricultural crops as grass.
        ii. Stage strorage is modeled with larger surface areas than shown on plans. For example with Pond 2 (1P), 920 contour measures ~5300sf but is modeled as 6970sf. 922 contour measures ~29,300sf, but is modeled as 35,127sf. Please check all pond volumes.
        iii. Weir is not modeled for Pond 1 (4P). Plan sheet C3-3 shows weir at 935.7
        iv. Filter trench is modeled as over entire surface area from 932.5 to 933.3, but plans only show top of filter trench as 932.9. Additionally, filter trench does not cover this entire area. May be more appropriate to model as constant flow to a 6" draintile. Adjust as necessary.

v. Starting elevation of Pond 3 (6P) shall be 924.0 to correspond with floodplain elevation.

vi. A 24" orifice is modeled that is not shown on plans for Wetland 2/3P.

End of Comments

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Attachment:

c. Phil Kern, Delano City Administrator
Paula Bauman, Administrative Services Director
Scott Dornfeld, Delano Building Official
Paul Twite, DMU General Manager
Dan Hanson, DMU Foreman

MANDREL SIZE

SDR 35 (DEPTH<16')				
PIPE SIZE	DEFLECTION TEST		AIR TEST	
(IN)	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
4	3.874	3.68	4	2
6	5.742	5.45	4	3
8	7.665	7.28	4	4
10	9.563	9.08	4	5
12	11.361	10.79	4	6
15	13.898	13.2	4	7.5

PS 46 (DEPTH<16')				
PIPE SIZE	DEFLECTION TEST		AIR TEST	
(IN)	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
18	16.976	16.13	4	9
21	20.004	19	4	10.5
24	22.48	21.36	4	12
27	25.327	24.06	4	13.5

SDR 26 (16'<DEPTH<25')				
PIPE SIZE	DEFLECTION TEST		AIR TEST	
(IN)	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
6	5.612	5.33	4	3
8	7.488	7.12	4	4
10	9.342	8.87	4	5
12	11.102	10.54	4	6
15	13.575	12.9	4	7.5

PS 115 (DEPTH<16')				
PIPE SIZE	DEFLECTION TEST		AIR TEST	
(IN)	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
18	16.586	15.76	4	9
21	19.545	18.57	4	10.5
24	21.964	20.87	4	12
27	24.744	23.51	4	13.5
30	28.763	27.32	4	15

C-900 DR 18 (25'<DEPTH)				
PIPE SIZE	DEFLECTION TEST		AIR TEST	
(IN)	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
6	5.934	5.49	4	3
8	7.754	7.37	4	4
10	9.487	9.01	4	5
12	11.265	10.7	4	6
14	13.05	12.4	4	7
16	14.831	14.09	4	8
18	16.609	15.78	4	9
20	18.386	17.47	4	10
24	21.94	20.84	4	12

GENERAL TESTING NOTES:

1. PIPE MATERIAL AND TESTING REQUIREMENTS MAY CHANGE DEPENDING ON SOIL CONDITIONS AND OTHER FACTORS.
2. ALL TESTING TO OCCUR BEFORE CONSTRUCTION OF WEAR COURSE PAVEMENT.
3. CITY TO BE NOTIFIED MINIMUM 48 HOURS BEFORE ANY UTILITY TESTING AND A REPRESENTATIVE MUST BE PRESENT FOR TESTING.

SANITARY SEWER TESTING NOTES:

1. A MINIMUM WAITING TIME PERIOD OF 30 DAYS AFTER INSTALLATION IS REQUIRED BEFORE DEFLECTION TEST MAY BE PERFORMED.
2. TRACER WIRE TEST TO BE PERFORMED ON ALL SANITARY SEWER AND SANITARY SEWER SERVICES BY METROTECH OR APPROVED EQUAL.
3. AIR TEST WILL BE PERFORMED AT A PRESSURE OF 4.0 PSIG GREATER THAN THE AVERAGE BACKPRESSURE OF ANY GROUND WATER PRESENT.
4. *IF GROUNDWATER IS PRESENT, FOR EVERY FOOT OF GROUND WATER ABOVE THE PIPE SPRING LINE, INCREASE THE GAGE TEST PRESSURE BY 0.43 PSI (TO COMPENSATE FOR WATER BACK PRESSURE).
5. THE SEWER LINE WHICH IS BEING TESTED WILL BE ACCEPTED AS PASSING THE AIR TEST IF THE PRESSURE DOES NOT DROP MORE THAN 0.0 PSI IN LESS TIME THAN 30 SECONDS PER INCH IN DIAMETER OF THE PIPE BEING TESTED.
6. TELEVISING SHALL BE PERFORMED ON ALL NEWLY INSTALLED GRAVITY SEWER FOLLOWING ALL OTHER SUCCESSFUL TESTING.
7. SANITARY SEWER TO BE JETTED PRIOR TO TELEVISING.
8. ALL PIPING AND SERVICE STUBS TO THE RIGHT OF WAY MUST BE INSTALLED PRIOR TO TESTING.

WATERMAIN TESTING NOTES:

1. WATERMAIN TESTING TO INCLUDE ALL CURB STOPS AND HYDRANT LEADS.
2. HYDROSTATIC PRESSURE TEST PROCEDURE AS FOLLOWS:
   - 2.1. PUMP SYSTEM TO MINIMUM 150 PSI.
   - 2.2. THE WATERMAIN SYSTEM WILL BE ACCEPTED AS PASSING IF THE PRESSURE HAS NO DROP IN PRESSURE IN 2 HOURS.
   - 2.3. ALL BUTTERFLY VALVES TO BE INDIVIDUALLY HYDROSTATICALLY TESTED AGAINST FOR A MINIMUM OF 30 MINUTES WITH NO DROP IN PRESSURE.
3. BACTERIA TEST (MINIMUM 2 SETS)
   - 3.1. 1 SET AFTER 1ST FLUSH, THEN 1 SET 24 HOURS LATER.
   - 3.2. AT LEAST 1 SET OF BACTERIA TEST SAMPLE REQUIRED FOR EVERY 1,200 FEET OF WATER MAIN INSTALLED, PLUS ONE SET FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH MAIN LATERAL BRANCH.
   - 3.3. TESTING TO BE DONE USING MDH STANDARDS.
4. TRACER WIRE TEST TO BE PERFORMED BY A METROTECH OR APPROVED EQUAL. TRACER ENTIRE LINE/ALL SERVICES TO CURB STOPS.
5. WATERMAIN TESTING TO MEET MINNESOTA DEPARTMENT OF HEALTH STANDARDS

STORM SEWER TESTING NOTES:

1. TELEVISING SHALL BE PERFORMED ON ALL DRAINTILE AFTER WEAR COURSE.
2. TELEVISING SHALL BE PERFORMED ON ALL REAR YARD DRAINTILE AFTER RESTORATION IS COMPLETE

Stantec

CLIENT: Delano — The Spirit of Community

PROJECT: STANDARD PLATES

SHEET TITLE: PIPE MATERIAL AND TESTING

REV	DWN	APP	REV DATE	DWN BY	CHK'D	APP'D	DWG DATE	PROJECT NO.	SHEET NO.	REV NO.
2	NMF	SDL	MAR 2022	SKH	RWS	RWS	FEB 2019	0564-100	GEN-7	2

SCALE