

Engineering

2. We recommend the direction of development head to Buss Road. We anticipate this will include over 20 acres of parkland. The Fifth Addition does not include any parkland dedication. Park development fees will be collected as though no parks are planned because none are platted. Adjusting the plat limits to include the parkland will solve the issue.

Preliminary Plat

1. A portion of the stormwater easement at the SW corner of Lot 473 will be on the Developer's property, but not in the platted area. The stormwater easement at the SW corner of Lot 473 will require a separate document unless the platted area is increased.
2. The Plat notes "Damascus Lane" instead of "Damascus Trail" at the south end of the road. Change plat note from Damascus Lane to Damascus Trail at the south end of the road.
3. There are no plans to connect to Meadowbrook Street (in the Town) or Nightingale Lane. Nightingale in the Town appears constructed to be extended with no turn around.
4. Extend stormwater easements in the back lots where swales are planned based on the grading. The easements only exist at the endwall locations. It's harder to make corrections when a landowner changes the drainage. There could be easements along the backs of lots 441 to 451 (shared with 452 to 462) and the backs of Lots 466 to 473.
5. On Sheet 2 there is an additional Canberra Circle labeled on Lots 428 and 429.

See MSA markups on the Preliminary Plat.

1. Provide a table of lot that includes net lot area. All remaining land areas not intended for sewer service or street use will be set into environmental corridor.
2. List minimum building opening elevations and minimum first floor elevations for lots within the plat.

Master Site 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 "Typical Section "for all streets.
4. Provide landscape/planting plan sheet.
5. Provide pavement marking and signage sheet.
6. Provide a lighting plan and private utility routing plan.

Master Utility Plan

1. All water crossings (including main and services) with storm having less than 5' of separation require insulation. Show insulation on plan sheets.
2. Dimension horizontal separation between utilities.
3. Provide stationing with centerline off-set for all sanitary structures, storm structures, and all watermain fittings.
4. Provide an overall utility sheet.
5. Revise existing watermain profile on Damascus Trail per record drawings (attached for developer) and field locations as noted in profile.
6. 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.

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7. All manhole castings to be R-1710, Neenah, type B self-sealing, gasketed non-rocking lids with consealed pick holes, revise on plan/profile sheets.
8. All C900 watermain requires tracer wire with termination boxes, show locations on plan.
9. Contact Village/MSA on design requirements and coordination for lift station and forcemain. Provide plan set.
10. Storm sewer design to match crown of pipes.

Plan and Profile Sheets of Street and Utility

1. 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.
2. Provide lot numbers on all plan/profile sheets

Sheet 6

1. Existing watermain labeled as C900 and Ductile iron in profile, clarify which.
2. Correct note "End of existing 8' sidewalk" to "end of existing multi-use path"
3. Clarify and label, existing 12" valve, approx. sta. 100+78
4. Show approx. location of sawcut on existing pavement.
5. Revise existing watermain profile per record drawings (attached)
6. Show profile of existing Damascus Trail, south of proposed connection.
7. Revise centerline profile to minimize depth of existing watermain, currently with proposed centerline watermain will be approx. 11-12 feet deep @ approx. stations 101+00- 103+00.
8. Can we move hydrant at intersection to London Ave. to avoid extra depth?
9. Will risers be required for sanitary sewer laterals between existing MH and SAN MH #1, if so, show depth or elevations for risers.
10. Verify and correct possible watermain/sanitary conflict (sta. 102+95) and conflict with sanitary lateral for lot at NW corner Damascus Trail/London Avenue
11. Clarify connection to existing watermain at London Ave./Damascus Trail, 4-way intersection should have minimum of 3 valves, tee intersection minimum of 2 valves. Clarify with type and method of connection.

Sheet 7

1. Move SAN MH #9 to centerline alignment of roadway, adjust line accordingly.
2. Clarify, correct pipe slope or invert elevations between SAN MH # 9 and SAN MH # 3, and between SAN MH #9 and SAN MH # 5.
3. Label existing valve, size and location.
4. Correct stationing of existing hydrant in plan view, 108+65, show correct location in profile.
5. Will risers be required for sanitary sewer laterals between SAN MH #1 & SAN MH #6, if so, show depth and/or elevations for risers.

Sheet 8

1. Clarify connection to existing watermain at Wellington Place/Damascus Trail, 4-way intersection should have minimum of 3 valves, tee intersection minimum of 2 valves. Clarify with type and method of connection.
2. Revise centerline profile to minimize depth of existing watermain, currently with proposed centerline watermain will be approx. 12-14 feet deep @ approx. stations 112+50- 115+50.
3. Extend roadway base 10' beyond end of pavement.
4. Place (2) type 3 barricades at end of pavement.

Sheet 9

1. Extend roadway base 10' beyond end of pavement.
2. Place (2) type 3 barricades at end of pavement.
3. Sanitary sewer must end in a manhole, no pipe stubs allowed. Additional manhole required, or pipe must be installed to next upstream manhole.

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4. Correct sidewalk note on north side to "bituminous multi-use path".
5. Add 8-inch valve, to east side of watermain tee, tee intersection requires a minimum of 2 valves.
6. Infall #9.1 along back lot line requires apron endwall with gate.
7. Add note in profile between top of watermain and proposed centerline "6.5' minimum bury" typical, if watermain differs from typical provide top of pipe elevations.

Sheet 10

1. Correct sidewalk note on north side to "bituminous multi-use path".
2. Infall #7.1 along back lot line requires apron endwall with gate.
3. See **Sheet 6** notes 22 – 23 & 25 – 26.
4. Revise watermain elevation at Damascus intersection to match per record drawings (attached) and field location as noted on profile.
5. Provide vertical curve information approx. station 213+00.
6. Ramp on NW corner Damascus/London Ave., should be 8' wide to except bike traffic across London Ave. from the south.
7. Ramp on NE corner Damascus/London Ave., should be offset from intersection to line up with ramp crossing from the west.
8. Revise location of STM CB #4, to be in curb line (inlet casting).
9. Valves in intersection require a minimum of 10' separation for proper compaction, Revise locations.
10. Add note in profile between top of watermain and proposed centerline "6.5' minimum bury" typical, if watermain differs from typical provide top of pipe elevations.

Sheet 11

1. Correct sidewalk note on north side to "bituminous multi-use path".
2. Sanitary laterals are not allowed to discharge directly into manholes, revise/adjust location of SAN MH #26 to accommodate.
3. Add note in profile between top of watermain and proposed centerline "6.5' minimum bury" typical, if watermain differs from typical provide top of pipe elevations.

Sheet 12

1. Extend roadway base 10' beyond end of pavement.
2. Sanitary sewer must end in a manhole, no pipe stubs allowed. Additional manhole required, or pipe must be installed to next upstream manhole.
3. Add an 8-inch valve east of temporary hydrant for ease of future connection.
4. Add note to west end of storm sewer, plug using "precast plug".
5. Correct pipe slope between SAN MH # 13 & SAN MH #12 = 1.51%
6. Label watermain cross at intersection Wellington Place/Paris Lane, add valve for ability to isolate legs.

Sheet 13

1. NE corner lot at intersection Wellington Pl./Damascus Tr. does not show water and sanitary services, is this a buildable lot?
2. Elevation of existing watermain through intersection with Damascus Trail does not match with sheet 8. Revise elevations for connections, valves will be 12-13' deep, revise centerline profile to better suit depth of existing watermain.

Sheet 14

1. Label low spot in centerline profile
2. Provide entrance drive opening for lift station, if known.
3. Locate hydrants at property line extended to accommodate larger area for placement of drive aprons without conflict.

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Sheet 15

1. Provide detail of bulb with grades to determine drainage pattern.
2. Locate hydrants at property line extended to accommodate larger area for placement of drive aprons without conflict.

Sheet 16

1. Locate hydrants at property line extended to accommodate larger area for placement of drive aprons without conflict.
2. Hydrant at end of cul de sac requires 8"x 6" reducer
3. Correct pipe slope or invert elevation of pipes between SAN MH #30 & SAN MH 32

Sheet 17

1. Correct pipe slope or invert elevation of pipes between SAN MH #30 & SAN MH 32
2. Valves require a minimum of 10' separation for proper compaction, Revise valve locations at hydrant.

Sheet 18

1. Valves require a minimum of 10' separation for proper compaction, Revise valve locations at hydrant.
2. Revise location of water service for lot 466 or location of SAN MH #16 to accommodate greater separation between the two.

Sheet 19

1. Storm sewer to match at crown of pipes.
2. Note "Storm pipe to include joint ties on last three sections of pipe.

Sheet 20

1. Storm pipe is 17 feet deep through easement, can you place another structure at approx. sta. 1001+50 and drop pipe?
2. Note "Storm pipe to include joint ties on last three sections of pipe.

Sheet 21

1. Note "Storm pipe to include joint ties on last three sections of pipe.

Sheet 22

1. No tracer wire on sanitary laterals is required, remove detail.
2. Revise sidewalk ramp detail to include, Detectable warning fields shall be cast iron Neenah Foundry, or equivalent. Color shall be Patina (no color).

Stormwater Management

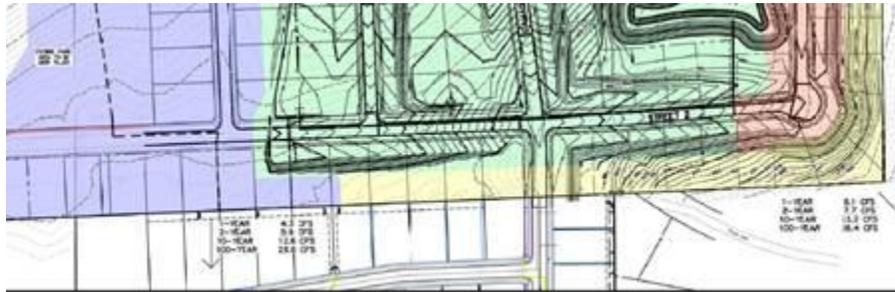
1. The Westlawn 4th addition plans appeared to call for capturing runoff from a larger area to the north than the 5th addition plans seem to accommodate flowing to the south. The image below is from the plans for the 4th addition that show the rear-yard swale extending from the parkland on the east to the second-over lot west of Damascus.



2. The next image shows the watersheds delineated as part of the 5th addition stormwater plan. This shows drainage from the north only coming from west of the central easement

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between lots 363 and 364 of the 4th addition. Plans for the 5th addition don't seem to call for any infrastructure for the yellow area west of Damascus to collect/route the runoff. Additionally, it appears there will be quite a grade-break for the lots south of 'Street 2' and perhaps the proposed-conditions watershed boundary needs to be shifted slightly to the north? At a minimum, it appears watershed boundaries should be adjusted.



3. The blue watershed under proposed conditions is indicated to be routed to the 'off-site' pond; which presumably is the north pond in Westlawn 4th Addition. Off-the-cuff, this doesn't seem to be an issue as far as model performance is concerned; however, I have three comments:
 - a. Under full build-out; how will this water be routed to the pond? Are there easements/outlots planned for this corridor?
 - b. During mass grading and home construction, there is the possibility that sediment will be transported to the north 4th Addition Pond. The Village may require a post-construction survey of the pond to be sure it still has design capacity.
 - c. Similar to item #2, above, when infrastructure is sized to serve this area, we'll want to ensure there is capacity to route 100-yr flows where planned.
4. To the north, it appears there is a larger off-site watershed than is accounted for. It does look like you have knowledge about plans, but for the medium term, it indicates a need to accommodate some additional runoff coming onto your site (both existing and future conditions). Below is a sketch on top of my GIS database showing my concern:



5. **Peak Flow Calculations.** While MSA concurs that peak discharge rate control is achieved for cumulated discharges to the east; the discharges from the eastern ponds are routed to either side of the existing town road and peak flows to the south side are greater under proposed conditions for large events than existing. These flows will need to be controlled such that they are less than existing conditions.
6. **Water Quality Calculations.** WinSLAMM calculations should be revised to include TP reduction calculations as required by Village ordinance. Additionally, the broad crested weir elevation on the west pond should be reviewed against HydroCAD modeling.
7. **Pond Outlet Structures.** The small diameter outlet control devices should be relocated to a wall within the vertical riser pipe with a larger pipe extending into the pond. This will allow easier and safer maintenance in the event of a blockage. Additionally, trash racks on risers should be replaced with cone racks instead of the flat racks as shown.
8. **Infiltration Basin.** Rip rap for scour protection is not preferred in infiltration basins. Please replace with a product such as scour stop or an equivalent.
9. **Storm Sewer Inlet Capacities.** Please submit inlet capacity calculations to document that design flows are captured by proposed inlets. MSA is particularly concerned about those listed below. In general this includes any 'at-grade' inlet where more than roughly 1.5 cfs of local flow is directed and sag inlets where more than 4 cfs of local flow is directed):
 - a. STM CB1 = 2.57 cfs
 - b. INL 2.1 = 2.90 cfs
 - c. INL6.2 = 2.82 cfs (sag?)
 - d. INL 8.1 = 3.07 cfs
 - e. INL 8.6 = 2.21 cfs
 - f. INL11.1 = 1.92 cfs
 - g. INL5.2 = 2.18 cfs
 - h. INL17.1 = 2.62 cfs (sag?)
 - i. INL17.2 = 3.12 cfs (sag?)
 - j. INL 19.2 = 8.90 cfs (sag?)
 - k. INL 19.3 = 2.19 cfs
 - l. INL 19.4 = 2.97 cfs (sag?)
 - m. CB11 = 9.41 cfs
 - n. CB12 = 3.31 cfs (sag?)
10. **Storm Sewer Pipe Sizes and/or Slopes.** The following pipes should be adjusted for the reasons stated.
 - a. The 12" between INL3.4 and INL3.3 should be increase to 0.5% to maintain minimum 3 ft/s velocity
 - b. The 12" between INL3.3 and MH3 should be increase to 0.5% to maintain minimum 3 ft/s velocity
 - c. 12" storm at 0% between INLs at 8.3?
 - d. 15" at triple inlet 21 to outfall 3 should be 18 inch as it will be inlet controlled.
 - e. 12" between INL16.3 and INL16.2 should be increase to 0.5% to maintain minimum 3 ft/s velocity
 - f. The Pipe from INL19.2 to INL19.1 should be 15" to accommodate 50% of flow from double inlets (see note on inlet capacity).
 - g. There are many locations throughout the plans where storm sewer pipes of increasing diameter are invert matched. These should be changed to match crowns.
11. **Storm Sewer Infalls.** At least two of the designated 'infalls' (transition from swales to storm sewers) appear to be inlet controlled. The depth of approaching swales should be verified to

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ensure that they are at least as deep as the storm sewer inlet they will discharge to and that unintended overflows and/or lot flooding do not occur due to inlet control conditions.

- a. Check Infall 7.1 ok with 1-foot surcharge (channel design calculations show only 1-foot of depth)
- b. Check Infall 9.1 ok with 2-foot surcharge (channel design calculations show only 1-foot of depth)
- c. Because of anticipated surcharge pipes between STMH15 and CB12 should be upsized to 36".