

MEMORANDUM

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Date: February 17, 2019

To: Ken Roberts, Planning Director
Cc: Chad Isakson, Assistant City Engineer
From: Jack Griffin, P.E., City Engineer

Re: Bentley Village
Preliminary Plan Engineering Review

An engineering review has been completed for the Bentley Village Preliminary Plat/Plans. The submittal consisted of the following documentation prepared by Alliant Engineering and received on January 31, 2019:

- Preliminary Plat/Plans dated January 25, 2019.
- Stormwater Management Plan dated January 25, 2019.
- Phasing Plan dated January 25, 2019.
- Drainage and Utility Vacation Exhibits dated January 25, 2019.

STATUS/FINDINGS: Engineering has prepared the following review comments:

PRELIMINARY PLAT AND PRELIMINARY SITE PLANS

- Preliminary plat approval should be contingent upon all public improvements being designed and constructed in accordance with the City Engineering Design Standards Manual.
- Preliminary plat approval should also be contingent upon the preliminary plans being revised and approved by the City prior to the City accepting an application for any phase of final plat.
- All Outlots (A, B, C, D, E, F, G, H and I) should be shown as HOA owned. Outlot ownership should be identified on the preliminary plat and on all construction plans.
- Drainage and utility easements have been shown over all Outlots. These easements will allow for City maintenance of the storm water BMPS and storm sewer system. However, the preliminary plans must be revised to eliminate all encroachments (buildings, retaining walls, trees, small utility corridors) that result in "effective" maintenance easement areas that are less than City minimum requirements.
- The site plans and preliminary plans must be revised to show a dedicated 10-foot utility corridor along all public streets, including 5th Street North, without encroachment by other design elements (e.g. storm sewer pipe, retaining walls, buildings, landscaping, storm water retention, etc.). The easements have been provided as required but the corridors have not been reserved for the dedicated purpose.
- All storm sewer pipe easements and effective maintenance areas must be a minimum 30-feet in width. Additional width may be required for deeper storm sewer. Significant plan revisions are needed to provide the minimum 15-feet of clearance from the pipe centerline. Storm sewer closer than 15-feet from plat boundaries will require off-site easements over the adjacent property. Retaining walls are not allowed to be constructed over storm sewer.
- Written landowner permission must be submitted as part of the final plat applications for any off-site grading work and storm water discharges to adjacent properties. The proposed off-site easements must be shown on the preliminary site plans, grading plans, and utility plans.

- Typical Townhome Lot Detail. The typical Townhome Lot detail proposes a minimum setback of 25 feet from the right-of-way to the garage door. Preliminary Plat approval should identify this requirement as a condition of approval to ensure that vehicles parked in the driveway do not obstruct sidewalks.
- Driveway connections to City Streets. The site plans and preliminary plans must be revised to show all private driveways within the public right-of-way to be perpendicular to the street.
- Once driveways are shown perpendicular to the street, a detailed street/boulevard plan must be incorporated into the preliminary plans that specifically identifies each on-street parking location, dedicated areas for snow storage, hydrant placement, mail box locations, street light locations, water/sewer service locations, and landscaping improvements. The proposed parking plan does not take these conflicts into consideration.
- Landscape Plans must be revised to avoid planting conflicts with utilities and pond maintenance access. Tree plantings must remain outside of utility easements, including the 10-foot small utility corridor along all public roads, and clear from all storm water maintenance benches and access roads. Tree plantings must be offset a minimum of 10 feet from watermains, hydrants, sanitary sewer mains, storm sewers, and water/sewer services. Water/sewer services must be shown on the landscape plans.
- All proposed retaining walls should be privately owned and maintained.

PHASING PLAN

- The phasing plan includes the construction of Road G (North-South Collector Roadway) as part of Phase 1. This is beneficial to direct traffic away from 5th Street and to initiate both the east development and west development from Road G rather than 5th Street.
- The phasing plan must be included in the Final approved Preliminary Plan set.
- The phasing plan should include the watermain, sanitary sewer and storm sewer infrastructure to be completed with each phase of the development, including the storm water basin outfall piping.
- Temporary cul-de-sacs per City standard details will be required with Phase 1 and 3 and should be shown on the phasing plans.

TRANSPORTATION IMPROVEMENTS

- 5th Street North Right-of-Way Dedication. The existing collector street to the north of the site (5th Street North) was constructed by Lennar within a permanent roadway easement. This easement area must be dedicated to the City as public right-of-way as part of this development. Per the City design standards for 5th Street, a 10 ft. utility easement corridor along the south side of the 5th Street right-of-way must also be reserved for small utilities with no encroachment from the development improvements.
- Site Access from 5th Street North. The preliminary plans propose three new public street intersections with 5th Street North; one at Junco Road North; one at Julianne Avenue North; and the construction of a new north-south collector street (Road G) that will eventually connect 5th Street North with Hudson Boulevard. All proposed intersections are consistent with approved access configuration along 5th Street.
- Additional Site Access. The new public streets proposed for this development will each have secondary access to the new north-south collector street (Road G) that will eventually connect 5th Street North with Hudson Boulevard. Access spacing appears to be acceptable along the new collector street.
- Road G (New North-South Collector Street) Alignment. Road G is consistent with the City's planning efforts and the proposed street is shown in the approximate location as planned. However, there are existing sanitary sewer and watermain utilities located in the corridor. The design for this new collector street must therefore consider the existing location of these utilities and must be consistent with City right-of-way and boulevard design standards.
- Public Street Typical Sections. The preliminary plan typical sections must be updated to provide all required information consistent with City design standard details. The 10-foot utility corridors must be shown on each side for all public streets to be preserved for small utility installation. Driveway grades must be shown at 4% along boulevards, at 2% along the sidewalk, and can vary up to 10% once beyond

the public right-of-way. Any proposed landscaping within the public right-of-way must be shown on the typical sections for review by the City.

- Road G Typical Section. The Typical Section of Road G (North-South Collector Street) must be determined by the City as the plat moves forward through the process, including required right-of-way width and lane configuration. The preliminary plans propose a 40-foot wide paved street to include two 12-foot drive lanes and one 12-foot center turn lane, within a 100-foot right-of-way. The right-of-way width may be able to be reduced to 80-feet through City staff evaluation. In addition, per City design standards, 10-foot utility easements must be provided along each side of the new R/W. An 8-foot wide bituminous trail is proposed on the east boulevard to connect to the future Hudson Boulevard trail corridor and a 6-foot sidewalk is proposed on the west boulevard.
- 5th Street North Turn Lanes. Eastbound right turn lanes (RTL) along 5th Street are in place at the intersections of Road G and Junco Road but not at Julianna Avenue. A westbound left turn lane (LTL) along 5th Street is in place at the Road G intersection. Additional transportation review is necessary to evaluate if additional turn lanes should be required including an eastbound right turn lane (RTL) at Julianna Avenue and westbound left turn lanes (LTL) at Junco Road and/or Julianna Avenue.
- Road G Turn Lanes Required at intersection with 5th Street. A northbound RLT and LTL is proposed at the intersection of 5th Street North and Road G.
- The proposed development will increase traffic movements at the intersections of CSAH-19 and 5th Street North and CSAH-19 and Hudson Boulevard. A financial contribution to traffic signal and turn lane improvements to one or both of these intersections should be considered.

RESIDENTIAL STREETS AND RIGHT-OF-WAYS

- All streets are proposed to be publicly owned and maintained. Public streets are proposed to meet the City's Engineering Design Standard street width of 28-feet with 45-foot cul-de-sac radii. However, the applicant is proposing a reduced right-of-way width from the City standard 60 feet to 53 feet. The reduced width is adequate for the proposed design since boulevard trees are not proposed within the right-of-way and the street section is not centered within the right-of-way. A six (6) foot sidewalk is proposed along one side of all residential streets within a 28-foot right-of-way from centerline and the other side of the street is within a 25-foot right-of-way from centerline with no sidewalk.
- In addition to the 53-foot right-of-way, a 10-foot utility corridor must be preserved for small utility installation along both sides of the street. A 10-foot drainage and utility easement is provided through the overall Outlot easements, however the preliminary plans must be revised to eliminate all encroachments to the utility corridors. The site plans and preliminary plans must be revised to show on the plans the dedicated 10-foot utility corridors along all public streets, including the south boulevard of 5th Street.
- The proposed internal street network is well interconnected creating multiple access routes into and out of the development. Only one short cul-de-sac has been proposed.
- The street plan proposes raised landscaped medians at all entrance points. Divided roadways must be a minimum of 19 feet wide each way from back of curb to back of curb.
- The City Standard boulevard must not exceed a 4% grade to the street. The driveway grades shown on the street typical sections must be removed. Grades exceeding 4% may be used outside the right-of-way.
- Coordinated landscape plans. The boulevard layout does not accommodate boulevard trees within the public right-of-way. No boulevard trees can be placed within the 10-foot utility easements. Landscaping requirements/plans must be planned accordingly.
- The south leg of Road E, at the intersection with Road D, must be revised to provide a minimum 50-foot tangent prior to the start of the horizontal curve. All street intersections must be at 90 degrees and maintain 50 feet of tangent with maximum slopes of 2.5%. Streets must also meet City standards for horizontal and vertical curvature. The City standard minimum horizontal curve radius is 90.
- Residential maximum longitudinal grade is 8% with no sidewalks, 6% where there are sidewalks. These requirements have been met with the proposed plans.

- Surmountable concrete curb and gutter shall be installed along areas with future driveways and B618 curb installed along entrance roadways and roadway stretches with no lots. The plans must be revised to incorporate the B style curb where appropriate.

GRADING PLAN, STORMWATER MANAGEMENT AND STORM SEWER SYSTEM

- The site plan is subject to a storm water management plan meeting State, VBWD and City rules. Storm water facilities proposed as part of the site plan to meet State and VBWD permitting requirements must be constructed in accordance with the City Engineering Design Standards Manual. Preliminary Plan revisions are required to comply.
- All storm water facilities and infiltration basins have been placed in Outlots as required. Drainage and utility easements have been proposed over all of each Outlot to facilitate maintenance by the City.
- The Stormwater facility Outlots must fully incorporate the 100-year HWL, 10-foot maintenance bench, and all maintenance access roads.
- Stormwater Ponds must be constructed meeting City standards. Stormwater forebays require a 10:1 safety bench at the NWL with the NWL shown on the plans. Designated maintenance access roads, 20 feet in width, must be provided for all storm water facilities and must extend from the public right-of-way to the maintenance bench with grades not exceeding 10%. Basin grading must also provide a maintenance bench from the access road to all storm sewer inlets and outfall pipe locations.
- Infiltration basin A proposes significant grading within the existing gas pipeline easement. Documentation must be provided by the gas main owner to demonstrate approval for this grading impact. The preliminary plans and existing conditions plan must be updated to show the existing gas main location including pipe size, material and depth.
- The NWL (forebays) and 100-year HWL basin elevations, and 100-year HWL contour must be shown on the plans for each storm water facility to facilitate plan review. The maintenance access roads/benches must be clearly shown to verify no obstructions (including landscaping) within the access locations.
- Infiltration Basin C capacity is required to meet volume control requirements, but the basin must be relocated. Infiltration basins are not allowed in Type D soils. The basin also appears to be within 35 feet of an off-site septic system to the south (see existing conditions plan). No maintenance access is proposed.
- Additional borings are required for each infiltration basin. A minimum of 2 borings are required per basin and must be obtained from within the actual proposed basin location. Additional borings are required for basins larger than 10,000 square feet (see engineering design standards manual).
- Overland emergency overflows have been provided as required. All emergency overflow elevations must be fully protected by drainage easement.
- All lots must have the minimum floor elevation at least 2 feet above any BMP 100-year HWL and at least 1-foot above any emergency overflow point. These conditions appear to have been met with the proposed preliminary plans.
- The 100-year HWL must be calculated and the 100-year HWL contour placed on the plans for all localized catch basin low points and the entire 100-year HWL must be fully protected by drainage and utility easement. This information has not been provided.
- The maximum curb run prior to a catch basin is 350 feet. The preliminary plans appear to meet this standard. Additional CBs may be required along Road F between STA 0+00 and STA 3+62 to enhance drainage through flat area.
- Additional storm sewer and CBs will likely be required along Road G to accommodate the wider street pavement widths and drainage from 5th Street North.
- Minimum storm sewer pipe size is 15-inch except for the storm sewer lead pipe located within paved streets. The storm sewer must be increased to the minimum 15-inch pipe for storm runs from CB218-CB216; CB217-CB216; CB206-CB204; CB319-CB318; CB317-CB316; CB403-CB402.
- The storm water model assumes a 12" x 6" orifice. This detail should be added to the storm sewer plans.

- The storm sewer system shall be designed to maintain the City standard **minimum** pipe cover of 3.0 feet. Drain tile is required as part of the City standard street section at all localized low points in the street. Drain tile considerations may impact the storm sewer design and depth requirements at low points.
- Street Grades. Street profile design should not include minimum grades to allow for construction tolerances. The Road A street profile grades from STA 19+00 to STA 21+50 and Road F street profile grades from STA 1+50 to STA 5+00 should be increased to avoid flat areas and potential standing water in the curb line.

MUNICIPAL SANITARY SEWER

- The development is proposing 240 REC units that will be discharged to the MCES WONE Interceptor. This is consistent with the Comprehensive Sewer Plan. The applicant will be responsible to connect to the City sanitary sewer system located along the alignment for the future collector roadway and extend sanitary sewer into the property at applicant's sole cost.
- Reconfiguration of the sanitary sewer connection points may be required. The preliminary plans show the sanitary sewer connection to be made outside of the plat boundaries on the adjacent property to the south. The preliminary plans identify proposed drainage and utility easements necessary to make this connection. Additional drainage and utility easement will be required to meet the City minimum 15-foot from the pipe centerline. Written permission from the adjacent property owner must be submitted with any final plat demonstrating the ability to acquire the necessary easements.
- The applicant may be required to stub sanitary sewer mains to adjacent properties if needed to maintain sewer access to all adjacent parcels (to be reviewed with final plans).
- Any main sewer lines not installed within public right-of-way will require minimum 30-foot easements centered over the pipe (or wider dependent upon the sewer depths) dedicated to the City and in the form of the City's Utility Easement Agreement.
- The preliminary plans must be updated to show the sanitary sewer services.

MUNICIPAL WATER SUPPLY

- The applicant will be responsible to extend municipal water into the development at its sole cost and will be required to construct a looped watermain network with multiple connection points. It is assumed that all of the property can be served by the City's high-pressure zone. Watermain should be installed along Road B and connected to existing watermain in 5th Street North at Julianne Avenue and watermain should be installed along Road E and connected to existing watermain in 5th Street North at Junco Road.
- The applicant may be required to provide watermain stub(s) to adjacent properties to maintain water access to all adjacent properties. Watermain stubs should be extended to the adjacent property to the south of the development near the west and east ends of the plat boundaries.
- No watermain pipe oversizing is anticipated at this time. Further review will be completed as the application moves forward through the process.
- Reconfiguration of the watermain connection points may be required. The preliminary plans show the watermain connections to be made outside of the plat boundaries on the adjacent property to the south. The preliminary plans identify proposed drainage and utility easements necessary to make this connection. Additional drainage and utility easement will be required to meet the City minimum 15-foot from the pipe centerline. Written permission from the adjacent property owner must be submitted with any final plat demonstrating the ability to acquire the necessary easements.
- The applicant will be responsible to place hydrants throughout the property at the direction of the Fire Department. Hydrant and system valve requirements and placement will be addressed as part of final plat and construction plan review. All fire hydrants shall be owned and maintained by the City.
- Any watermain lines and hydrants placed within the development will require minimum 30-foot easements centered over the pipe. Easements must be dedicated to the City and be provided in the City's standard form of easement agreement.