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Memorandum

To: Patrick Mulready, Senior Planner

Date: December 15, 2016

From: Alex Mestdagh, P.E., Engineering Services Manager
Jacob James, P.E., Stormwater Manager
Kurt Patrick, P.E., Stormwater Engineer
Dave Aden, P.E., Traffic Engineer
Tyler Sandt, Development Review Engineer

Cc: Tom Williams, Director of Public Works and Engineering

Subject: Trails at Crowfoot Filing No. 1 – Engineering 1st Review

The Engineering Department has reviewed the documents submitted for Trails at Crowfoot Filing No. 1. The submittal consisted of the following documents:

<u>Document</u>	<u>Date Received</u>
Preliminary Construction Documents	November 14, 2016
Preliminary Drainage Report	November 14, 2016
Preliminary Plan	November 14, 2016
Landscape Plans	November 14, 2016

The site is located south of the Richlawn Hills subdivision and east of Crowfoot Valley Road. Based on our review we have the following comments:

Traffic and Roadway Review Comments

The following comments concern traffic, access, roadway design, and construction standard issues for the subject property. They are based upon our review of the submittal documents in accordance with the criteria presented in the Town of Parker’s Roadway Design and Construction Criteria Manual (RDCCM), as revised, July 2015. Additional regulatory and planning documents may have been utilized in the review, and are referenced in the comments where appropriate.

Minor comments have been redlined in the accompanying set but excluded from the comments below.

General Comments

1. Please note that with each final plat submittal for this development, all associated Public Improvement obligations will be required to be constructed or otherwise satisfied in accordance with the Annexation Agreement for the Property. The developer will be required to enter into a Subdivision Improvement Agreement codifying these requirements at that time.

Preliminary Plan

2. Please add a Tract Summary Table that defines the use and intended ownership of each tract.
3. Clarify where any blanket easements are intended to be dedicated.
4. Please show any necessary sight easements on the preliminary plan per Town Standard Detail 25. These will be dedicated to the Town at the final plat stage.
5. Sheet 4 – label ultimate width of Crowfoot Valley Road right-of-way and the width of right-of-proposed to be dedicated with this development.
6. Sheet 6 – label Street D right-of-way at North Pinery Parkway.

Preliminary Construction Plans

7. On future submittals, use the Town's updated signature block. This has been uploaded to Trakit.
8. The Street E intersections with Street Y and Street Z do not meet Town criteria for intersection spacing, both with each other and with North Pinery Parkway. Residential Collector roadways require 425 feet for full movement access points and 250 for restricted movements.
9. At local-to-local intersections located adjacent to collector roadways, it should be confirmed that adequate intersection sight distance is being provided for conflicting movements. This specifically applies to left turns that may be in conflict with traffic turning off the collector (i.e. left turns from Street I to Street D in the face of right turns from North Pinery Pkwy) Generally, lower speeds than posted can be assumed for the

turning movements these areas, and between 175 feet and 200 feet of ISD is typically appropriate per AASHTO.

10. Please investigate reconfiguring the proposed lot layout to shift the northern leg of Street H south from Street E. It may be advantageous to design Street H in this area as a private road, which would not be required to adhere to Town's geometric criteria and standard roadway templates.
11. On future submittals, provide separate sheets for separate the roadway and storm sewer profiles.
12. Show all utility crossings are shown on the storm sewer profiles, and ensure that a minimum of 18 inches of separation is provided between storm sewer and water or sanitary crossings.
13. Please ensure that all intersections adhere to the Town's criteria for minimum curb radii (Table 4-8 of the *Roadway Design and Construction Criteria Manual*). This may have impacts to proposed right-of-way radii/dimensions.
14. Crossspans will be necessary at local-local intersections where there is a negative slope and a sag condition leading into the intersection (i.e. the intersection of Street A and Street B).
15. Pavement widths and radii for Streets AA, BB, and U will need to be evaluated for on-street parking as well as fire-life safety regulations. Please coordinate with Town staff to resolve this issue. This may affect the necessary right-of-way or easement width for these roadways.

Landscape Plans

16. On future submittals, please include storm sewer on the landscape plans and ensure no trees are placed within seven feet of any storm sewer.
17. Show sight triangles on the landscape plans and ensure no trees or plantings taller than three feet are placed within the sight triangles.

Stormwater Review Comments

The following comments concern drainage, erosion and sediment control, and non-point source pollution control issues for the subject property. They are based upon our review of the submittal documents against the criteria presented in the Town of Parker's, *Storm Drainage*

and Environmental Criteria Manual (SDECM), as revised, February, 2014. Additional regulatory and planning documents were utilized in the review, and are referenced in the comments where appropriate.

Preliminary Drainage Report

18. On future submittals, please include the “Inlet Management” sheet from the UD-Inlet workbook to facilitate a full review of the storm sewer system.
19. Please revisit the flow summary table on the drainage map – provide direct flow and cumulative flow columns to facilitate review.
20. Please revisit the proposed inlet spacing in regards to maximum allowable gutter capacity for the initial storm; it appears several areas are in violation of this criteria. An updated criteria for maximum allowable gutter capacity that reflects the current street templates has been uploaded for your use.
21. Please progress all detention pond sizing in the final drainage report.
22. Please note that areas of the development proposed to be released undetained will be subject to the Town’s compensatory storage requirements. All developed areas should be routed to a detention facility unless it can be demonstrated that it cannot feasibly be done.

Construction Plans

23. Coordinate offsite pond B tie in with Cielo development drawings and show tie-in locations and details.
24. Address how detention pond from Cielo development flows from the pond outfall to the toe of slope for North Pinery Parkway. This will require a roadside swale.
25. Address southern boundary fringe grading flows adjacent to Pond B and how the area will drain.
26. Please provide clear design point flows for the sub-regional channel adjacent Crowfoot Valley Road and preliminary drainageway sizing. Also, investigate a wide and shallow drainageway to reduce drops and possibly increase channel slope.
27. Please show grading for tributary swales into the regional as shallow low flow water quality channels.

28. Please address Pond A location as the approved PD shows it located on the southwest corner of the intersection. A park was designated in the proposed location for pond A.
29. Please note that the Pond C outfall location and configuration will require approval from Douglas County Public Works.
30. All outfalls to detention ponds shall be via inlets/storm pipe into concrete forebays.
31. Please show preliminary channel design for the regional channel.

Erosion and Sediment Control Plans

32. Please ensure CBMP plans adhere to Town details. A full review of these plans will be performed at final plat stage.

The submittal is not in general conformance with the Town of Parker's *Roadway Design and Construction Criteria Manual* and *Storm Drainage and Environmental Criteria Manual*. The submittal must be revised and re-submitted for review. All submittals should be through the Town Community Development Department, accompanied by a letter that responds to each comment herein. Direct submittals to the Engineering Department will not be accepted.

An attempt has been made to identify all of the items that do not meet the Town of Parker's design criteria; however, it remains the developer's responsibility to ensure that all criteria are met.

If you have any questions regarding the comments please do not hesitate to contact the Engineering Department at (303) 840-9546.