

Memorandum

To: Patrick Mulready, Senior Planner

Date: January 28, 2016

From: Alex Mestdagh, Senior Development Review Engineer *ALM*
Jacob James, Senior Stormwater Engineer
Kurt Patrick, Stormwater Engineer

Cc: Tom Williams, Director of Engineering
File

Subject: Compark Village South MDP, 1st Referral

The Engineering Department has reviewed the documents submitted for Compark Village South. The submittal consisted of the following documents:

<u>Document</u>	<u>Dated</u>
Water and Sewer Plans	11/2015
Belford Avenue Final Construction Plans	12/2015
Grading and BMP Plans	12/2015
Green Acres Trib Construction Plans	12/2015
Preliminary Drainage Report	11/2015
Minor Development Plat	11/2015
Cost Estimate	12/2015

The site is located immediately south of E-470 between Peoria and Chambers. We have the following comments on this submittal:

Plat Comments

1. Please add language to the plat indicating Tract C cannot be replatted for development until a LOMR is completed removing the Tract from the floodplain.
2. Remove Plat Note 9, this is handled by the Town's standard dedication statement.
3. Revise Note 10 as follows:

"A regional stormwater detention and water quality pond, for the benefit of all tracts, will be constructed on Tracts B and J. A blanket drainage easement is hereby dedicated to the Town of Parker over and across

Tracts B and J for the purpose of accessing, maintaining, and repairing stormwater management improvements including, but not limited to, inlets, pipes, culverts, channels, ditches, hydraulic structures, riprap, detention basins, forebays, micropools, and water quality facilities in the event that the property owner fails to satisfactorily maintain or repair said facilities."

4. Regarding Plat Notes 12 and 13 - the ability of the proposed metro districts to own property needs to be discussed with Town Staff. These notes, along with the ownership table on the following sheet, may require revision.

5. Add the following plat notes:

"The regional detention and water quality facility proposed in the construction documents associated with this plat will be the maintenance responsibility of the property owner.

"470 Compark LLC shall be responsible for the maintenance of all areas of right-of-way dedicated by this plat until the roadways located within them have been constructed and accepted by the Town of Parker."

6. The ownership First Street cul-de-sac located on the property should be clarified. This area would be most appropriately dedicated to Douglas County as an extension of their right-of-way.
7. A sanitary easement is shown being dedicated across the Belford Avenue right-of-way near the eastern boundary. The Town does not grant easements over right-of-way, please revise this easement accordingly.
8. On the plat plan sheets, add "Blanket Drainage Easement" labels under the name labels for Tracts B and J.

Traffic and Roadway Review Comments

The following comments concern traffic, access, roadway design, and construction standards 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), revised July 2015. Additional regulatory and planning documents may have been utilized in the review, and are referenced in the comments where appropriate.

Construction Plans

1. Provide the Peoria intersection design for review/reference in future submittals.

2. The Town has updated its signature block, which has been uploaded as an attachment. Please revise accordingly.
3. Please revise the proposed grading of the north half of Belford Avenue to replace the 15" undercut with an at-grade slope and a smaller diversion ditch (similar to the Manhard design for Cottonwood Highlands). This wide depression will develop localized ponding and will tend to gather trash.
4. The horizontal curve proposed for Belford Avenue east of the construction limits - near Sta. 85 00 - has a centerline radius below the minimum for a major collector roadway. Please revise to ensure that the portion to be constructed allows for this curve to meet criteria.
5. At the eastern end of Belford Avenue construction, install OM4-1 markers with red retroreflective devices with the sign "ROAD TO BE EXTENDED IN THE FUTURE".
6. Proposed grading of the future Belford Avenue should end well in advance of Happy Canyon Creek to avoid impacts to the floodplain and challenges in keeping sediment out of the drainageway.

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

1. The drainage report shall be progressed to final prior to approval of this MDP.
2. The drainage report shall state that the proposed retention pond and water feature pond will not be eligible for assistance through the Town's Stormwater Utility. The Town recommends the applicant consider modifying the configuration to a regional dry detention pond as contemplated in the approved master plan document.
3. The drainage report shall be amended to state a variance is required for the water feature pond and proposed retention pond as these facilities will not be eligible for Urban Drainage maintenance eligibility. See construction plan comments for further information.
4. Please include evidence of sufficient water rights and/or augmentation plans for the proposed water feature pond and retention pond with the next submittal.

5. A standard operating procedure document following Town criteria shall be submitted with the drainage report for the water feature pond and the proposed retention pond. The SOP shall address mosquito control, algae management, inspection and maintenance procedures and frequencies as well as responsibilities at a minimum.
6. Provide a detailed narrative regarding the design concept for the regional pond(s).
7. Rescale the drainage map to provide a clearer picture of the on-site basin delineation. Provide a flow table on the drainage map for the storm sewer system. Designate design points and provide direct and cumulative runoff to each key point, and correlate these points with flow calcs in the report. Label inlets on the map for clarity.
8. Impervious calc tables are blank, please add data for review.
9. Provide flow calculations for the minor event (5-year for Belford/commercial areas, 2-year for local streets/residential)
10. In the ultimate configuration, Belford Avenue should be designed to meet the Town's arterial roadway criteria for ponding and spread in the major and minor storms. The design appears to accommodate this, but please revise inlet calc sheets to reflect this criteria.
11. Check inlet lengths and number of units in inlet calcs, spot checks do not match plans (i.e. Inlet 1-3 shows 2 15-foot units, plans show single 10-foot)
12. Please modify the Green Acres Tributary channel geometry to meet current Urban Drainage standards showing a trapezoidal section with a low flow channel that has capacity for 2% of the 100 year flow.
13. Please update the drainage report to include major drainage facility design components such as channel geometry sizing, grouted boulder drop structure sizing, channel riprap sizing, low tailwater basin sizing, and all other required facility components.
14. Please update the drainage report to include final design calculations for the two water quality ponds serving Belford Avenue between the western property boundary and Peoria Street.
15. Please address and show that each channel bend meets the Urban Drainage and Flood Control District radius criteria.
16. All storm outfalls to Green Acres Tributary require some form of water quality treatment prior to entering the drainageway. Please refer to the Town's criteria manual section 8.3.2.3 for more information.

17. Please state that a floodplain development permit is required for construction within the Zone A of the Green Acres Tributary.
18. Please add language stating that all improvements to Happy Canyon Creek involving the bridge crossing will be addressed in a separate drainage report.
19. A more detailed review will be completed once the above items have been addressed.

Construction Plans

1. The design concept of a permanent pool in the regional detention facilities will not be eligible for maintenance by UDFCD. Town Criteria requires that all major drainageway improvements be designed to be accepted in the UDFCD Maintenance Program, so with this pond being online with Green Acres Trib, this will require a variance to criteria (SDECM 2.4.2.2). Please submit a variance request for review that addressed the requirements in Section 3.11 of the Roadway Criteria Manual. Please note that this facility will also be ineligible for maintenance assistance from the Town's Stormwater Utility, and a Maintenance and Operations Manual/SOP should be provided for review with the next submittal.
2. The Town will also require acknowledgement from the Centennial Airport that there are no concerns with this proposed facility in relation to airport operations and regulation.
3. The maintenance responsibility for the storm sewer pipes under the Grandview Estates berm will need to be discussed and any necessary easements provided. Provide additional detail regarding these flows and how they will be conveyed to the drainageway in the interim condition.
4. Please note that for discharges to Green Acres Trib upstream of the regional ponds, some water quality treatment is necessary. See Section 8.3.2.3 of the Town's Storm Drainage Criteria Manual.
5. Provide minor and major HGLs on the storm profiles.
6. Clarify grading at the intakes and outfalls of Storm Line 4 and 5.
7. Provide details for the water quality ponds associated with Belford Avenue through Douglas County.
8. Please modify the channel geometry section as discussed the drainage report review comments.
9. Please provide hydraulic grade lines and label the design 100 year flow on the channel profiles.

10. Please provide greater detail of each drop structure to show grading, limits of sheet piling, weep drains, etc. This will likely require a plan of each drop at a larger scale.
11. Please provide drainage access via maintenance access trail from the Belford Ave arch pipe crossing to the upstream limit of the proposed channel grading.
12. Please clarify the proposed grading transition from the natural drainageway to the improved drainageway at the upstream tie-in to this project.
13. Please provide details and/or typical section of the proposed water feature pond and retention pond showing bank protection from wave action and erosion.
14. Please show and label the limits of the 100-year water surface elevation on all channel drawings.
15. A more detailed review will be completed once final design drawings and details are submitted.

Grading and BMP Plans

1. All sites greater than 40 acres require a Town approved phasing plan.
2. Add arrows to indicate the direction of flow.
3. Show the ratio of all slopes that are 4:1 or greater (ex. 4:1, 3.5:1, 3:1)
4. Add a note on all land adjacent to the project stating that no work shall occur in these areas.
5. Add the following note to each plan sheet: To reduce the potential for clogging of debris grates, no straw mulch shall be used within the Excess Urban Runoff Volume of a detention basin. Instead, erosion control blanket shall be installed for a width of at least 6-feet on both sides of the concrete low flow channels or up to a depth of 1-foot in soil riprap or benched low flow channels. Additionally, hydraulically-applied wood fiber mulch, stabilized fiber matrix, bonded fiber matrix, or flexible growth medium shall be used in all other areas within the Excess Urban Runoff Volume of the detention basin. The blanket and hydraulically-applied mulch shall comply with the materials and installation requirements for erosion control blankets as required by the Town's CBMP program, and where applicable, the product manufacturer.
6. Add Debris and Trash Control (DTC) to S. Peoria Street and Belford Ave.

7. Show outfalls for TSBs and include all sizing information. Show SMC for the temporary access road.
8. Show SF across Belford Ave. at Peoria to ensure construction traffic enters through the VTC at the temporary access road.
9. Include RCSC or Rock Check Dams throughout the northern section of Belford Ave.
10. Include TSBs to collect runoff for the graded unpaved portion of Belford Ave.
11. Include a TSB at the end of the grading area on the west end of Belford Ave.
12. Include TSBs for offsite flows entering into the residential portion.
13. Include Diversial Ditches and TSBs for the graded residential area.
14. Include RCSC throughout the graded residential area.
15. Add Culvert Protection to Green Acres Trib 12'x10' box culvert going under E470.
16. Need to see plan for diverting Green Acres Trib while channel work is taking place, as well as all stream crossing locations for the work. The Town requires the diversion to be lined, please include all details for the diversion channel as well as sizing calculations.

This 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.

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 us at (303) 840-9546.