

It should be noted that the Green Acres Tributary Construction Plans as well as the plans related to the intersection improvements at Peoria and Belford are not included with this submittal. Due to coordination and design delays, these plans will be submitted as soon as they are completed. All comments related to these plan sets have been discussed in the responses provided below and applicable plans have been updated to show the revisions.

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.
A note has been added to the plat.
2. Remove Plat Note 9, this is handled by the Town's standard dedication statement.
The note has been removed.
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."

The note has been revised.

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.

The plat notes and ownership table will be revised if necessary.

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."

The notes have been added to the plat.

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.

In a meeting with Douglas County, they requested that we either provide ownership to them with the M.D. for secondary maintenance responsibilities or dedicate to M.D. with Douglas County easement for maintenance.

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.

The easement has been revised.

8. On the plat plan sheets, add "Blanket Drainage Easement" labels under the name labels for Tracts B and J.

The labels have been added.

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.

The design is being completed under a separate plan set by FHU, a subconsultant, and will be submitted upon completion.

2. The Town has updated its signature block, which has been uploaded as an attachment. Please revise accordingly.
The signature block has been revised as requested.
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.
The grading has been revised to match the Cottonwood Highlands concept.
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.
The curve has been revised to meet the minimum Town criteria of 770 ft.
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".
The sign has been added as requested.
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.
The grading has been revised as requested.

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.
Comment noted.
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.
The report has been revised as requested to reflect that the ponds will not be eligible for assistance.
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.
The report has been revised as requested. The variance is included with this submittal.
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.
A water rights consultant has been retained and the water rights/augmentation plan will be discussed in future submittals.

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.
The SOP has been included with this submittal as requested.
6. Provide a detailed narrative regarding the design concept for the regional pond(s).
The narrative in the storm drainage report has been revised to include the design concept for the ponds.
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.
The map has been rescaled, flow tables and design points have been added, and inlets have been labeled.
8. Impervious calc tables are blank, please add data for review.
Impervious calculations have been updated.
9. Provide flow calculations for the minor event (5-year for Belford/commercial areas, 2-year for local streets/residential)
The requested flow calculations are now included in the report.
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.
Inlet calculation sheets have been revised as requested.
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)
Inlet calculation sheets have been revised and coordinated as requested.
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.
The design of GAT includes a low flow channel that has been sized to carry the 5 yr storm which is greater than 2% of the 100 yr flow. Final design is in progress and will be included in the next submittal of the Green Acres Trib plans
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.
Final details for the major components of the GAT are in progress and will be included in the next submittal of the Green Acres Trib plans
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.
The report has been revised to include the design calculations.
15. Please address and show that each channel bend meets the Urban Drainage and Flood Control District radius criteria.
Channel geometry will be labeled on the GAT construction plans.
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.
Water quality improvements will be added to the outfalls in the GAT submittal.

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

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.
A variance request is included with this submittal as requested.
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.
We understand the next referral will include Centennial Airport.
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.

Per discussions with the County, it was determined that easements will be obtained from affected individual property owners, which includes Douglas County, and granted to the Metro District. The plans have been revised to show conveyance 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.
Additional water quality treatment will be provided at each discharge point.
5. Provide minor and major HGLs on the storm profiles.
HGLs have been added to the Storm P & P sheets.
6. Clarify grading at the intakes and outfalls of Storm Line 4 and 5.
The plans have been revised to show conveyance in the interim condition.
7. Provide details for the water quality ponds associated with Belford Avenue through Douglas County.
Plan sheets have been added to provide details for the Belford Ave water quality ponds.
8. Please modify the channel geometry section as discussed the drainage report review comments.
The design of the channel has been coordinated with and meets the UDFCD standards.
9. Please provide hydraulic grade lines and label the design 100 year flow on the channel profiles.
The channel HGL and 100 yr flow will be included in the future Green Acres Trib plan submittal.

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.
The additional details will be included in the future Green Acres Trib plan submittal.
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.
Maintenance access is being coordinated with UDFCD and will be included in the future Green Acres Trib plan submittal.
12. Please clarify the proposed grading transition from the natural drainageway to the improved drainageway at the upstream tie-in to this project.
The grading has been revised as requested.
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.
The additional details will be included in the future Green Acres Trib plan submittal.
14. Please show and label the limits of the 100-year water surface elevation on all channel drawings.
The limits of the 100 yr water surface will be included in the future Green Acres Trib plan submittal.
15. A more detailed review will be completed once final design drawings and details are submitted.
Comment noted.

Grading and BMP Plans

1. All sites greater than 40 acres require a Town approved phasing plan.
A note has been added to the plans.
2. Add arrows to indicate the direction of flow.
The plans have been revised to include flow arrows.
3. Show the ratio of all slopes that are 4:1 or greater (ex. 4:1, 3.5:1, 3:1)
The plans have been revised to show the requested slopes.
4. Add a note on all land adjacent to the project stating that no work shall occur in these areas.
The plans have been revised to include the note.
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.
The plans have been revised to include the note.
6. Add Debris and Trash Control (DTC) to S. Peoria Street and Belford Ave.
The plans have been revised as requested.

7. Show outfalls for TSBs and include all sizing information. Show SMC for the temporary access road. *The plans have been revised as requested.*
8. Show SF across Belford Ave. at Peoria to ensure construction traffic enters through the VTC at the temporary access road.
The plans have been revised as requested.
9. Include RCSC or Rock Check Dams throughout the northern section of Belford Ave.
The plans have been revised as requested.
10. Include TSBs to collect runoff for the graded unpaved portion of Belford Ave.
The plans have been revised as requested.
11. Include a TSB at the end of the grading area on the west end of Belford Ave.
The plans have been revised as requested.
12. Include TSBs for offsite flows entering into the residential portion.
The plans have been revised as requested.
13. Include Diversial Ditches and TSBs for the graded residential area.
The plans have been revised as requested.
14. Include RCSC throughout the graded residential area.
The plans have been revised as requested.
15. Add Culvert Protection to Green Acres Trib 12'x10' box culvert going under E470.
The plans have been revised as requested.
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.
An initial diversion plan has been added to the construction documents with a note stating that the actual plan will be determined by the contractor.

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.