URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

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## UDFCD Maintenance Eligibility Program
## Referral Review Comments

Project: **Compark Village South Filing 1 – Belford Bridge**
Stream: **Happy Canyon Creek**
UDFCD MEP Phase: **Design**
UD MEP ID: **106582**

Dear **Ms. Carolyn Washee- Freeland**,

This letter is in response to the request for our comments concerning the referenced project. We appreciate the opportunity to review this proposal. We have reviewed this proposal only as it relates to major drainage features, in this case:

- Happy Canyon Creek

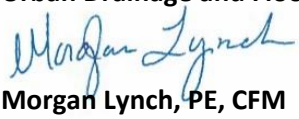
We have the following comments to offer:

1. Please add the following note to the construction plans:
   *The Urban Drainage and Flood Control District will conduct site visits during the project construction within or near the channel to observe construction for conformance with the approved plans and specifications. Please contact Mike Sarmento, UDFCD construction manager (303-455-6227), msarmento@udfcd.org to schedule a preconstruction meeting. All structural and grouted boulder work require 48-hours prior notice to any construction or concrete placement. Standards and specifications for all outfall and channel work can be accessed at www.udfcd.org under the References section. Failure to notify may result in project ineligibility.*
2. Please submit a report detailing the need and basis of design. A cursory review of the plans were completed, without the basis of design documentation, some design assumptions were not clear. Guidance for the report is outlined in the UDFCD MEP Guidelines. In addition, the plans should include the design information requested in the guidelines.
3. It is recommended that bedding material be used for the soil riprap along the banks.
4. Please provide documentation of the current channel conditions. Please clearly state any assumptions made with the design.
5. Due to the dynamic nature of this system, is a sheet pile cap more appropriate? A sheet pile cap has less impact and can be lowered or buried easier than a concrete cap if future maintenance is needed.

6. Please provide a plan and profile of the proposed outfall. Please include the proposed flow, velocity and Froude number for this outfall.
7. Please include all supporting calculations for the riprap and boulder sizing, as well as how the limits of riprap were determined.
8. Please provide existing and proposed hydraulic information for Happy Canyon Creek. This includes documenting impacts to shear and velocity within the project reach.
9. Based on proposed shears and velocities at drop four, is there a need to grade the right overbank, outside the ordinary high water mark, to minimize those parameters and constriction in the floodplain.
10. Based on the location of the next downstream vertical control, would the proposed drop one and associated cutoff wall be better purposed downstream of the low-water crossing to protect the crossing? In addition, in a system that is aggradating, the drop located upstream of the crossing may result in sediment deposition in or on the crossing. If the downstream location is not preferred, please align the proposed cutoff wall parallel to the low water crossing. If the intent is to protect the tributary, can the cutoff wall be broke into two sections?
11. In general we support the use of the toe-in drop structures, however we have the following comments related to the structures:
    a. Please confirm the toe-in drop structures extend at least 18" deeper than the crest of the drop located downstream.
    b. Please extend the grouted boulder drop structures along the overbank to a known water surface elevation. Typically boulders are extended to at least the two- year water surface elevation, but the 10- year is preferred.
    c. Is the location of groundwater known, if so please show the elevation in the profile? Dewatering for these drops is typically a concern during construction. Please consider providing a note instructing the contractor to install the sheet pile cutoff wall first, then install dewatering wells to dewater below lowest excavation. If the drop cannot be constructed to the plan depth, than a grouted boulder drop with a stilling basin and end sill will be required.

Please feel free to contact me with any questions or concerns.

Sincerely,
**Urban Drainage and Flood Control District**



**Morgan Lynch, PE, CFM**
Watershed Services Program