

April 20, 2023



Joshua Palmer, PE
EL Paso County Engineer / ECM Administrator
3275 Akers Drive
Colorado Springs, CO 80922

**RE: Sterling Ranch – Sand Creek Channel Improvements
Criteria Deviations and Ownership/Maintenance Responsibilities R1**

Mr. Palmer;

The purpose of this letter is to discuss and document the reasoning and logic behind the several El Paso County (EPC) criteria deviations needed for the channel design and also to further the discussion of the benefit of having the county own and maintain the channel improvements within this regional channel corridor. Regarding specific Sand Creek Channel maintenance responsibilities, it is proposed that County, Developer and District enter into an agreement similar to the agreement made as part of the Retreat at Timber Ridge which is adjacent to and upstream of this reach. In the Timber Ridge agreement, the county maintains the structural facilities and the district is responsible for aesthetic maintenance within the channel corridor.

The proposed criteria deviations are necessary to effectively design a stabilized channel that can meet the objectives of El Paso County Department of Public Works while also accommodating the Army Corps of Engineers (USACOE) desire to limit disturbance of existing wetlands and to create an aesthetically pleasing regional trail corridor for the residents of El Paso County.

A BRIEF HISTORY

In late 2020, Kiowa Engineering submitted to the USACOE a “traditionally engineered” open channel with a multitude of grouted boulder drop structures and a consistent hard lined cross section capable of conveying the 100 year storm channel flows through the Sterling Ranch development. That approach was not accepted as the preferred alternative by the USACOE since, in their opinion, the significant disturbance to the existing riparian corridor and wetlands was not justified. Their reasoning was the USACOE considers Sand Creek a “high functioning creek” throughout this corridor therefore, not justifying the significant wetland disturbance of a “traditionally engineered” channel. The USACOE requested a more “natural” solution be brought forward.

In the spring of 2021, JR Engineering was engaged to prepare a more “natural” channel design. Early in the project JR retained Five Smooth Stones, a regionally recognized natural channel design firm to prepare a geomorphology study and provide recommendations for channel geometry and slope based upon their findings. Since that time, JR has been working closely with EPC engineering staff to come up with an acceptable design that balances both the El Paso County and USACOE perspective. While the proposed design meets many of the EPC criteria, several deviations are requested as shown below;

Sand Creek Channel Design - EPC Criteria Deviations		
Item	Criteria	Reason for Deviation
Low Flow Channel Capacity	DCM Vol. 1, 6.5.3	Geomorphologist Recommendation
Minimum Bottom Width of 8 ft	DCM Vol. 1, 6.5.3	Geomorphologist Recommendation
Drop Structure Height < 4ft	DCM Vol. 1, 6.5.5	To lessen # of drops, reduce wetland impact
Channel Access Spacing at 500 ft	3.3.3 K.1	Reduce wetland impact
Channel Fencing (chain link)	3.3.3 K.4	Aesthetic appearance

The following highlights key aspects for the current proposal:

NEED

The need for these deviations is to meet the USACOE requirement that existing natural wetland features be preserved along this regional corridor. The proposed design reduces the low flow channel capacity to push the minor storm flows over a broader (65 foot) flat flood terrace that will be densely planted with wetland vegetation thereby expanding the natural wetland corridor. Increasing the drop structure height to 6 feet, reduces the number of drop structures necessary to stabilize the channel and also requires fewer channel maintenance access ramps.

BENEFIT

The benefit of these deviations is they help preserve the existing wetlands, create a wide shallow minor storm flood terrace that expands the overall amount of wetland areas within the corridor thereby creating a wider stabilized channel. With less hard structures, the resultant corridor will be aesthetically pleasing to the county residents, as this corridor is recognized by the El Paso County Parks Master Plan as being a “proposed primary regional trail”. This corridor is also a candidate open space area further emphasizing the desire to preserve the existing natural features of this portion of Sand Creek.

HARDSHIP

It is difficult to find any hardship created by granting these deviations and accepting this natural channel approach. A stabilized channel with less hard improvements will require less overall maintenance and replacement costs and it is widely accepted that wetlands improve water quality.

Simply reducing the amount of drop structures from twenty one (21) (Kiowa Engineered Corridor) to eight (8) (JR Natural / Aesthetic Treatment) is a significant reduction in potential maintenance.

It is requested that El Paso County accept ownership of the channel and maintenance of the “structural facilities” in this channel corridor given its beneficial impact to the overall population of the county. The corridor provides a regional open space, has a county Parks Department regional trail along the west side and an envisioned 30-acre community park adjacent to it on the east side. Maintenance needs should not create a hardship to El Paso County considering the “natural channel” design techniques create a wide stable channel with slower velocities, less hard structures, generally low maintenance requirements and an aesthetically pleasing appearance.

El Paso staff has requested an estimate of maintenance costs be developed based upon information available from Denver’s regional authority, Mile High Flood District (MHFD). JR has researched this information and found it to be very high level. The below table presents

some unit rates found during our research which may be of use to El Paso County;

Operation and Maintenance		
Culvert Maintenance	L.F.	\$1.00
Manhole and Inlet Maintenance	EA	\$50.00
Hydraulic Structure Maintenance	EA	\$500.00
Channel Maintenance	L.F.	\$2.00
Detention/WQ Maintenance	ACRE	\$1,500.00
Mowing	ACRE	\$50.00
Trail Maintenance	L.F.	\$5.00

Your review of this proposal and favorable consideration of El Paso County ownership and maintenance within this corridor is appreciated and a draft Channel Maintenance agreement fashioned off of the Retreat at Timber Ridge channel maintenance agreement has been included with the latest EDARP deviations submittal. The draft agreement has the County responsible for “structural facilities and Sterling Ranch Metro District responsible for all aesthetic maintenance similar to the Retreat agreement but also includes, pedestrian safety fencing and walls adjacent to the access road/pedestrian trails.

wetlands?

We feel this design is a very positive proposal for future generations of El Paso County residents. Attached to this letter are the formal deviation requests for El Paso County staff consideration.

Please contact me if you have questions or concerns with this approach.

Respectfully submitted,

JR ENGINEERING, LLC



Mike Bramlett P.E., Client Manager
 Colorado PE #32314

Attachments:

- Deviation Request – Low Flow Channel Capacity
- Deviation Request – Low Flow Channel Bottom Width
- Deviation Request – Drop Structure Height
- Deviation Request – Spacing of Access Ramps to Channel Bottom
- Deviation Request – Fencing Requirements

Provide a table listing each facility proposed to be County maintained. This can be on the requested overall plan. List the GSBs individually.

Unresolved from R1 EDARP comments:

- The Hardship section should address what the hardship is to the developer-property owners-Metro District to maintain the channel, not including cost.
- In the last paragraph of the Hardship section addressing maintenance of fencing, walls, etc., add wetlands, grasses, and vegetation as district maintenance responsibilities if the TimberRidge agreement is being mirrored. (County is responsible for structural facilities only.)
- Please address the maintenance agreements that would need to be revised (SR3 and HSN1) if County ownership and maintenance of Sand Creek is requested, and generally what the revisions would be.
- Per deviation request redlines, provide a map showing specific areas requested to be County-maintained. (The overall wetland plan (without all the wetland labels) would be a good base.
- If supercritical flows exist in the final model (excepting drop structure locations) a deviation request will be needed and this will affect possible County maintenance.