

Twin Tunnels Environmental Assessment and Frontage Road Project ALIVE Meeting*

January 20, 2012
CDOT Region 1

** Habitat concepts and improvements recommended in this presentation are conceptual and subject to revision*



Issue: Hidden Valley Bridge over Clear Creek



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Idaho Springs/Clear Creek County





View of existing bench under the Hidden Valley Bridge



Hidden Valley Bridge over Clear Creek

View of habitat on the upstream side of the bridge- note steep banks and large riprap.

Recommendations at Hidden Valley Bridge

- When the bridge at this location is extended it is recommended to extend and maintain the existing bench.
- The approach on the upstream side of Clear Creek should be improved and “softened” to allow animals to move more freely (the approach on the upstream side of the creek is steep and there is large riprap).
- Replace large boulders and riprap with substrate that is more wildlife friendly.



Issue: Existing Fence on North Side of I-70



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Existing Fence on North Side of I-70

Issues with existing fence:

- **Sheep have been tangled in fence.**
- **Fence has several different types of woven wire.**
- **Barbed wire is very loose and is on both the top and bottom strands, which is the most lethal fence to wildlife.**



Woven-wire fence, especially if topped with barbed wire is the most lethal fence to wildlife.



» *Picture from Colorado Division of Wildlife:
Fencing with Wildlife in Mind, 2009 (Page 4).*



Existing fence on north side of I-70:

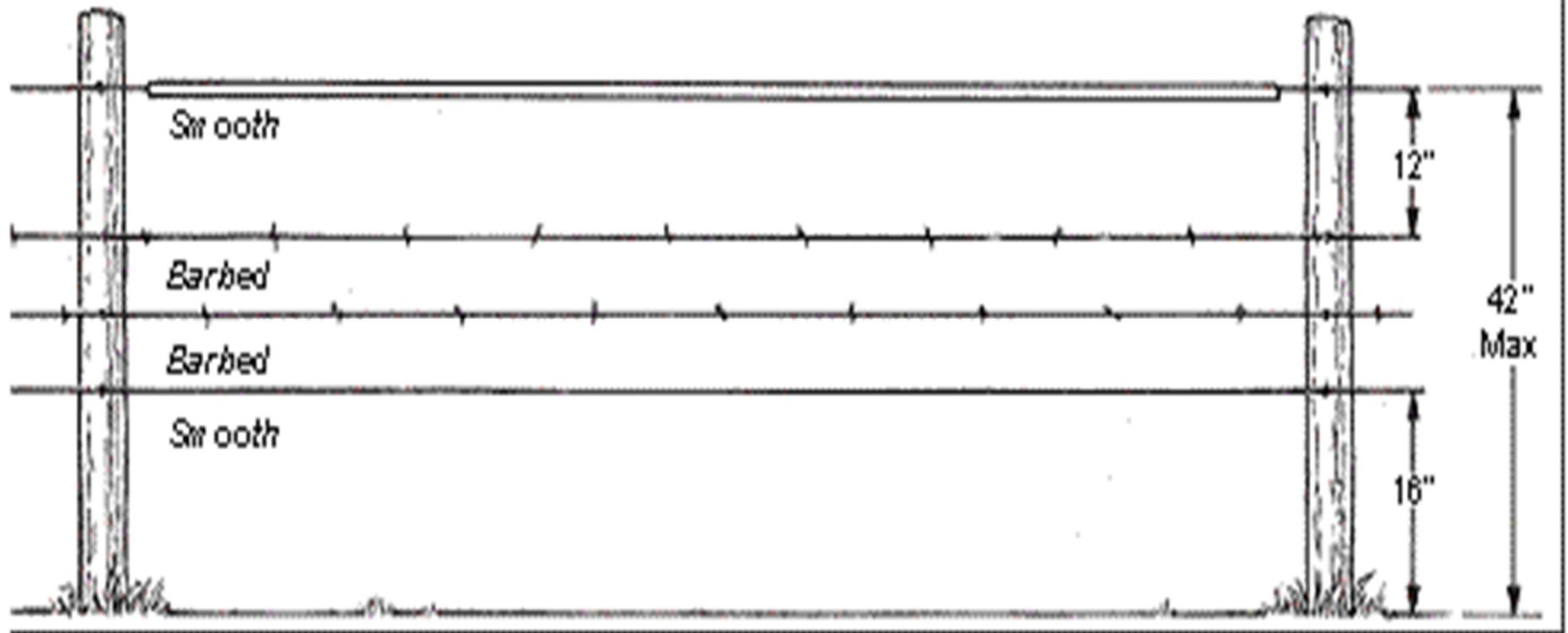


Existing fence on north side of I-70:

- Initial recommendation from CPW was complete removal of the fence.
- CDOT Region 1 contacted the landowner, Richard Young
- Landowner requested the fence remain in place because it is only fence that keeps his livestock of I-70



Colorado Parks and Wildlife Fencing Recommendation:



Graphic from Colorado Division of Wildlife: Fencing with Wildlife in Mind, 2009 (Page 7).



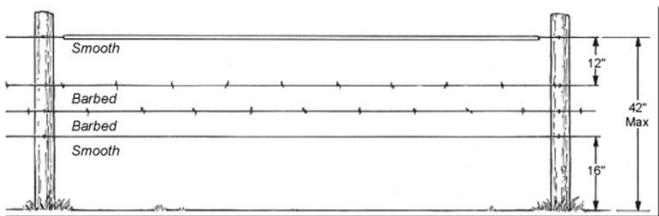
Recommended Wildlife Improvements on North Side of I-70

- **Replace existing fence in the same location with more wildlife friendly fence per CPW recommendations.**
- **Fence should be replaced from the west portal to Clear Creek.**
- **Remove pines and junipers on north side of I-70 to improve motorists' ability to detect sheep as they exit the tunnel.**





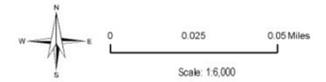
Existing fence: Combination woven-wire fence topped with barbed wire.



Schematic of Wildlife Friendly Fence

- Barbwire Fence
- Wingwall*
- Box Culvert
- Vegetation Removal

*Fence will be tied into the wingwalls of the CBC to encourage wildlife usage.



Data Sources: Colorado DOT (2011-Interstate, and County Bounds)
 Clear Creek County (2011-Streams, City Limits, County Roads, Aerial
 Photography), Atkins (2010)

Date: 1/19/2012

Recommended Wildlife Mitigation Strategies During the Detour

- **Concern: deicing liquids and salt placed on the road during the detour may attract bighorn sheep down to the roadway.**
- **Several fencing strategies were discussed and it was recommended that a 10 foot fence be placed only on the north side of old US 40.**
- **The fence would be placed on the south side of the ditch and would run approximately from the west side of the tunnel to the Dog House Bridge.**



Wildlife Mitigation Strategies During the Detour (Continued)

- **The ten foot fence that will be placed on US 40 is temporary and will be removed after traffic is no longer being diverted onto the detour.**
- **It is recommended that the existing vegetation at the edge of pavement on the north side of US 40 be removed to improve visibility and detection of wildlife for drivers. In addition, temporary lighting should be used on the detour to improve safety and detection of wildlife on the roadway.**



Recommended Wildlife Mitigation Strategies During the Detour- Remove Vegetation



Recommended Wildlife Mitigation Strategies During the Detour- Remove Vegetation



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Consider Opportunities to Enhance Wildlife Movement in Concrete Box Culvert near Mile Marker 242

- **The existing barbed wire fence crosses one intermittent drainage just west of the west portal near MM 242. There is a concrete box culvert (CBC) at this location that carries flows from this drainage under I-70 and discharges to Clear Creek.**
- **Enhancement opportunities at this location are being recommended to enhance wildlife movement/connectivity. The CBC currently has a concrete bottom and the discharge point at Clear Creek has a steep drop-off.**



Consider Opportunities to Enhance Wildlife Movement in Concrete Box Culvert near Mile Marker 242



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View of intermittent drainage- facing north (note existing barbed wire fence across drainage)



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Concrete Box Culvert- view from north side of I-70



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Concrete Box Culvert-

Concrete Bottom



Steep Drop-Off



Concrete Box Culvert- Opportunities for Enhancement

- If the fence is replaced, it is recommended that the drainage be left open- and instead of fencing across the drainage (like the existing condition) the fence should be tied in to the wing-walls of the CBC to encourage wildlife usage.
- It is recommended that the CBC be retrofitted to provide a more natural substrate on the bottom. Baffles could be installed to retain sediment and prevent scour. A natural substrate on the bottom is recommended to promote usage by wildlife.





CBC Wildlife Monitoring

Motion detection wildlife cameras have been in place since January 4, 2012....





1/05/12 12:21 PM

Cuddeback.



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Aquatic Habitat Improvement Concepts to Consider in Project Area

- There are two dominant stream channel types in the project area
- 1) A straight channel with relatively high gradient, high water velocity and confined by steep banks.
- 2) Lower gradient sections that are over 70 feet wide or greater with uniform depths with little instream cover from velocity and very little winter refuge habitat.



Aquatic Habitat Improvement Concepts to Consider in Project Area

- Objective: Increase juvenile refuge in swift sections and overwinter trout habitat in sections where widths exceed 70 feet





Reference Habitat Section upstream of I-70 Bridge Near Idaho Springs



Aquatic Habitat Improvement Concepts to Consider in Project Area

Potential habitat improvement site upstream of Dog House Bridge



Potential habitat improvement site upstream from Central City Parkway





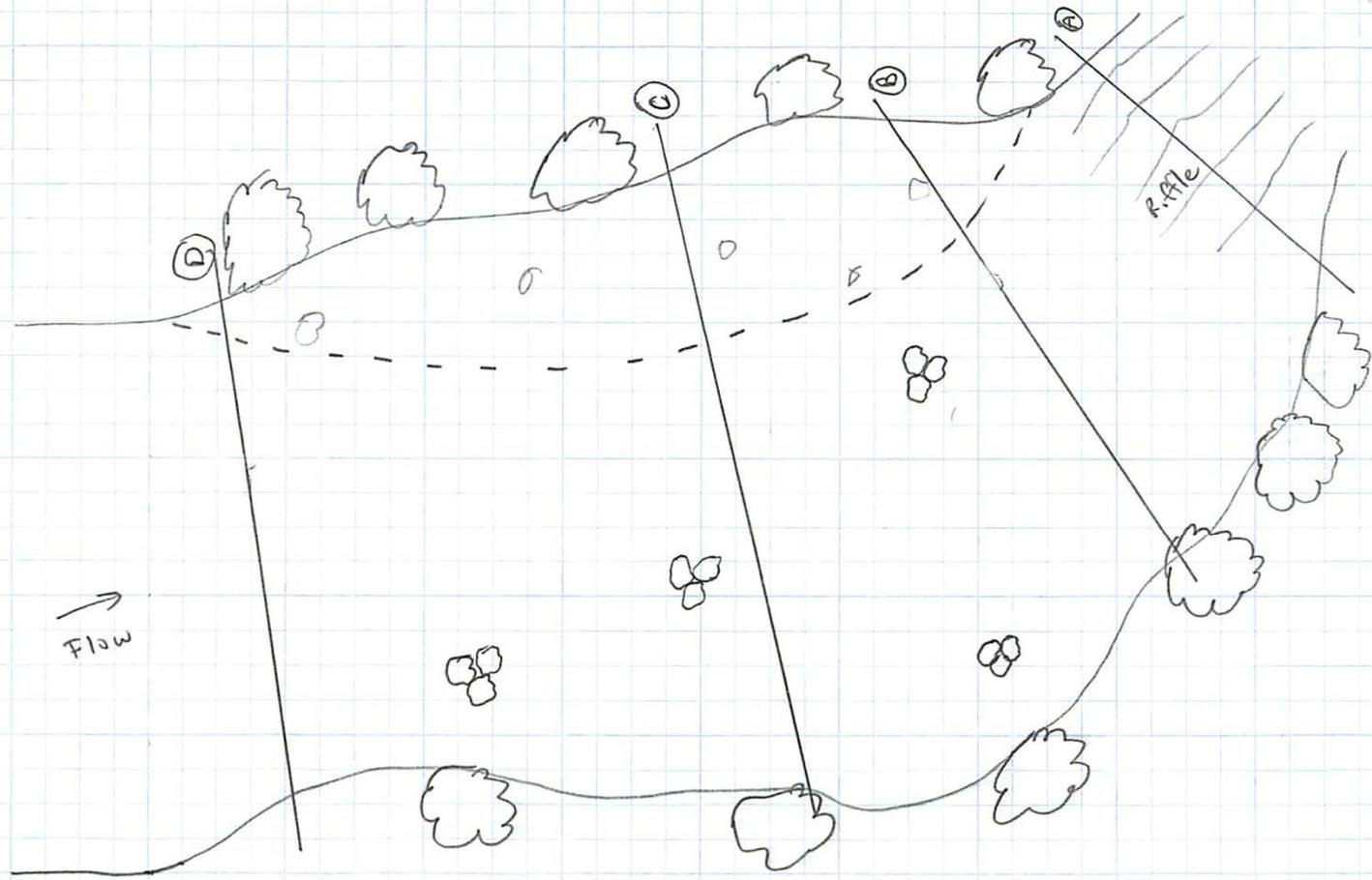
Potential habitat improvement site downstream from Hidden Valley exit



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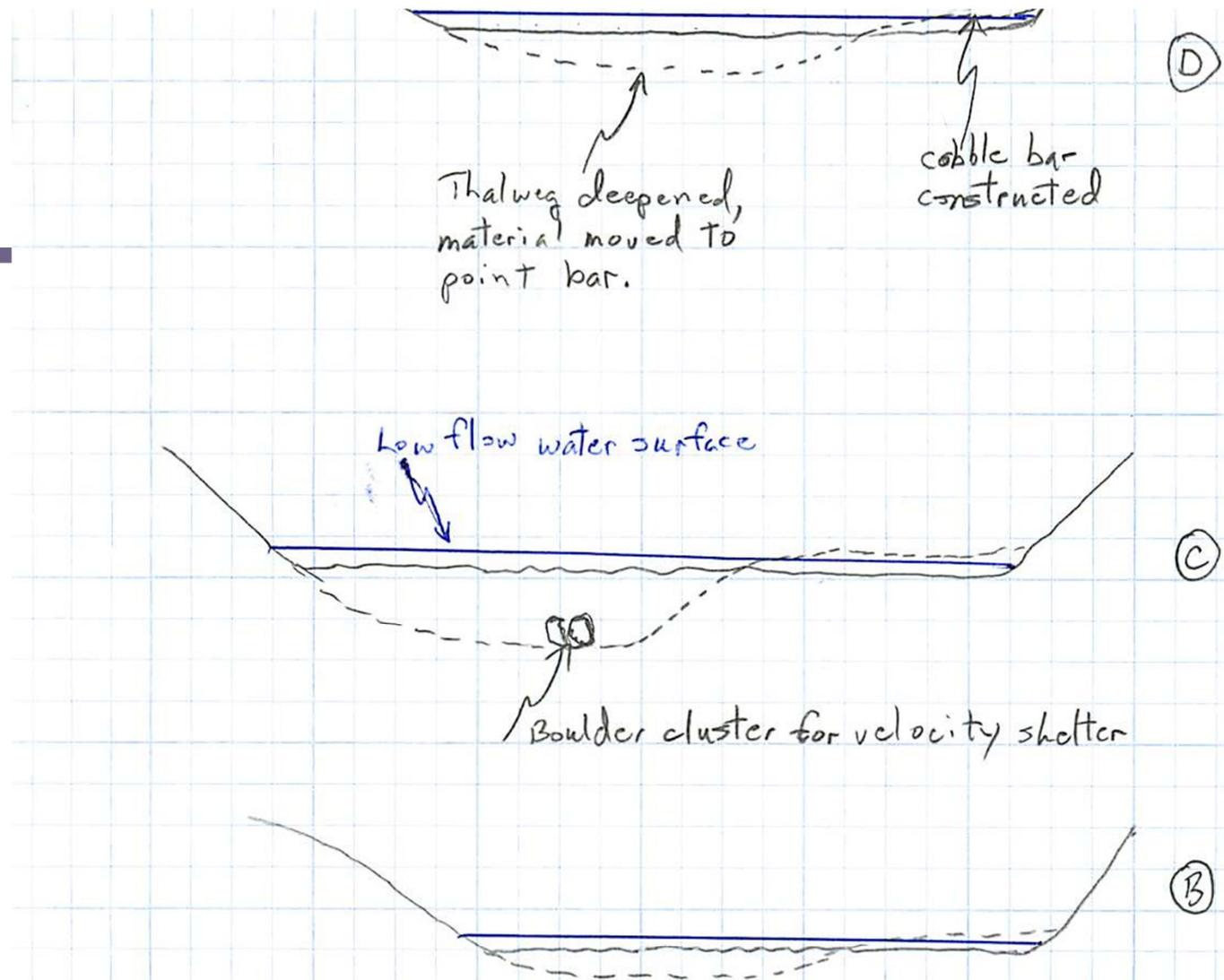
Sheet 1 - Example habitat improvement plan view.



Example habitat improvement plan view in wider stream section. Dotted line represents edge of constructed point bar at low flow

(Conceptual Design- Subject to Revision)





Example of cross sections in habitat improvement sites. Dotted line represents future bed profile and point bar construction

(Conceptual Design- Subject to Revision)

