MEETING NOTES

PROJECT:	23982-23929 I-70 West Vail Pass Safety and Operations Improvements
PURPOSE:	ALIVE ITF #6 Meeting
DATE HELD:	May 9, 2022
LOCATION:	Online Google Meet Meeting
ATTENDING:	John Kronholm, Project Manager, CDOT Region 3 Karen Berdoulay, Resident Engineer, CDOT Region 3 Rob Beck, Program Engineer, CDOT Region 3 Matt Figgs, CDOT Region 3 Cinnamon Levi-Flinn, CDOT Jeff Peterson, CDOT Kristin Salamek, CDOT USFWS Liaison Devin Duval, DNR Michelle Cowardin, DNR Jeff Bellen, FHWA Stephanie Gibson, FHWA Dick Cleveland, Town of Vail Pete Wadden, Town of Vail Julia Kintsch, ECO-resolutions Tanner Rausch, Kiewit Randal Lapsley, R S & H Mary Jo Vobejda, Jacobs Jim Clarke, Jacobs Pat Bastings, Jacobs Amy Hopkins, Jacobs Loretta LaRiviere, Jacobs
COPIES:	Attendees

SUMMARY OF DISCUSSION:

1. **Introductions & Meeting Purpose**
    a. Karen introduced the attendees at today's meeting.
    b. Mary Jo said the purpose and goals for today's meeting are to give you a brief update on the project progress and provide an update on the large wildlife crossing dimensions.
2. **Work Completed Since the Last Meeting**
    a. Mary Jo noted the work that has been completed since we last met in September.
        - EMS ITF Meeting #4 on February 7th
        - PLT Meeting #11 on February 11th
        - TT Meetings on Feb 14th, March 14th, and April 18th
        - 106/Aesthetic Guidelines submitted to Consulting Parties
        - CP#2 Final Plans submittal on March 7th. This is mainly the rec trail and construction will be starting in the next few weeks.
        - Final Maintenance Manual distributed for comments
        - Addressed comments to the Map Book from MP 180 - 185

- CP #3 FOR Submittal on March 23rd
- I-70 Virtual Open House on March 31st
- Construction on the remaining items for CP #1 began on April 4th and the early work that needs to be completed prior to starting CP #2 recreation path construction.

3. Large Wildlife Passages Sizing Refinements Presentation

a. John said he has had wildlife cameras on Vail Pass for the past four years, primarily in the summer. I have hundreds of photos, but my favorite is of a deer watching a tractor trailer go over the bridge and it is representative of the balance of Vail Pass of safety vs. the environment.

b. Today we are going to talk about modifying one of the larger wildlife crossings to make it a little narrower, the justification for that, and the team's final recommendation.

We are taking another look at the wildlife crossings because currently the project is over budget by several million dollars. Some of the things contributing to that are labor shortages, inflation, and material shortages. Only a small percentage of the overage is the unknowns that have come up with the scope of work. Because we are over budget, we are revisiting almost every aspect of the project to see how we can best reduce costs but still meet the goals of the project. We have to explain ourselves to executive management and eventually we will have to look for more project funding.

A statistical study was recently completed by Pat Bastings and the Jacobs team: **A Literature Analysis to Determine Optimal Wildlife Crossing Structure Size**. This study helps to provide justification for the size reduction.

We approached our internal wildlife staff and asked if they would agree for us to narrow the two larger wildlife crossings from 140' to 120' in length. The 140' length has a 10' buffer in between the edge of asphalt and the concrete barrier. Although it is still within the clear zone, it simply gives a little more room to run off the road and not hit anything. By narrowing that up and putting the concrete barrier to the edge of asphalt, we can eliminate 10' off of either side of these crossings.

To downsize, there is a $2 million in cost savings for the project so that was another reason to go from 50' to 40'.

c. We have a few reasons for justification for the 40' width. The state has similar sized crossings used elsewhere, the FHWA Guidelines recommend 40' width, the findings in the statistical model, the cameras up on the Pass, and cost savings.

There is a project on 550/160. The Region 5 wildlife biologist said he has great results with 35' wide underpass and they are generally around 115' long. They have a similar target species mule deer, black bear, and elk.

Julia said the way the monitoring was conducted, on 160 was done by an external researcher at the dry crossing monitoring wildlife and he found elk

were not approaching the underpass. But that could be other reasons, so I don't want to say the crossing doesn't work. I think there are some habitat reasons in that area, but in general, they are not just monitoring success rates, so we have to understand animal presence is great. It shows the animals are using it, elk in particular are using it, but it doesn't tell you the animals that aren't using it.

d. John said the FHWA Wildlife Crossing Structure Handbook general guidelines recommend 40' width, and a minimum of 20' wide.

   John said for him to personally understand the FHWA Wildlife Crossing Structure Handbook, is to understand the author Tony Clevenger. He did the world's longest duration wildlife crossing study in Banff under the TransCanada highway. There were a variety of sizes, but the wildlife underpasses were a little more on the narrow side, 24' wide and 11' to 12' tall, but they were very long. The average length of the four underpasses he performed camera studies on, and measured success rates were 185'. But he took those success rates and averaged them all together, so it doesn't really tell us which one was better than the other. He did see a variety of wildlife over the five years of monitoring including elk and deer and one lynx.

   Based on this, part of our overall argument was there are recommendations for crossings being less than 50' wide. The crossing handbook has an obscure reference to the length, but it is based more on how many traffic lanes you have. In Banff, there is a four-lane highway that has a 60' wide median, so perhaps just noting the general wildlife crossing length based on lane width may not be the most appropriate way to describe it. We have a six-lane highway but we have no median so that is why we are able to come up with a crossing that is much shorter in length, 120' versus the average of 185' in Banff.

e. The statistical study Jacobs performed came up with a regressional equation by combining many different studies together. There are other wildlife studies that measure success and repel rates. A successful crossing is when the wildlife stands in front of the opening and goes through it. If they turn away and don't go through it for some reason, they have rejected it. The hypothesis is that we can predict wildlife crossing use of an underpass based solely on length, width, and height as measured by success rates of wildlife.

   In the study, there are 75 data points from deer and 33 from elk. Volume wise, there are a lot fewer elk than deer crossing. Data point wise, about half of the data came from elk. There could be some difference in opinion on how you use the information when it comes to elk or other wildlife, but the authors of the report did find that it would be representative of both deer and elk passage with no statistical difference between the usage of the two.

   The study concludes if we decrease the length to 120' the wildlife usage would be more successful by 3%. It goes up from 66% to 69%. So statistically, the shorter the wildlife underpass, the better chance you have of wildlife using them.

At 120' length, the difference between a 40' and 50' wide crossing was a 2% difference in success rates. Without any definitive definition we thought it didn't seem to be a statistically significant difference, so why not go with the 40' width?

1. Stephanie asked if 3% is statistically significant.

   Pat said, to directly answer your question is 3% a statistically significant difference between 40' and 50' width, I don't think it is.

   Our recommendation was to look at things in a range for success rates rather than trying to pin it on one particular number. When we get this modeling, we ran it with 95% confidence based on these results so what John is saying is well within reason and it really gets down to how many animals approach it as well, and so part of what you see in this slide is the total number of animal counts approaching the structures and using them. Looks like 98.5% of the data driven to develop this chart is from mule deer and as far as total number of animals approaching and using these structures or repelling, and 1.4% is from elk.

   You also have to look at the existing conditions. Right now, the highway is a barrier with almost 0% connectivity.

   John said one way to differentiate between a success rate is if you had the right size wildlife underpass and you install it where there is no wildlife to begin with, then it wouldn't be successful. And the success rate here is more a measure of if you get the wildlife right in front of passage, are they going to use it or not?

f. John said one of the camera traps he set up on Vail Pass is at MP 187.3, which is the location of one of the future larger wildlife underpasses and in this area, there wasn't a large volume of wildlife coming down to the road and looking to cross it. There were 7 elk, 65 deer, one mountain lion, and one coyote.

   As you get closer to the summit of Vail Pass MP 188.3, there is a higher population of elk. The best camera is the westbound directional camera on the east side. In 2020 there were 137 elk, 98 deer, 2 moose, and 2 coyote. The elk in this area come down to the roadway and every time I went up there I saw a lot of big tracks in the sediment ponds, so they don't appear to actually cross the highway.

   Mule deer tend to stay near the lower crossing at MP 187.3.

   The closer you get to the summit, the terrain becomes more favorable for wildlife movement. In the Narrows from MP 185.5 to MP 187.5, there are steep cliffs and there is not as much wildlife movement in those areas. That is consistent with some of the mapped CPW summer concentration for elk around Polk Creek. I have also heard anecdotal evidence from the maintenance folks and hunters. But this is the area where they are hanging out during the summer concentration and their desire to cross the highway increases as you head down towards Copper Mountain.

g. Roadkill occurs more towards the bottom and the top of the pass. In The Narrows from MP 185.5 to MP 188. 5 where there is much steeper terrain, the animals do not cross as often, thus there is a lot less roadkill and fewer wildlife-vehicle collisions. The counts were collected from CDOT Maintenance of carcasses picked up on the side of the road, and the Colorado State Patrol reported crash data.

   There is a lot higher volume of wildlife crossing the highway under the bridges the further down the pass you get. Around MP 184 to MP 185 there is a large volume we have seen from tracks on field visits.

h. We've presented all this information to our wildlife team, and they requested to keep the upper wildlife crossing at MP 188.3 at 50' wide and at MP 187.3 reduce it to 40' wide. 40' will not preclude the elk using it. It still passes the target species in this area which are lynx, elk, and mule deer and also the secondary target species of black bear and mountain lions.

   The final recommendation is to downsize the lower wildlife crossing to 40' wide and the higher one will remain at 50' wide but they will be shorter going from 140' to 120'.

1. Dick asked if shortening the length of the crossings make them more attractive to wildlife?

   John said from the statistical study and other wildlife studies I've read, the shorter the crossing, the more likely it will be used. It may not attract more wildlife to it but once they do get in front if it, there will be a better chance of them using it.

2. Mary Jo asked what is the next step is now that you have made your recommendation?

   John said we have presented the information shown here to CPW and US Fish and Wildlife Service and they are on board with these recommendations, so at this point, we are moving forward with it.

   Michelle said CPW is on board with this. We support these recommendations and don't have any concerns.

3. Mary Jo asked what is the plan for monitoring or tracking success rates when these wildlife crossings are constructed?

   John said he would like to track or measure the success rate to get more data points for the study. There are a couple of ways to go about that. I mentioned the Applied Research and Innovation Branch (ARIB) here at CDOT. I applied to get the grant for the statistical study that Pat did. Between me and Cinnamon we can apply for another grant and presumably it would get awarded to have the wildlife crossings studied and measured. Right now, the ARIB is interested in more wildlife specific research studies. So that's one way to get it funded and select someone to go out there and do it.

On my own, I could continue to use the camera traps. I could put some cameras in front of the crossings just to see if I can measure the repel and success rates. But I don't know if I would have time to digest data for all six of the crossings, so I think we would have to have someone else come in and study it. There is a plan, but not necessarily tied to the project but we will pursue it.

Julia said in Colorado we've gotten data on small wildlife at large crossings, but we've never monitored small crossings specifically, although on I-25 we are monitoring cover features that are dedicated for small animals. It would be a great research component to be able to just look specifically at how these smaller structures work for those targeted species.

John said he did place cameras at the four smaller crossings and did get more smaller wildlife at those locations than where the larger crossings are going to go. At MP 189.6 which is more at the crest of the Pass, there was a larger component of wildlife volume. It would be interesting to get some before and after comparison in some ways to define the wildlife that is there versus the wildlife that went through the passages.

Michelle said you can't really compare the volume, you've got a set of camera about five miles and the camera span 30' or so. What we did on Highway 9 with our before and after was just any species you saw before the structures went in, we'd want to see in the area and potentially using the structures after. But without having fencing, an animal or group of animals could be behind your camera so it's just really hard to do before and after when you don't have the fence to guide the animals to where your cameras are set in the crossing structures. You'd have to line your entire five miles with cameras or do track surveys to really get an idea of the animals along that stretch.

John said he had a wildlife camera at MP 184 pointed towards the bridge and I wouldn't get a large volume but every time I would go immediately behind the camera there would be hundreds of elk tracks in the mud. If I would have pointed it the other way, I would have captured a huge volume of wildlife. You can't capture everything.

4. Schedule

a. Mary Jo reviewed the schedule and noted the items that will be done during this construction season: the remote closure system and the rec path relocation. A large cut wall will be going in and part of the bridge substructure is going to get started.

b. Right now, we are showing construction packages 1, 2 & 3 and it will be ending in November for this year.

Pat noted there is one small portion of a wildlife crossings will be in CP #2, but the major work will be done in CP #4 when the road is built.

Mary Jo said the schedule continues to change as the designers do their work and Kiewit is looking at it and pieces are moving between construction packages for optimization and efficiency.

5. Next Steps

Mary Jo so we don't plan to meet with you again as an ITF. If something comes up like this did, we will reconvene this group.

Construction Package #3 design is being finalized.

The next PLT Meeting is May 12th, and the next TT meeting is May 16th

The only ITF that is continuing to meet is the SWEEP group. Their last meeting is anticipated to be in August to review the Map Book from MP 185-190.