February 2020 Project Update

Project Overview

An auxiliary lane in both directions on I-70 from the East Vail exit to the Vail Pass exit at the top of Vail Pass was recommended in a broad-scale study of the I-70 mountain corridor in 2011. The current Environmental Assessment (EA) study is evaluating the benefits and impacts of these additional lanes and other safety and operational improvements on West Vail Pass.

Following two public meetings and extensive coordination with local, state and federal agencies and stakeholder groups, a Proposed Action has been identified (see reverse).

Proposed improvements include an eastbound and westbound auxiliary lane from the East Vail exit to the Vail Pass rest area on I-70. Preliminary design and technical analysis of the benefits and impacts of the improvements has been occurring over the past year. Findings will be documented in the EA report, which is expected to be available for public review late this summer. The Federal Highway Administration will review the EA and public comments received, and determine if there are no significant impacts to environmental and community resources (documented in a "decision document"). If so, then the project will move forward into final design and construction as funding becomes available.

Purpose

The purpose of the project is to improve safety and operations on Eastbound and Westbound I-70 on West Vail Pass.

Need

This project is needed to address safety concerns and operational issues due to geometric conditions (steep grades and tight curves) and slow-moving vehicle and passenger vehicle interactions that result in inconsistent and slow travel times along the corridor. The I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS) identified safety and mobility issues on West Vail Pass related to speed differentials due to slow-moving vehicles. *(Mobility is defined as the ability to travel along the I-70 Mountain Corridor safely and efficiently in a reasonable amount of time.)*

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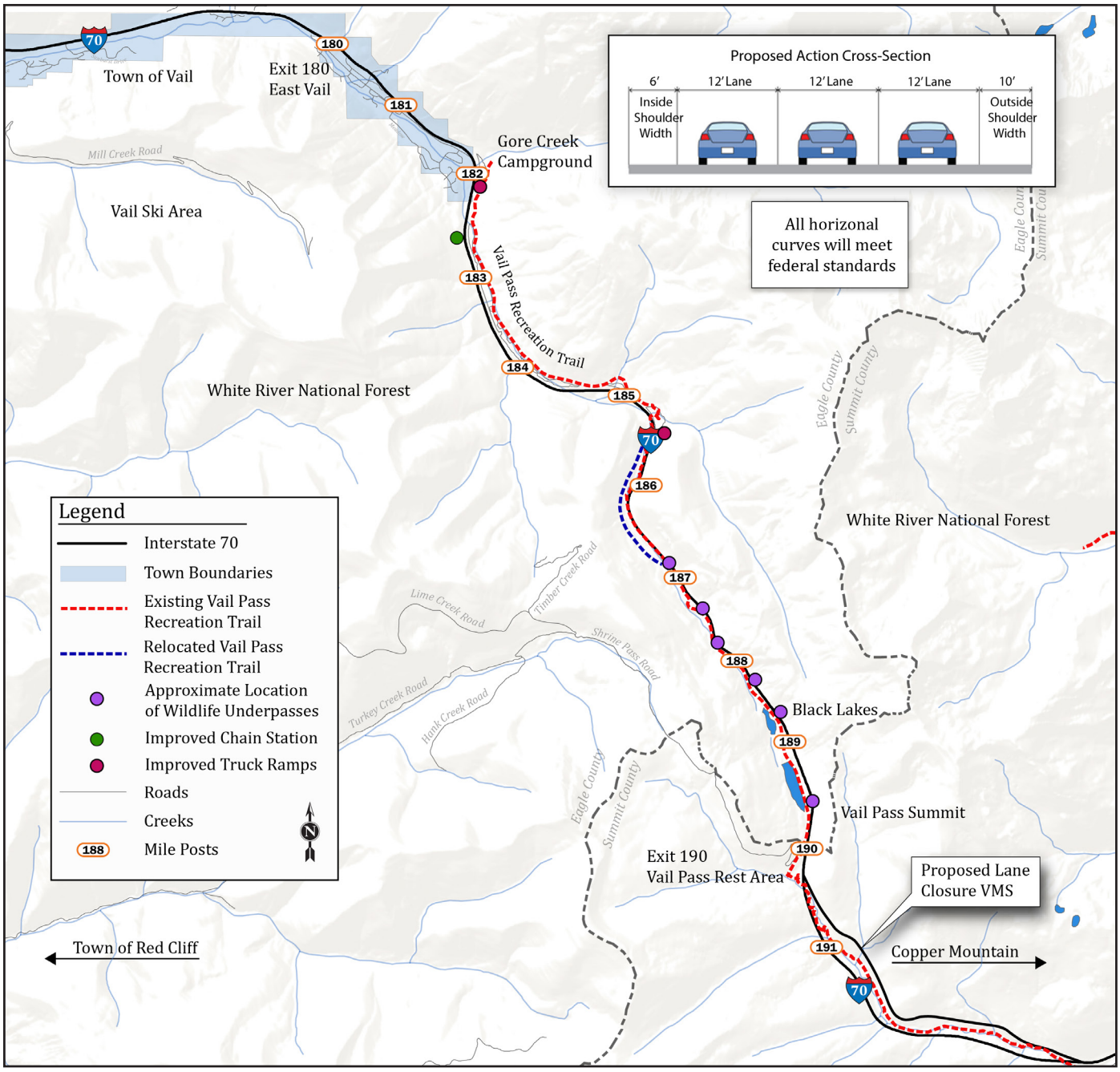
Project Schedule

Public review of EA: Summer 2020
Public meeting #3: Summer 2020
Decision document: Fall 2020

Proposed Action



Elements of the Proposed Action

- Add a third lane both eastbound and westbound (MP 180-190)
- Roadway curve improvements
- Intelligent Transportation System improvements - variable message and speed limit signs
- Improved truck ramps, truck parking, and chain stations
- Trail improvements where impacted
- Wildlife underpasses
- Sediment collection improvements
- Avalanche protection near milepost 186

Noise Questions & Answers

1. Q: When is a noise analysis required?

A: A noise analysis is required for a proposed CDOT project if that project consists of: A new highway built on a new location, interchange modifications, or an existing highway that is significantly altered by substantially changing the horizontal or vertical characteristics of the road, or the number of through traffic lanes being increased or auxiliary lanes added. Noise analysis is also required if there is an addition of a new, or a substantial alteration of an existing, a weigh station, rest stop, ride-share lot, or toll plaza. Minor projects, such as normal roadway resurfacings (without adding new lanes), do not require a noise analysis.

2. Q: Does CDOT analyze noise levels on existing highways?

A: In the absence of a major highway project as described above, CDOT does not perform noise studies or mitigate noise for existing highways.

3. Q: What are noise receptors and receivers?

A: A noise sensitive "receptor" is a location where highway traffic noise may be detrimental to the enjoyment and functional use of the property as defined by the CDOT Noise Abatement Criteria. If a group of individual receptors share similar acoustical properties and settings, a representative, consolidated receptor site may be used in modeling and is called a "receiver".

Outdoor areas of frequent human use for residential, school, places of worship, park, hotel, and other sensitive land uses are considered for evaluation. Indoor areas of schools, places of worship, and other noise sensitive non-residential land uses are considered for evaluation when all exterior analytical methods have been exhausted. Indoor areas of residences are not considered for evaluation.

4. Q: What is A-weighting and why is it used?

A: The human ear does not respond equally to all frequencies. The A-weighting network approximates the frequency response of the average young human ear when listening to most ordinary sounds. When people make a judgment of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds.

Using the A-weighting network, 0 dBA is the threshold of human hearing, 40 to 50 dBA is typical for a peaceful neighborhood, 70 to 80 dBA is typical adjacent to a busy urban street or 50 feet from a major freeway, and 120 dBA is a level at which sound is painful.

5. Q: How are noise levels added?

A: Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, 70 decibels + 70 decibels = 73 decibels, not 140 decibels.

6. Q: How are noise level changes perceived?

A: Studies have shown that changes in noise levels of 3 decibels or less are not normally detectable by the average human ear. An increase of 5 decibels is generally readily noticeable by anyone, and a 10-decibel increase is usually felt to be "twice as loud".

7. Q: How is noise measured?

A: Highway traffic noise is measured using the sound level meter. For highway traffic noise studies, noise levels are quantified in terms of the equivalent sound level, or Leq. Leq represents an average of the sound energy occurring over a specified period. The 1-hour A-weighted equivalent sound level (Leq[h]) is the energy average of A-weighted sound levels occurring during a one-hour period, and is the basis for noise abatement criteria (NAC) used by CDOT and FHWA.

8. Q: Why are noise measurements conducted?

A: The purpose for taking field measurements is to gather data that is used to develop a comparison between those measurements and results obtained with the noise prediction model. This exercise is performed to validate the model so that it can be used with confidence to determine the worst-hour existing noise levels and predict the future noise levels. Statistical accuracy requires minimum measurements of approximately eight minutes on high-volume roads for periods where unusual events do not occur. Measurements along low-volume highways may require longer measurement periods (e.g., 30-60 minutes) to attain desirable statistical accuracy. Measurements can be taken at any time and do not necessarily represent the worst-hour; however, it is best to measure when traffic is relatively free flowing at or near the posted speed limit. Long-term measurements, conducted over periods of 24-hours or longer, are conducted to identify the noisiest hour of the day, if the noisiest hour of the day is not available via other means.

9. Q: How are loud noises such as “Jake Brakes” shown in the noise measurements?

A: Intermittent loud noises such as Jake Brakes are included in the noise measurement if Jake Brakes were used by trucks during the measurement. The fluctuation in noise is averaged out over the entire reading, as described in question #7.

10. Q: Can anything be done about "Jake Brake" use?

A: All commercial vehicles operating on any public roadway in Colorado equipped with a compression or "Jake" brake device are required by law to have mufflers in accordance with Colorado Revised Statute 42-4-225. Failure to do so will result in a $500 fine. Enforcement of this law is the responsibility of local authorities and is typically accomplished through commercial vehicle inspections at port of entry and weigh station facilities. Signs stating "engine brake mufflers required" have been installed around the state to inform motor carriers of this requirement. The presence of these signs alone does not significantly reduce highway noise levels at specific locations.

However, even with proper use of mufflers, engine braking still produces a distinct sound. Because they are a safety device, the use of engine brakes is not prohibited on state highways unless explicitly forbidden by local ordinance. Local law enforcement officials can provide additional information regarding local noise ordinances and their enforcement.

11. Q: Does topography affect noise impacts?

A: A large object or barrier in the path between a noise source and a receptor can substantially reduce noise levels at the receptor. The amount of reduction provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can reduce noise levels. For example, a noise-sensitive receptor that is located at a lower elevation than the source of the noise will have lower noise levels than a receptor located at a higher elevation from the noise source.

12. Q: What constitutes a traffic noise impact?

A: A traffic noise impact occurs if either of the following conditions is met at a noise sensitive receptor (see above for definition of "receptor"):

- future projected traffic noise levels (generally a 20 year projection) approach or exceed the CDOT Noise Abatement Criteria (NAC) (for residential land, the NAC is 66 dBA) and/or
- future projected traffic noise levels exceed existing highway traffic noise levels by 10 dBA or more.

13. Q: Is noise abatement evaluated for all receptors?

A: No, noise abatement is evaluated for all impacted receptors.

14. Q: What does CDOT consider "feasible and reasonable"?

A: A noise barrier must be both feasible and reasonable if it is to be constructed with a highway project. Feasibility and reasonableness are determined by criteria that are quantifiable. As a result, noise mitigation is not automatically provided where noise impacts have been identified. A barrier is feasible if a wall that is 20 feet high or less can be constructed without major engineering or safety issues and provide at least 5 decibels of noise reduction to at least one impacted receptor. Reasonableness deals with whether the barrier can be designed to achieve a noise reduction design goal of 7 decibels at a receptor location (does not have to be impacted), whether the barrier can be constructed in a cost-efficient manner, and the desires of the community. All of these criteria must be met for a barrier to be considered feasible and reasonable to build.

15. Q: What is a "readily perceptible noise reduction"?

A: A noise barrier must provide at least a readily perceptible decrease in noise levels to adjacent receivers to be feasible. This is defined as a noise decrease of at least 5 decibels. As noise level changes of 3 decibels or less are not generally perceivable, it is not prudent to construct a noise barrier that gives only a 1 or 2 decibel benefit to adjacent properties.

16. Q: How do noise barriers work?

A: Noise barriers reduce noise by blocking the direct travel of sound waves from a source (such as a highway) to adjacent homes or businesses, forcing the waves over the top or around the barrier. The barrier must be high enough and long enough to block the view (line of sight) of the highway. This is the phenomenon that allows a noise barrier to provide a readily perceptible noise reduction. Noise barriers are not as effective for homes on a hillside overlooking a road or for buildings which rise above a barrier. Openings or gaps in

barriers for driveway connections or street intersections reduce barrier effectiveness. Noise barriers are most effective for the first one or two rows of homes at distances up to 200 to 300 feet from the barrier. As noise levels decrease with distance, there is a point away from the highway at which noise barriers are no longer effective. It is important to note that barriers are not designed to eliminate or block all noise.

17. Q: How are heights of modeled noise walls determined?

A: Noise abatement is evaluated for areas with impacted receptors only. If no impacted receptors are identified in an area, noise abatement will not be evaluated for that area. For impacted areas, noise walls are considered at several locations and in increments ranging from 8 to 20 feet in height. Noise wall location and heights that meet the feasibility and reasonableness criteria described above will be considered for construction with the project. The final noise abatement decision will be made during completion of the project's final design and the public involvement process.

18. Q: Can private citizens or municipalities pay for noise mitigation within CDOT right-of-way?

A: Private or third party funding can be used on projects for the following:

- To make functional enhancements to a noise abatement measure already determined to be feasible and reasonable, such as adding absorptive treatment, access doors, or aesthetic enhancements
- To construct landscape or hardscape features in interstate right-of-way that may provide some noise abatement without meeting the feasible and reasonable determination. These features are not considered to be noise mitigation by CDOT.
- To build noise mitigation as described under 2 CCR 601-17 and/or CRS 43-2-400. Private citizens may fund the mitigation in whole or in partnership with local agencies. The mitigation must meet the same guidelines as mitigation built by CDOT.

Private or third party funding is not allowed on a federal or federal-aid Type I or Type II project to discount the cost of the noise abatement measure in order to influence the determination of feasible and/or reasonable or to augment the dimensions or change the cost-benefit index of abatement measures recommended on a federal-aid project.

19. Q: When do residents vote on a noise wall?

A: A formal benefited receptor preference survey will occur during the next phase (final design) to determine public support. The majority of property owners and tenants adjacent to the noise abatement wall need to be in favor of the wall or it will not be constructed.

Additional Noise Frequently Asked Questions can be found at:
www.codot.gov/programs/environmental/noise/noise-faqs

For more information and background regarding the I-70 West Vail Pass Auxiliary Lanes project or to submit a comment related to the project:
www.codot.gov/projects/I-70-West-Vail-Auxiliary-Lanes

Noise Abbreviations and Term Definitions

- **dBA –** Stands for "A" weighted decibels, which are an expression of the relative loudness of sounds in air as perceived by the human ear.
- **Leq –** The average sound level occurring over a specified period of time.
- **Receiver –** A location that represents noise sensitive land uses; can represent multiple receptors.
- **Receptor -** A specific location (e.g. a house) represented by a modeled receiver. Outdoor areas of frequent human use for residential, school, places of worship, park, hotel, and other sensitive land uses are considered for evaluation. Indoor areas of residences are not considered for evaluation.

East Vail Noise Meeting Comment Form

February 13, 2020

Please provide your comments regarding the I-70 West Vail Pass Auxiliary Lanes project's preliminary noise analysis.

Visit the project web page to submit a comment and learn more:

www.codot.gov/projects/I-70-West-Vail-Auxiliary-Lanes

(over)

Please provide general suggestions and comments regarding this project.

How did you hear about this meeting?

- ____ Email from project team
- ____ Social media
- ____ Agency's email blast
- ____ Postcard mailer
- ____ Word of mouth/Forwarded email
- ____ Other _____

Name _____

Address _____

City, State, Zip _____

Phone #: _____

Email: _____

Return to:

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