



Best Practices Guide for Motor Carriers Operating on the I-70 Mountain Corridor

April 2012

Best Practices Guideline for Motor Carriers Operating on the I-70 Mountain Corridor

Introduction

This document highlights the “best practices” of those motor carriers with outstanding safety records in Colorado, while operating on the I-70 Mountain Corridor. This compendium provides a guide and suggestions for other motor carriers to implement similar safety programs within their own companies.

The Colorado Department of Transportation, Colorado State Patrol, Federal Motor Carrier Safety Administration along with the Colorado Motor Carriers Association share the goal to reduce truck involved crashes and incidents. As part of this quest for safety, there are ongoing efforts by each of these entities to increase traffic efficiency, reduce congestion and wait time, and improve productivity along the I-70 mountain corridor. While there are a variety of programs being implemented to achieve this goal, a commitment by the entire motor carrier industry to improve safety and traffic management practices will be essential. The truck driver is truly the professional of the road. As such, all drivers have a responsibility to not only drive safely, but also to avoid potential accidents caused by others on the highways, and to navigate traffic in a timely, safe and practical manner. Whether you operate 1,000 trucks or are an owner-operator, long-haul carrier or courier, seasonal driver or long time professional, safety is your responsibility. Every driver, owner and manager must make safety their priority. This includes road management and trip planning to minimize risk exposure for all who use the highway system.

Safe operations protect the lives and well being of the industry’s employees and the traveling public. Moreover, safe operations contribute to the corporate financial stability, productivity, and customer and employee satisfaction and retention. The motor carrier industry recognizes that achieving safe operations is an ongoing process, demanding a variety of actions undertaken at all levels of an organization, and fully integrated with hiring, training, compensation and benefits, and day-to-day operating procedures.

On the following pages you will find tips, suggestions and guidance from the safest motor carriers operating on the I-70 Mountain Corridor in Colorado. You may already utilize some of these ideas. Others may not be applicable to your company. There is no “one size fits all” safety program that works for all carriers. This compendium provides valuable information on how the safety motor carriers conduct business. It provides guidance on how to implement policies or procedures that make sense for your company. An investment in safety will not only improve your financial well being and improve the image of the trucking industry, but ultimately it will save lives.

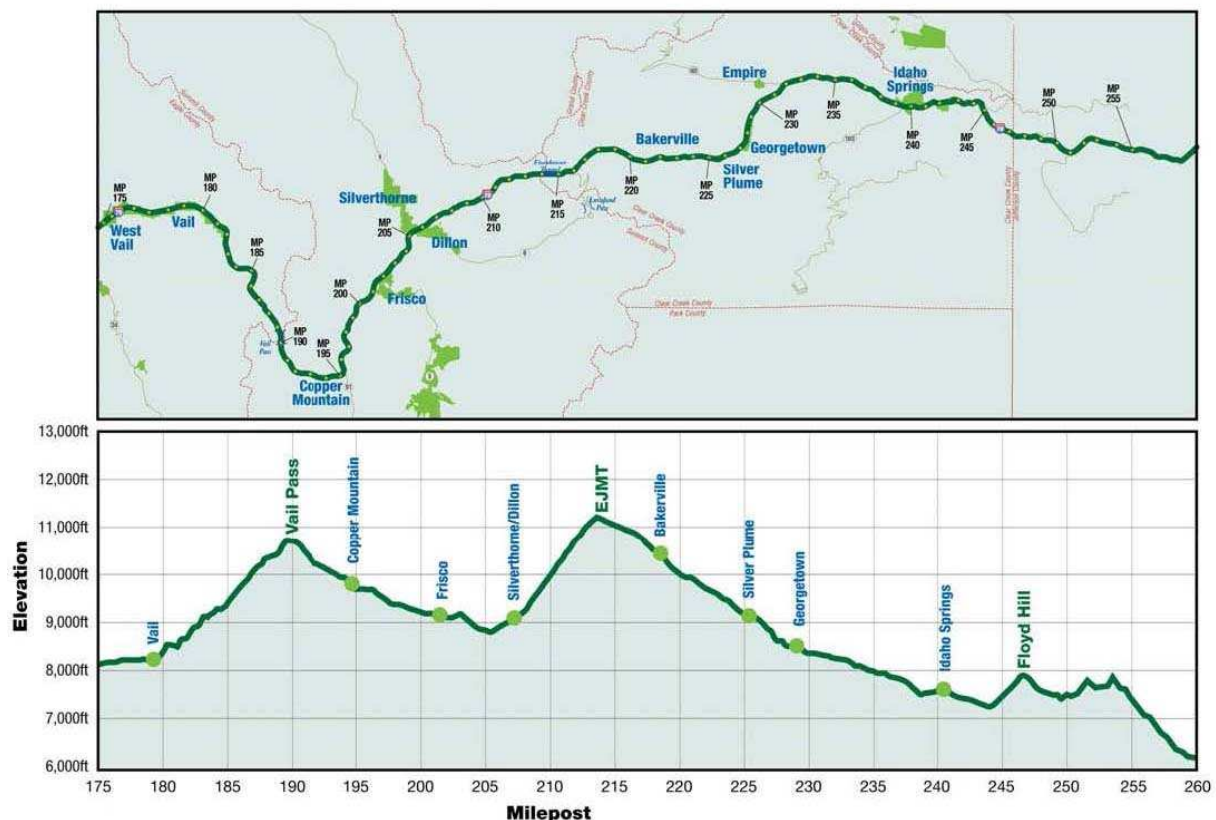
Background

This study was initiated and funded by the Colorado Motor Carriers Association (CMCA), as part of their ongoing efforts to improve safety and efficiency of the trucking industry throughout Colorado. Commercial vehicle safety is the top priority for CMCA. Everyone involved in motor

carrier operations – from drivers and management to patrol and enforcement personnel to legislators and regulators – is committed to increasing highway safety for both motor carriers and the traveling public. This study, as part of a larger collaborative effort to increase efficiency and safety within the I-70 mountain corridor, was funded by the Colorado Motor Carriers Association’s Safety Management Council.

History

The I-70 Mountain Corridor in Colorado is unique among all highways in the US Interstate Highway System. It features high mountainous terrain with two major passes, extended grades in excess of 6%, the highest tunnel in the interstate system at 2.1 miles in length and an elevation of 11,000 feet, traffic congestion during peak travel times, and challenging adverse weather conditions.



The Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA) for decades have sought a comprehensive and environmentally sound solution to improving safety and mobility in the Corridor. On June 16, 2011 they released the *I-70 Mountain Corridor Record of Decision for Programmatic Environmental Impact Statement (PEIS)*. This document and its associated Preferred Alternative and Record of Decision approves a program of transit, highway, safety, and other improvements on the 144 mile route between Glenwood

Springs and the western edge of the Denver metropolitan area. The decision provides a framework for implementing specific projects in the Corridor as funding allows. The complete project will require decades to complete at a cost in excess of \$10 Billion.

With the PEIS complete, CDOT focused on the need to identify low cost and short term solutions for the Corridor. In May, 2011, CDOT hosted a week-long workshop of I-70 stakeholders and technical experts charged with the task of developing, exploring, and documenting ideas to improve mobility and operations along the I-70 Mountain Corridor. In total, 142 ideas were developed as part of this effort and were grouped based on potential implementation in the short-, mid-, and long-term time frames.

One outcome to the Safety and Mobility Workshop was the proposed widening of the east bound twin tunnels at MP 242 and adding a third lane of capacity EB between east of Idaho Springs and the base of Floyd Hill. This can be completed in four years at a cost of \$60 million and will eliminate a peak travel time bottleneck.

The Workshop also looked at issues associated with the operation of commercial vehicles in the corridor especially during peak travel times. This Guide will identify those issues and the “Best Practices” of carriers that operate regularly in the Corridor safely and with minimal impact to Corridor mobility.



I-70 Mountain Corridor Efforts

The Colorado High Country along the Continental Divide west of Denver provides a vast assortment of year-round recreational, cultural, and leisure activities. Its close proximity to the high density metro Denver and Front Range areas results in extremely high highway traffic volumes on I-70 during the weekends and holidays. Congestion is typically directional as traffic moves into or out of the corridor. Sunday afternoons, both winter and summer, east bound toward Denver is the most congested period in the corridor. The resulting congestion has major economic impacts in the region. Weather and accident related incidents greatly exacerbate an already acute situation.

The trucking industry avoids these periods for discretionary shipments due to the higher operating costs associated with congestion; however, non-discretionary shipments such as bulk fuel, food service, bulk mail, and interstate “just-in-time” shipments must continue to operate in the Corridor. Additionally, there is insufficient truck parking in the corridor to accommodate trucks on a “congestion hold.”



The Safety and Mobility Workshop proposed many initiatives to reduce the impact of trucking operations in the Corridor, including restricting trucking operations during peak travel times. CDOT's traffic studies and analysis have shown that restricting trucking operations during peak travel times will not have a significant impact on improving free flow mobility during peak travel times. However, if there is an incident involving a large truck during peak travel times, especially in conjunction with adverse weather conditions, the consequences for corridor mobility can be significant. Recognizing this, the Colorado Motor Carriers Association (CMCA), CDOT, and the Colorado State Patrol (CSP) have previously implemented many successful programs to improve commercial vehicle safety and reduce truck related incidents in the corridor. These include improved and expanded chain stations, penalties for commercial drivers failing to observe the posted chain law, a heavy tow program with large recovery equipment on standby to provide quick clearance of a large vehicle impeding traffic flow, a third party chain assist program to provide chains or chain installation help, and approval of alternate traction devices. While these initiatives have proven successful and cost effective, there remains public and political pressure to restrict truck operations during peak travel times.

A congestion mitigation strategy is known as Travel Demand Management (TDM) in which travel is incentivized to consolidate travel or use off peak times for travel. This has been previously applied in the Corridor primarily aimed at single passenger automobile travel. Carpooling has resulted in skier traffic averaging more than three occupants per vehicle. There are pilot programs to further apply TDM measures using Smart Phone and GPS technology. TDM for freight movements is recognized as a measure to investigate and implement as may be appropriate. Consequently, CDOT, CMCA, CSP and significant stakeholders have formed a "Freight TDM Working Group" for the I-70 Mountain Corridor. The goal of the Working Group

is to reduce the footprint of trucking operations in the Corridor during peak travel times. The production of this Best Practices Guide is one of the outcomes of the TDM Working Group.

The I-70 Mountain Corridor as used in this Guide includes the I-70 segment between Vail (MP186) and the Morrison Exit west of Denver (MP259). The production of this Guide is the result of the collaborative efforts of the Colorado Motor Carriers Association, the Colorado Department of Transportation, the Colorado State Patrol, and motor carriers with a record of safe and efficient operations in the corridor.

Purpose

The objective of this compendium was to outline and capture those operational practices which place certain motor carrier companies above others in terms of safety and efficiency. The specific areas of interest for this project are mountain driving and winter driving.

The best way to identify successful management practices that result in outstanding performance is to go to the source. Fifteen (15) motor carriers were identified as having exemplary safety records, along with a high level of operations on the I-70 mountain corridor. Of those identified motor carriers, ten (10) agreed to participate. These target companies were interviewed over a three month period during the 2011 / 2012 winter season to identify and explore successful management programs. This project sought to find out what sets the safest companies apart from others in the trucking industry.

Carrier Selection

Best Practices Carriers were chosen based on three criteria: operational level in the I-70 mountain corridor, safety performance and demographics. These carriers were selected from a database of over 2,000 trucking companies with operations in Colorado. Selection was also made based on recommendations from the Colorado State Patrol, local law enforcement agencies, Colorado Motor Carriers Association, insurance companies and the Colorado Department of Transportation.

Methodology

Seven LTL, truckload, private, and specialized carriers agreed to participate. These companies represented both union and non-union operations, and were located across the country. However, each carrier included has a significant physical presence in Colorado.

In-depth interviews and site visits were conducted with safety managers of the selected trucking companies. Discussions were focused around the general topic areas listed below:

- Demographics
- General Business Culture
- Drivers
- Internal Operating Protocols and Policies
- Equipment
- Technology
- Other Factors Critical to Success

What Makes These Programs So Successful?

This next section describes the finding of those interviews, documenting the management attitudes and program components that carriers credit with the success of their outstanding safety record on the I-70 Mountain Corridor. This compendium is divided into three main sections:

- Top factors critical for success on the I-70 Mountain Corridor
- Management tools for safety success on the I-70 Mountain Corridor
- Resources for motor carriers operating on the I-70 Mountain Corridor



Section One: Top Factors Critical for Success

Management programs that result in exemplary safety performance are remarkable similar in approach. Programs that produce outstanding results may differ in specific implementation detail, but the core program components, management commitment to safety and attitude toward employees are universal. Factors consistently highlighted by the motor carriers as critical to successful performance include:

Top Management Commitment to Safety

The active support of top management translates into employee commitment at all levels of the organization. The senior managers of these companies are committed to safety.

Communication at all Levels of Operation

These companies stress two-way communication. A strong working relationship between supervisors and employees, dispatchers and drivers, and senior managers and line employees is essential to the business culture.

Safety is a Continuous Process

These companies recognize achieving safe operations is an on-going process. These companies monitor and analyze safety statistics and operations on a daily basis to encourage improvements and take prompt action when problems are identified.

Maintain and Inspect Equipment

Properly inspected and maintained equipment was seen by all Best Practices Carriers as critical to safe operations. Many of the companies involve drivers and mechanics in determining how to spec vehicles and equipment.

Employees are an Integral Part of the Solution

Satisfied employees – those with whom the company regularly communicates and who have a stake in the company's performance – make safer employees. Employees are treated with respect and are involved in both major and day-to-day decision making.

Integration of Safety in all Aspects of Operation

A culture of safety must begin with the top executives. Safety tools, training and operations must be used together – there is no single magic bullet. Safety is much more than just compliance. All daily operations must keep safety in the forefront, including hiring, compensation, benefits and dispatching decision.

Respect Quality Drivers

Hiring quality employees and providing continuous training are the keys to safe operations. Best Practices Carriers do not cut corners on driver hiring, even if equipment sits idle. Drivers and other employees must know what is expected of them and how they will be measured and evaluated. Recognition of excellent driver performance in all aspects of company operations is important. These carriers trust drivers to make responsible and professional decisions, and give drivers the authority to make safety decisions while on the road.

Section Two: Management Tools for Success

The management tools utilized by Best Practices Carriers to achieve safety and operational success are presented in the following sections:

- General Business Culture
- Drivers
- Internal Operating Protocols and Policies
- Equipment & Maintenance
- Technology & Information Resources

General Business Culture

From the largest to the smallest motor carrier, one common thread these companies share is they make safety everyone's responsibility and most important job. The president, managers, drivers, mechanics, dockworkers, and dispatchers are continually reminded to focus on safety.

Responsibility for safety must extend to the company's top management team to achieve the effective follow-through required at all other level of the organization. In smaller firms, the owner of the firm or a vice president typically functions as the safety director. In larger firms, the director tends to be an officer of the company, or an individual reporting directly to the president or vice president of the company.

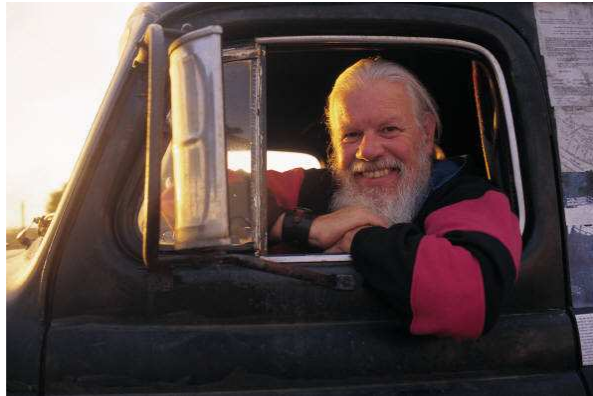
The commitment to safety is made clear to all employees at the time of hiring. In many of the companies, a statement of the company's commitment to safety is included in the employee handbook or signing papers. The safety department is also integrated into the hiring, firing, benefits, and compensation policies of the companies. The safety department develops hiring, retention and past employment criteria, conducts background checks, oversees training, administers awards programs, and are directly involved in issuing written and verbal warnings for safety policy infractions.



Drivers

Starting with the right people is the key to overall safety performance. As the pool of experienced drivers continues to shrink, identifying the right people, particularly among younger hires, requires focusing on attitude as well as experience. Many of the Best Practices Carriers focus on hiring the right persona by teaching skills to candidates with the right attitude, rather than trying to teach “attitude” to someone with a particular set of skills. The safety manager is involved in the driver hiring process and safety is stressed from the first contact with prospective drivers and other employees.

In selecting new hires who will run the I-70 mountain corridor, Best Practices Carriers strictly follow DOT requirements regarding DMV checks, contacting previous employers, road tests, and drug and alcohol testing. These procedures are implemented without question, and used as minimum guidelines, rather than required paperwork. Best Practices Carriers generally follow a similar protocol for selecting drivers for the I-70 mountain corridor.



Recruitment

These motor carriers pay attention to driver candidates that have mountain driving and / or inclement weather driving experience. This narrows down the candidate pool, and provides the motor carrier with a starting place from which to determine suitability for mountain routes.

Pre-Hire Mountain Road Test

Best Practices Carriers utilize senior drivers or driver trainers to conduct mountain-specific road tests for all driver candidates who will be driving the mountain corridor. These specific road tests check for advanced skill levels in shifting, braking, driver attentiveness and road management.

Driver Training

Most of the companies supplement driver training with a mentoring program that pairs a new hire / new mountain driver with an experienced company driver. Exposure to mountain driving is usually included in this mentoring program. The extent of supervised training ranges from 2 days to two weeks or more. A safety director or supervisor is involved in at least some of the training rides. All of the companies institute a

probationary period for new drivers. Most companies require drivers to demonstrate a positive attitude, a good relationship with customers, no accidents or tickets and no complaints during this probationary time.

Specialized Driver / Equipment Training

Companies that have a variety of equipment require drivers to gain experience on each type of equipment under the supervision of an experienced driver. The companies provide additional training on equipment such as doubles, triples, and specialized loads. Companies that haul hazardous materials or other specialized cargo that must use Loveland Pass rather than travel through the Eisenhower-Johnson Memorial Tunnels also ensure “rookie” mountain drivers have time in the truck with experienced drivers before they are allowed to run solo over the Pass. In addition, drivers are trained on all equipment and technology provided by the company to ensure driver compliance and safety on the I-70 mountain corridor. This includes pre- and post-trip inspection procedures, equipment safety, chaining requirements, proper chaining techniques, inclement weather-related topics (high wind / glare ice / etc.), road safety and speed / space management techniques.

Driver Equipment / Personal Protection

Best Practices Carriers require their drivers to follow company protocols for personal safety. Most carriers do not allow drivers to wear cowboy boots or shoes with smooth leather bottoms. Steel-toed boots and other footwear with proper grip and tread are required. Nearly half of Best Practices Carriers provide drivers with this type of footwear, which is critical in icy or snowy conditions. Reflective vests, eye protection, cold-weather gloves and emergency kits are also commonly supplied to driver by Best Practices Carriers. Drivers who may experience unsafe driving conditions and must stop driving due to weather / road conditions, must be outfitted with items essential for their safety and well-being.



Internal Operating Protocols and Policies

The Best Practices Carriers have written guidelines empowering drivers to take any necessary action to ensure a safe arrival at their destination, as long as dispatch is notified. This policy puts the ultimate decision-making authority with the driver. Not only does the company empower drivers and build teamwork, but also reinforces the fact that safety is a top priority. Pre- and post-trip inspections are required, and drivers are expected to adhere to all safety protocols.

The companies focus on the condition of both the driver and the roadway. This means strictly following the hours-of-service regulations, and setting limits on the amount of time drivers are behind the wheel. If a driver is fatigued, they have the authority to stop and rest. The same is true if a driver encounters adverse weather conditions. The driver is given the authority to shut down until conditions improve or use alternate routes to maximize safety. At a minimum all drivers have access to a cell phone, radio or computer for communication with dispatch or the appropriate terminal.

Equipment & Maintenance

Proper maintenance and inspection are critically important in all of these companies. All but the smallest of companies retain in-house personnel to carry out basic / preventative maintenance and perform regular inspections. Some companies do more complex maintenance work in-house as well. A majority of the companies have specialized or heavy maintenance performed by an outside contractor. DOT requirements for pre-and post-trip inspections, annual inspections and so forth are copiously enforced. Trip inspection reports are provided to the shop nightly. Items needing immediate attention and/or those that affect truck safety are attended to at once. Other items are generally dealt with on a priority basis. Drivers are informed when each item will be addressed. Some companies have developed in-house checklists for pre-and post inspections that exceed regulatory minimums. All companies require drivers to conduct basic fluid level and air pressure checks every day. In all companies, drivers have the authority to stop driving if either the equipment or load is unsafe or unsecured.

Best Practices Carriers spec a variety of items for safety and comfort purposes such as additional steps, grab handles, fender mirrors and tilt steering wheels. These items help the driver safely operate the vehicle and ensure driver comfort. These companies solicit input from maintenance personnel and drivers when purchasing truck features. For safety and efficiency, most of the companies set a maximum speed on truck engines between 60 and 72 miles per hour. One additional area in which driver input / preferences are taken into consideration is tractor-trailer configurations. Many Best Practices Carriers try to avoid pulling long or heavy loads with single axle tractors in the wintertime, to maximize efficiency and safety while traveling on snowy and / or icy roads. The additional traction provided by twin-screw tractors may mean the difference between safely traversing the mountain corridor, and needing to be towed from the roadway due to lack of traction. Operationally, delays due to lack of traction, spin-outs or loss of power, can cost trucking companies thousands of dollars in late delivery surcharges, tow bills and accidents / injuries.

All Best Practices Carriers spec winter equipment that exceeds normal workload standards. Tires, chains and engine brakes are all spec'd with the knowledge of mountain use and steep grades in mind. Some carriers supply each power unit with a combination of traction devices:

high tensile chains along with auto sanders / or Autosocks for added safety. Many Best Practices carriers allow drivers to chain up and run at reduced speeds even if the chain law is not in effect, if the driver believes it to be safer.

Some motor carriers provide specific equipment for winter and / or mountain routes. Many of these “specialty” items have been acquired after driver input. For instance, many carriers utilize a specially-formulated window washer fluid that cuts through magnesium chloride residue in the winter. Other companies solicit driver input when purchasing chains / cables / tire sanders, and so forth. Best Practices Carriers recognize that drivers are the best judge of what works out on the roads, and thus, can provide invaluable advice on spec’ing and purchasing equipment. Increasingly, companies are paying attention to driver input on tire tread patterns, aerodynamic trailer fins and skirts, and other equipment that makes a driver’s job easier and safer.



Section Three: Resources for Motor Carriers Operating on the I-70 Mountain Corridor

This section provides motor carriers with the basic information needed to successfully and safely navigate the I-70 mountain corridor in Colorado. The information was accurate and correct at the time of printing. Please double check all information before relying solely on this section for safety and / or compliance.

Technology & Information Resources

Best Practices Carriers expect their drivers and other personnel to utilize all available technology and information resources to safely and efficiently navigate through the I-70 mountain corridor. Many carriers provide their drivers with cell phones or other in-cab communication devices. With the passage of a federal hand-held cell phone ban for all commercial drivers, wireless and hands-free technology will be quickly incorporated into all company policies and equipment.

Other examples of technology available to drivers include Variable Message Signs. These electronic signs are placed all along the corridor and relate real-time information on the chain law, congestion and/or delays, accidents, animal crossings and other safety-related events in the immediate vicinity. This information can be used by the driver to better manage the trip across the mountain corridor. In-cab communication systems such as those manufactured by Qualcomm and PeopleNet are becoming increasingly popular with motor carriers as another tool to ensure a high level of communication between dispatch and drivers.

Additional state-funded resources for drivers, dispatchers and company officials include the CB Wizard (CB radio channel that provides highway information, road closures, delays and other real-time traffic updates); 511 (phone number that provides recorded information on traffic conditions); and www.cotrip.org (CDOT website with camera feeds from mountain locations, road closures and other highway information). Drivers are also tuning into real-time weather reports on Sirius / XM Satellite radio stations.

A joint project between the Colorado Department of Transportation and the trucking industry is also gaining popularity. CDOT is providing live feed from traffic cameras to companies and truck stops which install computer monitors in driver rooms, dispatch areas and common spaces. This allows companies to monitor weather and traffic conditions on the I-70 mountain corridor on a real-time basis, and have accurate information at their fingertips, rather than relying on weather predictions. Drivers especially benefit from this program, as they can see the exact conditions into which they will be driving and can plan accordingly.

Summary

If the results of this research could be briefly summarized, it would read: *the safest motor carriers go beyond compliance and operating “by the book.” They actively manage the safety and operational functions and take prompt action when indicated. They use a pro-active management approach with safety as the top priority.*

This compendium provides an overview of management tools that can be used by any motor carrier to refine and improve its overall safety and performance on mountain corridors. The information presented here may also be useful in setting standards for evaluation of motor carrier safety management activities. In addition, the structure of this compendium may provide a model for future safety-related research and information efforts for the Colorado motor carrier industry.

As part of this “Best Practices” project, this document highlights the positive actions taken by the trucking industry to address over-the-road safety, congestion in our mountain regions, and free access for all users to our highway system. This is just one example of how the trucking industry continues to be pro-active in its focus on improving highway safety.

Carrier “A” Profile

Carrier Size: 100 – 150 power units
Drivers: 50 – 100 drivers
Mileage: 1,000,000 to 5,000,000 miles per year
I-70 Experience: 5 – 10 trips per day

Driver Training:

- Drivers spend 3 weeks or more with a veteran driver on the corridor. Veteran driver drives the first 2 times, then turns the wheel over to the new driver.
- Inexperienced drivers drive for no less than 3 months in summer weather. This allows them to learn the roads, routes, wildlife activity, locations of chain stations and laws.
- Utilize voice mails, posters and driver meetings to train / remind drivers. Most of the intense training is done with individual drivers.
- Has developed a specific mountain / winter driving training program that includes:
 - Chain law requirements / when to chain up
 - Where to chain
 - How to chain
 - Speed / space management

Operating Protocols:

- Drivers are required to have dry weather / summer experience before being allowed to drive in snow / winter conditions.
- Drivers are required to chain when the chain law is in effect.
- Owner / management checks with drivers to verify road conditions before making a decision to stop or proceed with loads.
- Driver input is essential to making a decision whether or not to continue in bad weather. Drivers almost always get to decide if they want to continue or stop.
- Utilize tandem axle tractors with a twin screw to pull 28 foot pup trailers.
- Company uses 511 and www.cotrip.org to help determine inclement weather decisions.

Equipment:

- Equipment is spec'd with plenty of horsepower, correct gear ratios, engine brakes, automatic chains and twin screws for safety in the mountains.
- Due to experience in the mountain corridor, company spec's heavy duty chains and advanced engine brakes to ensure safe and efficient transport.

Most critical aspects that contribute to safety:

- Drivers are required to spend 3 months driving in summer months / dry weather PRIOR to winter driving.
- Proper equipment on trucks – i.e. twin screws, heavy duty chains, engine brakes
- Strict disciplinary policy for non-compliant drivers.

Carrier “B” Profile

Carrier Size: 1 - 50 power units
Drivers: 20 - 49 drivers
Mileage: up to 250,000 miles per year
I-70 Experience: 50 or more trips per day

Driver Training:

- Drivers spend time with a veteran driver on the corridor, prior to driving alone.
- Company requires drivers to have specialized training on mountain driving and inclement weather driving prior to putting them to work.
- Company has weekly safety meetings to discuss issues / concerns / safety items. Mandatory for all drivers.
- Drivers go through defensive driving training prior to being sent on loads.

Operating Protocols:

- Management, drivers and dispatch check weather reports and get feedback from drivers on the road prior to dispatching.
- Owner / management checks with drivers to verify road conditions before making a decision to stop or proceed with loads.
- Drivers are given the discretion to park and wait out bad weather.
- Drivers have ultimate decision to accept or reject a load or route, based on safety.
- Company uses 511 and www.cotrip.org to help determine inclement weather decisions.

Equipment:

- Equipment is spec'd with plenty of horsepower, engine brakes, automatic chains and all-wheel drive for safety in the mountains.
- Due to experience in the mountain corridor, company spec's heavy duty chains and advanced engine brakes and tires to ensure safe and efficient transport.

Most critical aspects that contribute to safety:

- Drivers training in mountain and winter driving!
- Proper equipment on trucks – i.e., heavy duty chains, engine brakes
- Safety meetings to discuss current issues with roads, routes and weather.

Peak Travel Times in the Corridor:

Westbound Fridays, 6 PM - 10 PM
Westbound Saturdays, 6 AM - 10 AM

Eastbound Saturdays, 5 PM – 10 PM
Eastbound Sundays, 2 PM - 7 PM

(Note: CDOT considers peak to be EB Sunday from 10am – 8pm)

I-70 Traffic Demand Management Information

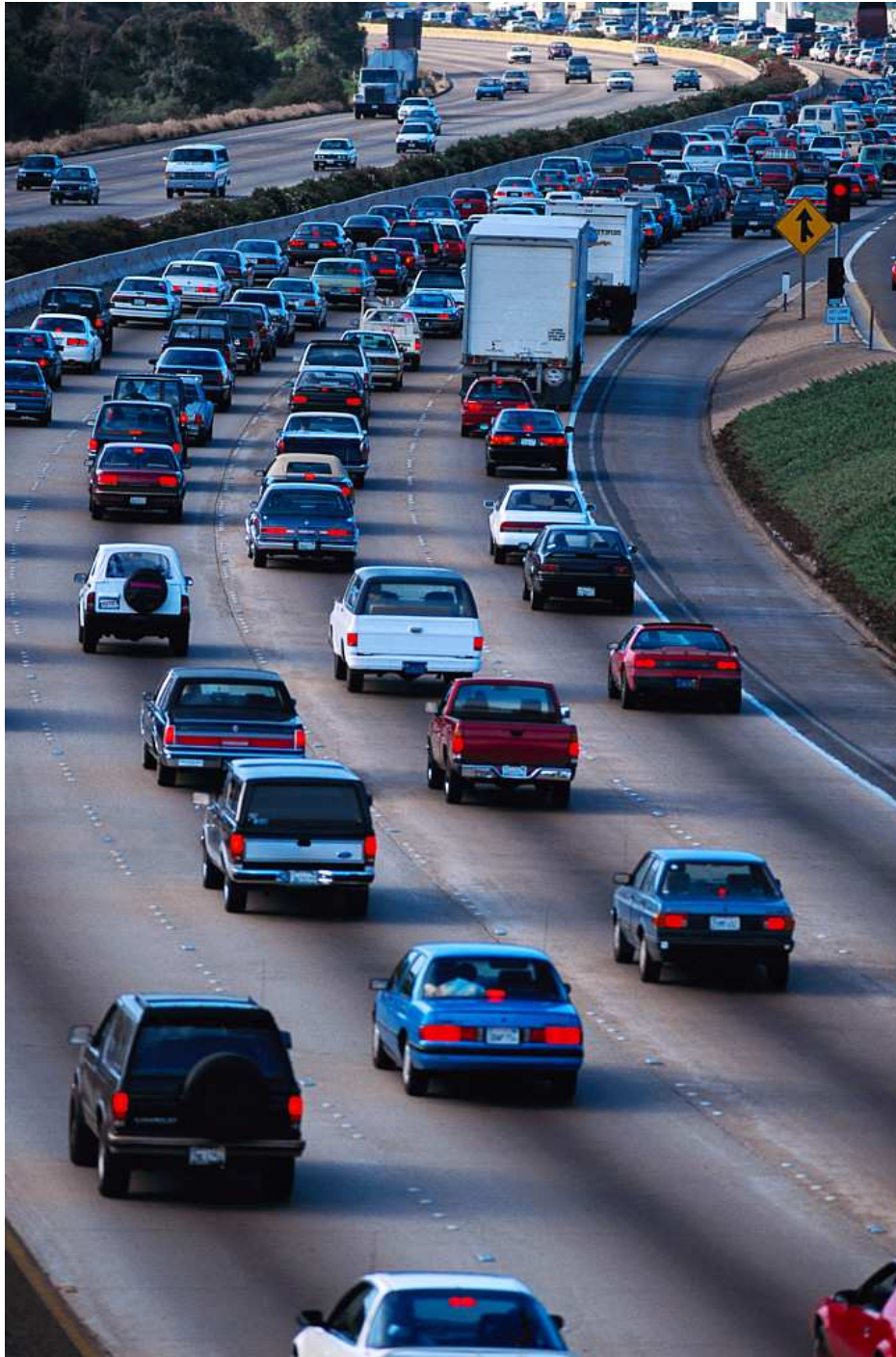
The I-70 Mountain Corridor in Colorado is unique in the U.S. Interstate system due to a unique combination of factors. Travel demand during peak travel times is the single most significant factor affecting mobility in the corridor; especially Sunday afternoon Eastbound into the Denver area.

During off peak times the Corridor typically operates at a very high level of service with traffic moving at posted speed limits. During peak travel times stop-and-go conditions may exist for many miles , typically from Georgetown (MP 228) to Floyd Hill (MP 245).

With transit and significant capacity improvements many years in the future, there is a concerted effort to shift the number of vehicles operating in the corridor during peak travel times to off peak time through travel demand management (TDM). Incentives to encourage car pooling is one measure employed with some success. Winter day skiers now average in excess of three occupants per vehicle. Trucking operations have been identified as a segment targeted for TDM; some have even advocated a ban on trucking operations during peak times.

CMCA conducted an analysis of motor carriers with extensive operations in the Corridor yet with a history of very minimal incidents. These included the carriers participating in this Best Practices Guide and members of the CMCA Safety Management Council. The results supported the industry contention that many carriers avoid operating during peak times due to hours of service and inefficient operational issues. Of the 25 carriers surveyed, 9 or 36% reported they avoid the corridor completely during peak travel times. Colorado carriers that do travel during peak travel times include non-discretionary shipments of essential services such as bulk mail, bulk fuel, and food services. For the 25 surveyed carriers, the analysis revealed of shipments conducted during the Sunday afternoon Eastbound peak travel time 76% were food service and bulk fuel transport.

CMCA is committed to working with CDOT and the CSP to improve safety and mobility in the Corridor. Colorado based carriers have adjusted their operations to minimize their footprint in the Corridor during peak travel times. It is critically important for other carriers to be aware of the Corridor's limitations during peak travel times and adjust their operations accordingly to the extent possible. Trucking is perceived as part of the problem; we need change the perception to being part of the solution.



Statutes & Rules Applying to Commercial Vehicles Operating on I-70

42-4-235 (2)(a)

This is the state statute that adopts the entire Federal Motor Carrier statutes and makes them (FMCS) enforceable in Colorado.

Drivers operating a commercial vehicle as defined in Colorado Department of Transportation's rule [2 CCR 601-14](#), except mobile cranes, being operated on Interstate 70 between milepost 133 to milepost 259 from September 1st to May 31st inclusive, must carry on the vehicle, tire chains as defined in § 42-4-106(5)(A)(I). There is also a reference to alternate traction devices in CDPS rules. Other alternative traction devices, as defined in [2 CCR 601-14](#), may be used in lieu of tire chains.

42-4-106 (5)(a)

Chain restrictions statute. Increases the fine if a travel lane is closed.

42-4-711 (1)

Drove vehicle improperly on mountain highways. This statute is typically used in the case of an accident because it specifically requires a driver to “hold such motor vehicle under control.”

42-4-1008

Following too closely. This is one of the three highest accident casual factors for accidents in Summit and Clear Creek Counties. The statute requires a following distance that is “reasonable and prudent” and “having a due regard for the speed of such vehicles and the traffic upon and the condition of the highway.”

42-4-1013 (1)

Requires motorists to drive in the “non-passing lane” unless in the act of passing when a highway with a 65 mph speed limit.

42-4-1402/ 42-4-705

Careless Driving: Failed to yield right of way requires vehicles to move to the left when stationary emergency vehicles are on the right shoulder. ALSO – Requires motorists to slow down and to move the left where chains are being applied by someone on the right shoulder.

42-4-1103 (1)

Impeded the normal flow of traffic requires drivers to drive at a speed that “does not impede or block the normal and reasonable forward movement of traffic.”

42-4-1106

Interstate 70 - “When there is an average 6% grade or more uphill for at least a mile,” restricts all vehicles from travelling in the “far left lane” at a speed less than the minimum speed limit that is 10 mph below the posted speed limit or the minimum speed limit as set by the Department.

Right Lane restriction I 70 Downhill portions 6% or greater. This restriction is loosely covered in CDOT's authority to regulate traffic flow. I can find no statute. From what I have been told by the troopers, they cite 42-4-603 Failed to observe/ disregarded traffic control device.

The authority to set speed limits for trucks on the I-70 corridor is established loosely by statute (42-4-1102 see below). A very important fact for drivers to know is that the speed limits are tied to the Gross Vehicle Weight RATING not the Gross Vehicle Weight. This approach to the setting of speed limits on downhill portions of I-70 has been standardized by tying the reduced speed limits to GVWR.

42-4-1102 (1) (a) Whenever the department of transportation determines upon the basis of a traffic investigation or survey or upon the basis of appropriate design standards and projected traffic volumes in the case of newly constructed highways or segments thereof that any speed specified or established as authorized under sections [42-4-1101](#) to 42-4-1104 is greater or less than is reasonable or safe under the road and traffic conditions at any intersection or other place or upon any part of a state highway under its jurisdiction, said department shall determine and declare a reasonable and safe speed limit thereat which shall be effective when appropriate signs giving notice thereof are erected at such intersection or other place or upon the approaches thereto; except that no speed limit in excess of seventy-five miles per hour shall be authorized by said department.

42-4-1102 (5) Whenever the department of transportation or local authorities, within their respective jurisdictions, determine upon the basis of a traffic investigation or survey that a reduced speed limit is warranted in a school or construction area or other place during certain hours or periods of the day when special or temporary hazards exist, the department or the concerned local authority may erect or display official signs of a type prescribed in the state traffic control manual giving notice of the appropriate speed limit for such conditions and stating the time or period the regulation is effective. When such signs are erected or displayed, the lawful speed limit at the particular time and place shall be that which is then indicated upon such signs; except that no such speed limit shall be less than twenty miles per hour on a state highway or other arterial street as defined in subsection (3) of this section nor less than fifteen miles per hour on any other road or street, nor shall any such reduced speed limit be made applicable at times when the special conditions for which it is imposed cease to exist. Such reduced speed limits on streets which are state highways shall be subject to the written approval of the department of transportation before becoming effective.



Chain Law / Chain Up Tips

Commercial Vehicles operating on I-70 in either direction between mileposts 133 (Dotsero) and 259 (Morrison) from Sept. 1 to May 31 must carry sufficient chains at all times to be in compliance with the Colorado chain law.

Definitions

Under the Colorado chain law, a commercial vehicle is defined as being used in commerce to transport passengers or property and fitting into one of the following categories:

- Has a gross combination weight rating of 26,001 or more lbs. inclusive of a towed unit which has a gross vehicle weight rating of more than 10,000 lbs.
- Has a gross vehicle weight rating of 26,001 or more lbs.
- Is designed to transport 16 or more passengers, including the driver



Notification

When the chain law is in effect, drivers will be notified which vehicles must chain up and where by the following means: electronic message signs; 511 traveler information; www.cotrip.org; and media outlets.

Carrying Chains on I-70 (effective March 1, 2009)

Commercial vehicles operating on I-70 in either direction between mileposts 133 (Dotsero) and 259 (Morrison) from Sept. 1 to May 31 must carry sufficient chains at all times to be in compliance with the Colorado chain law.

Chaining Up

Metal chains must consist of two circular metal loops, one on each side of the tire, connected by not less than nine evenly-spaced chain loops across the tread. Commercial vehicles that have four or more drive wheels must chain four wheels. Dual tire chains are acceptable



Alternate Traction Devices (ATDs)

Approved ATDs in Colorado are wheel sanders, which must carry enough sand to get the vehicle through the restricted area; pneumatically driven chains, which spin under the drive wheels automatically as traction is lost; and textile traction device (TTD), a fabric boot which encompasses the tire. Currently, the only TTD that has been approved for use on Colorado state highways is the AutoSock.

Tire Cables

With only two exceptions, Colorado chain law rules do not permit tire cables as alternate traction devices. The exceptions are:

- 1) tire cables with high strength steel cross member rollers 0.415" or greater in diameter, which can be used on all commercial vehicles except single drive axle combinations; and
- 2) on a tandem power drive axle commercial vehicle, where any type of cable can be used only if there are chains on the two outside tires of one of the power drive axles and cables on two or more tires of the other power drive axle.

Chain Law Level 1

All single drive axle combination commercial vehicles must chain all four drive wheels; cables are not permitted as ATDs. All other commercial vehicles must have snow tires or chains. Level 1 may be implemented any time there is snow covering any part of the traveled portion of pavement on an ascending grade.

Chain Law Level 2

All commercial vehicles must chain up. Single drive axle and tandem drive axle combination commercial vehicles must chain four drive wheels. Autotransporters must comply to the extent possible without causing damage to hydraulic lines. Buses must chain two drive wheels to comply. Level 2 may be implemented any time there is snow covering the entire traveled portion of pavement on an ascending grade, or when driving conditions dictate that this level is necessary to protect safety and to minimize road closures.

I-70 Chain Up Stations

EB mileposts: 178, 183, 184 (shoulder), 187 (shoulder), 195, 203 (scenic area), 205, 219, 228, 241, 251, 289, 343.

WB mileposts: 358, 263, 260, 254 (Buffalo Overlook), 228, 223, 221, 219, 213, 197, 179.

I-25 Chain Up Stations

NB milepost 157

SB milepost 172.

Violations

The fine for not carrying chains on I-70 between mileposts 133 and 259 from Sept. 1 to May 31 is \$50 plus a \$17 surcharge.

Statewide, the fine for not chaining up when the chain law is in effect is \$500 plus a \$79 surcharge.

The fine for not chaining up and subsequently blocking the highway is \$1,000 plus a \$ 157 surcharge.

FAQs

Do trailers need to be chained up?

No. Chains are not required on trailers.

Must hazardous material tankers and transporters comply with the chain law?

Yes. Vehicles placarded for flammable, combustible, or explosive loads may pass the chain-up signs and install their chains where pavement is covered by snow or ice, at a safe location outside the traveled portion of the highway.

When can chains be removed?

Call *511 for current chain law status. The chain law will cease where bare descending pavement is encountered, and when electronic signs cease to display 'chain law in effect' information.



Tips from a CSP Captain for Truckers using the I-70 Mountain Corridor

Truck Escape Ramp Use

It is our practice not to take enforcement action for ramp use. Drivers should never attempt to back down and out of the ramps. We have had a few fatalities as a result of drivers trying to get out of the ramp. Some drivers have lost control while trying to back out of the ramp including rollovers and worse. Also, do not park directly or indirectly blocking the ramp.

Training in the mountains

I know of several instances where a trooper has stopped a commercial vehicle descending the tunnel grade or Vail Pass for a serious violation when the driver is in training and the trainer is asleep in the sleeper berth. Trainers should be fully engaged in training when driving through the corridor

Brake Management

Too often drivers descend steep grades on I 70 in the wrong gear and rely completely on brakes to slow them with the resultant blue cloud. I have heard an old adage that a commercial vehicle should be driven down the hill in the same gear as it went up the hill. Some training on the correct gear to use when traversing steep downhill portions is badly needed as a best practice.

Detours

I can tell you a story about a carrier from Alabama who took Highway 6 over Loveland Pass during a multi-day blizzard to avoid the chain restrictions on I 70. That turned out to be about a \$7,000.00 mistake. Detours, when to take them and when not to is certainly a best practices consideration. We are beginning to question rerouting commercial vehicles over Battle Mountain when I 70 westbound Vail Pass is closed.

Engine Retarder Mufflers

This is becoming an issue for the City of Georgetown and already is with Vail and other cities on the corridor. The need to have functioning engine brake mufflers is critical on the corridor.

Runaway Trucks

We have had some horrific situations because of driver's decisions when they have no functioning brakes.

We had a near fatal crash followed by the truck hitting a tree rather than the convenience store and propane tanks at the end of the Georgetown off-ramp. We have had drivers jump to their death from runaway trucks and their trucks rolled to a stop with very minor damage. In addition to the off-ramp at Georgetown described above, we have had truckers use the off-ramp at Silverthorne as a runaway truck ramp when school buses were driving by the intersection.

Drivers need to be told to always stay in their trucks and never use the off-ramps as a runaway ramp. This also goes back to brake management and gear use.

Chain up Procedures

Drivers should never personally occupy any travelled portion of the roadway to install chains. I have seen drivers on all fours in the middle of the right lane fiddling with chains with normal traffic flow occurring. Drivers should always take every precaution to protect themselves when installing chains. Safety should be paramount.

Road Closures

On long term closures, avoid parking in the traffic lane rather park on the shoulder or find emergency parking especially for closures of I 70 westbound at Copper Mountain. The Corn Lot is available for parking during longer duration incidents of I 70 WB at Copper Mountain.



“Safetyman’s Top Ten List of Safe Winter Driving Tips”

10. Check Under Your Hood

- Look at coolant levels, defroster, battery charge, wiper blades, washer fluid. Carry extra washer fluids to top off your reservoir as necessary. Keep your fuel tanks at least half full.

9. Inspect Your Truck

- Check your heater, exhaust system, tire inflation, and air hoses. Clear all light reflectors and conspicuity tape for increased visibility.

8. Shine Your Lights for Safety

- Turn on headlights for increased visibility for both you and other vehicles

7. Pack a Survival Kit

- Stash non-perishable food, water, warm clothing, blankets, triangles or flares, flashlight and batteries for emergency situations.

6. Solutions for Being “Stuck”

- Always carry chains, alternate traction devices, sand bags, broom, ice scraper, and a shovel. Know where the Chain Stations are located. Use *511 and CB Wizard.

5. Watch the Weather

- Look at the sky! Watch for cloud cover, rain & sleet forecasts. Listen to the weather channel and road condition reports. Snow & ice drifts can be deadly!

4. Road Check

- Watch for snow covered areas and wheel ruts. Overpasses, bridges and raised highways freeze faster than other areas. Shaded areas ice over quickly,

3. Traffic Counts!

- Four wheelers often overdrive conditions, watch for tourists in snowy areas, cars that have lost control, and those going too fast for conditions Don’t pass snow plows or sand trucks!

2. Drive Defensively

- Decrease speed, increase space (allow at least three times more space than usual between you and the vehicle in front of you), slow down, drive for the weather, not the speed limit

1. Know Your Limits

- Be aware of your route, and alternate routes that may be available. Know where you can park if necessary, avoid driving in storms if possible. Don’t drive while fatigued – everything gets compounded in bad weather!

Resource Guide

Colorado Department of Transportation

David Wieder	Maintenance & Operations Supervisor	303-512-5500
Dan Wells	Supervisor of Permits	303-757-9843
Teresa Carrillo	Pilot Car Program	303-757-9716

Colorado Department of Revenue

Kirstie Nixon	Director of Motor Carrier Services	303-205-5691
	Fuel Tax Section	303-205-8205
	Accident/Police Reports	303-205-5613
Steve Monson	CDL Program Manager	303-205-5829
Stuart Zion	IFTA (International Fuel Tax)	303-205-8205
Trish Aragon	IRP (International Registration Plan)	303-205-5602
	Sales Tax	303-205-2416
(IRS)	HVUT	800-829-4933

Colorado State Patrol

Motor Carrier Safety Office	303-273-1875
Hazardous Materials Office	303-273-1900
Colorado Bureau of Investigation	303-239-4201
Division of Criminal Justice	303-239-4442
Division of Fire Safety	720-852-6735

Department of Regulatory Agencies

Ron Jack	Section Chief – Transportation	303-894-2865
Cliff Hinson	Safety & Compliance	303-894-2904
Cathy Lopez	Unified Carrier Registration	303-894-2029

United States Government Agencies

Steve Kleszczynski	Director; FMCSA	720-963-3130
Harry Thomas	Federal Program Manager, FMCSA	720-963-3133

Information Lines

Weather Line – Forecast, Time & Temp.	303-337-2500
Road Conditions	303-639-1111
Road Construction	303-573-7623
State Patrol – General Information	303-239-4500

A Special Thanks to Our Best Practices Carriers

RAC Transport – Commerce City

HVH Transportation – Denver

Everist Materials - Silverthorne

Republic National Distributing Company - Littleton

CAST Transportation – Henderson

Shamrock Foods – Aurora

Mile Hi Foods – Denver

Credits

Colorado Department of Transportation – photos / graphs / charts

Art Ballah – interviews, photos and research

Cpt. Ron Prater, Colorado State Patrol – compilation of CO statutes & rules

Colorado State Patrol – data