



U.S. Department of Transportation
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OFFICE OF ANALYSIS, RESEARCH, AND TECHNOLOGY

Use of Skid Pad for Training Truck Drivers March 2, 2009

Webinar Transcript

Presenters

- Quon Kwan, Program Manager, FMCSA Office of Analysis, Research, and Technology (ART)

Speakers

- Phil Liggins, Coordinator, Lewis-Clark State College Motor Safety Training Center

Description:

FMCSA issued a grant to fund the development of a driving track known as a skid pad at the Lewis-Clark State College (LCSC) North Lewiston Training Facility in Idaho. The recently-completed skid pad—a paved surface for exercising driving maneuvers involving skidding, jack knifing, and other forms of loss of control of a vehicle—provides a cost-effective facility for hands-on training in accident avoidance maneuvers. In this webinar, Phil Liggins, coordinator of the LCSC Motor Safety Training Center, will present details about the safety training for bus and commercial motor vehicle drivers that this facility offers through controlled “adverse” weather situations, including ice and rain, as well as faulty braking systems, tire blowouts and anti-skid equipment failure. This is the only training facility of its type in the Northwest.

PRESENTATION—USE OF SKID PAD FOR TRAINING TRUCK DRIVERS**PRESENTATION TITLE SLIDE: USE OF SKID PAD FOR TRAINING TRUCK DRIVERS****Sarah (Operator):**

Welcome and thank you all for standing by. At this time all participants are in a listen-only mode until the question and answer session of today's conference. At that time you press *1 if you'd like to ask a question. I'd also like to inform parties that today's call is being recorded; if you have any objections you may disconnect at this time. I'd like to turn the call over to Miss Kirse Kelly. Thank you ma'am, you may begin.

[00:24]

Kirse Kelly (Web Conference Host, FMCSA ART):

Welcome. Thank you very much Sarah and thanks to all of you who are participating in our webinar on the FMCSA's sponsored project on the use of a Skid Pad for Training Truck Drivers, which is part of the series put on by the FMCSA Office of Analysis, Research and Technology. Now, as Sarah mentioned, time permitting all questions will be answered at the end of the call. You can submit questions in **Q&A Box** which is on the lower left side of your screen here. Throughout the presentation you can do that. At the end of the call you will be able to both submit questions online and ask questions over the phone line. Please note you'll also be able to download a copy of the presentation, or at least one of the presentations at the end of the webinar. We'll give you access to both of them on our website very soon after the webinar. If you have to leave early, you can return to this website at a later time and slides will be available or you can come to the FMCSA website anytime after tomorrow and they will be available for you. Members of the trade or local media who are participating today are asked to contact the FMCSA Office of Communications at 202-366-9999 at the conclusion of the webinar if you have any questions. I'll repeat that number for you at the end of the webinar. Finally, for anyone who might have a smaller screen and this virtual meeting room is on the upper left-hand side of your screen, you might want to try "Full Screen". That can be accessed by clicking on **Meeting** at the very top left side of your screen where you can choose **Manage My Settings** in the list and click on **Full Screen**. Now, I'm going to do a little housekeeping matters, items. I'll turn you over to Quon Kwan from FMCSA, Technology and he'll introduce our speaker.

Quon Kwan (Program Manager, FMCSA ART):

Good afternoon. I'm Quon Kwan. I'm the program manager for this project, the Skid Pad Project at Lewis-Clark State College. I work in the Technology Division of the Federal Motor Carrier Safety Administration, also known as FMCSA, part of the U.S. Department of Transportation. I'm going to make a five-minute introduction and then turn the program over to Phil Liggins, the Coordinator of the Motor Safety Training Center at Lewis-State College. The Skid Pad Project at Lewis-Clark State College has had a long history. It started in 2003 when FMCSA funded the project. This project has had to jump many hurdles, including locating a site, negotiating a lease-arrangement, getting Congressional to change the pavement form, and doing an environmental

assessment. I inherited this project from Jerry Robin in 2007 and it wasn't until last year that we started to see fruits coming from this project. I'm proud to say that the Skid Pad Project is one of the best uses of designated funds that not only I have ever managed, but also FMCSA has ever had. There's only a handful; maybe a half a dozen public skid pad training facilities in the United States. The skid pad facility at Lewis-Clark State College is the newest and the only skid pad facility in the Northwest. This skid pad facility will further FMCSA's mission of reducing crashes and fatalities by improving commercial driver safety training.

Now let me go over the agenda this afternoon for the program. Phil will give a PowerPoint presentation on the development of the skid pad facility, covering excavation and paving, the garage and fencing, the skid vehicle and skid technology. Phil will then give a second PowerPoint presentation on the driver training using the skid vehicle and skid pad. In this presentation, although you will see passenger cars, we ask you to imagine that the vehicles are commercial vehicles—that is over 10,000 pounds gross vehicle weight. Third, we will show a five-minute video of a skid vehicle operating and performing maneuvers on the skid pad. Fourth, we'll take questions and comments from the audience. Fifth and last, the audience will have an opportunity to evaluate the program today.

What I'd like to do is give you a little bit of background on Phil Liggins and then turn it over to him. Phil has had over 20 years in state law enforcement. He was formerly with the Washington State Patrol. He's had six years of truck driving experience; over 25 years experience in accident reconstruction. He was a guest instructor for law enforcement in collision and criminal investigations. He is a certified program planner. And last, currently he is Coordinator of the Motor Safety Training Center at Lewis-Clark State College. I will now turn the program over to Phil. Phil?

[6:22]

Phil Liggins (Coordinator, Motor Carrier Safety Training, Lewis-Clark State College):

I'd like to begin by welcoming everybody to today's presentation regarding the Lewis-Clark State College Skid Pad Project—soon to be known as the "Skid-Shop" at Lewis-Clark State College. I feel I need to tell everybody that this project was funded by the United States Department of Transportation, Federal Motor Carrier Safety Administration. As Quon said, he was our grant administrator and I would like to thank him because Quon was a great resource throughout this entire development process. Kirse Kelly with Research and Technology at FMCSA is today's presentation facilitator and host. With me in my office today are Rob Lohrmeyer, who's the Dean of Professional Technical Programs at Lewis-Clark State College and Linda Strickland, who is the Director of Workforce Training.

Today's presentation is actually going to be in three sections as Quon's alluded to. The first is a short segment on development. The second section is classroom curriculum. And the third section is a short video showing our skid truck going through some exercises on the skid pad.

Most of you don't want to hear this if you live on the East Coast, but in Lewiston, Idaho it's a beautiful 55 degree sunny day.

I'd like to take a minute to tell you a little about Lewis-Clark State College and our region. Lewis-Clark State College offers both two and four-year degree programs as well as non-credit programs. That's workforce training here. Our student enrollment is about 3600 students. LCSC has been ranked as one of the top colleges in the West and has an absolutely beautiful campus. I also need to mention that Lewis-Clark State College is the annual host of the NAI College World Series. Lewis-Clark State College is also located in the city of Lewiston, Idaho.

In case some of you don't know much about our region Lewiston, Idaho is located in north central Idaho. It lies on the border between Idaho and Washington. It is at the confluence of the Snake and Clearwater Rivers. It is a Mecca for outdoor recreation. To give you just a little more of a picture or so you can imagine exactly where we are, we are, about 40 miles to the north of us is Pullman, Washington where Washington State University is and also Moscow, Idaho where the University of Idaho resides. If you travel northwest from here about 90 miles you will go to Spokane, Washington and about a six hour drive south is Boise.

Why build a skid pad in Lewiston, Idaho you might ask? Lewiston lies in a river valley. Temperatures here are moderate and that includes in the wintertime. Most roadways here are two lane state highways. Leaving Lewiston to the northwest within ten minutes you rise from about 1000 feet in elevation to 3500 feet and in that ten-minute drive you can go from very moderate temperatures into real winter conditions; approximate 90 mile drive if you continue again to Spokane. If you drive south approximately 30 minutes you rise again to about 3500 feet and you get into real winter conditions again. That's called a Pat Camas Prairie area. If you head east along highway 12 towards Montana you are slowly along the Clearwater and Lochsa Rivers. There are no escape routes on these two-lane highways and these highways are quite hazardous during winter conditions. In our region we have a port of entry just outside of Lewiston. Approximately a quarter of a million commercial vehicles pass through that port of entry per year. Nearly everything in our region is moved by truck. That's a little bit of an introduction and a little travel log about our area.

Let's move to the presentation on development of the Skid Pad Project.

[10:44]

SLIDE 2: WORKFORCE TRAINING FACILITY

The skid pad project is housed within Workforce Training. This is a slide of our Workforce Training Facility. Workforce training will provide staffing and classrooms for our Skid Pad Project.

SLIDE 3: EXCAVATION AND PAVING

The first part of our development phase was excavation and paving.

SLIDE 4: PHASE 1: EXCAVATE AND PAVE EXISTING GRAVEL AREA

I do have a couple of slides here of the existing property prior to our paving project.

SLIDE 5: THE FOLLOWING SLIDES DEPICT THE AREA PRIOR TO PAVING

It was just a large four and a half acre parking lot next to the Workforce Training Facility. In the background you can kind of get an idea of what part of Lewiston looks like.

SLIDE 6: LOCATION FOR STAGING AREA AND GARAGE

Here's another slide of the parking lot area where we are going to pave the skid pad. This is looking back to the northwest. In describing the area in which we live, you see those, they're not mountains, but the hills to the northwest there. Those rise about 3500 feet from where I'm standing taking this picture, and it's about a ten minute drive up to Lewiston Grade. People in this region can be driving through the area where I am standing now, which is the Port of Lewiston, in ten minutes they can be up on that hill in some of the most treacherous weather conditions offered.

SLIDE 7: PERSPECTIVE OF THE AREA FROM SOUTHWEST CORNER OF PROPERTY

This is just another perspective of where we're going to build our skid pad from the southwest corner of the property. Again you can see those hills in the background—that would be in direction of Pullman and Moscow, Idaho.

SLIDE 8: ENGINEERS OBSERVING THE TEST PASS

This is our first test pass of paving our skid pad. The two gentlemen closest here are our engineers for the project. I would suggest if anyone builds a skid pad in the future that they use an engineering firm to help manage the project. It just helps everything go smoother than going on your own.

SLIDE 9: THE PROJECT USED LOCAL CONTRACTORS AND PROVIDED JOBS FOR THE VALLEY.

Our project used local contractors and provided jobs for the valley.

SLIDE 10: EXCAVATION AND PAVING TOOK LESS THAN ONE MONTH

Excavation and paving took less than a month. It went along very quickly.

[13:18]

SLIDE 11: SKID PAD PAVING COMPLETED

Here's a slide of our completed skid pad. The exercise area is actually 500 feet long by about 300 feet wide. In the foreground here we see the small pickup, that's our staging area and where later you'll see in the development part of this presentation, you'll see where we built our skid shop.

SLIDE 12: PHASE 2: SKID PAD GARAGE AND SECURITY FENCE

Phase two in our development was building a garage and a security fence.

SLIDE 13: POLE BUILDING DESIGN WITH ELECTRICAL CONDUITS

The design was a pole building with electrical conduits. The pole building fit well for our location. To be honest, it was the least expensive way to build.

SLIDE 14: LOCAL CONTRACTOR WAS AWARDED THE BID CONTRACT

A local contract was awarded the bid contract. As you can see here it's being framed.

SLIDE 15: MATERIALS PURCHASED FROM LOCAL SUPPLIERS

All materials were purchased from local suppliers. Almost all of the work and materials that we purchased for this project funds went locally.

SLIDE 16: PROJECT PROVIDED LABOR JOBS

Of course, this project provided much needed labor jobs for our region.

That's a photograph of the inside of our garage being built.

SLIDE 17: COMPLETED GARAGE IS 54×32 FEET

There's a photograph of our completed garage.

As you can see in this photograph what I was talking about earlier. If you look into the background there in those hills, this is the wintertime. As you can see down here in the valley we have no snow, but you can see that white on those peaks in the background. They're having serious winter at that time.

SLIDE 18: PERSPECTIVE FROM FRONT GATE TO SKID PAD

This is a perspective from our front gate. Just giving you another look at what are skid pad actually looks like.

[15:14]

SLIDE 19: PHASE 3: SKID TRUCK

Phase three was our skid truck specification and purchase.

SLIDE 20: SKID TRUCK WAS MANUFACTURED BY INTERNATIONAL CO.

International Company actually won the bid. When writing the specifications for this truck, I should add that we went to the Idaho Department of Transportation, who are experts at writing specifications for and purchasing trucks. They were a huge resource in the kind of truck that we needed as a classroom, and they helped me write the specifications. We got a very good platform from International Company.

SLIDE 21: INSTALLATION OF FLAT-BED

I threw a little slide in here of the installation of the flat-bed. The reason we went with the flat-bed configuration was so in the future, looking towards the future, if we ever go mobile with our training we can carry some of the training materials that we need and some of the equipment. This truck has also installed a standard towing mechanism and a gooseneck.

SLIDE 22: SKID TRUCK

Here's a photograph of our finished truck on the skid pad. I should mention that small building just behind the truck is our observation shack. It has a large picture window that faces the skid pad. We also installed a video monitor inside the observation shack and installed a video system in the cab of the truck so that observers, students and other people could actually stand inside the shack and see real-time training that's going on our skid pad or exercise area.

[17:14]

SLIDE 23: PHASE 4: TECHNOLOGY

Phase four was the development of the technology for the Skid Pad Project.

SLIDE 24: TECHNOLOGY INSTALLED TO THE TRUCK

Here's a slide showing the technology installed to the truck. This technology is actually the only technology of this type in the United States. It's actually manufactured in Sweden. They've been doing this for more than 20 years. SkidCar Systems of North America is the only distributor. As you can see, the frame of the technology actually go underneath the framework of the truck—this system works hydraulically and lifts the frame of the truck up, reducing the friction or traction or grip between the tires and the training surface or roadway. The front-end of this truck can be lifted or lowered in ten different variations, as can the back-end. With this technology we can place drivers in a front-skid situation or a rear-skid situation or we can set it up so that the front and the rear have equal grip or traction.

SLIDE 25: PHASE 4: TECHNOLOGY

There's another photograph of our skid truck

SLIDE 26: LEWIS-CLARK STATE COLLEGE INVESTED FUNDS TO EXPAND THE PROGRAM

The college at one point in our development decided they would invest their own funds to expand this program beyond the commercial side of training and into the more public side of training.

SLIDE 27: SKID SUV

The college purchased a SUV; in this case a Chevrolet Tahoe purchased the technology. Now with this vehicle we can offer training to the general public. Law enforcement will like training with this vehicle. We have in our region a large contingent of Forest Service people who drive SUVs and trucks when they go to work. Also, most people in this region have some kind of SUV or truck because of the weather conditions and hauling people around. This is going to be an excellent, excellent addition to our program. It makes us much more comprehensive.

SLIDE 28: THE LEWIS-CLARK STATE COLLEGE SKID FLEET

And here's our two-vehicle Lewis-Clark State College Skid Fleet.

[15:55]

Now Kirse this is the end of the development part of our presentation. Do you want to take questions if there are any at this point before we move on to the classroom curriculum?

Kirse Kelly:

No, why don't go ahead and move on to the training and just take questions at the end.

Phil Liggins:

Okay.

Phil:

While Kirse is bringing up our in-class PowerPoint presentation I'll start by saying that our training is two-part. We have approximately 30 to 40 minutes of classroom training. In that classroom training, we basically tell the students what we are going to be doing out on the skid pad. We talk about grip. We talk about proactive driving. We talk about the different types of common skids that people get into. We talk about drivers being proactive drivers rather than reactive drivers—because this training is all about preventing skids instead of reacting and getting themselves into the recovery mode. What we do in the classroom really gets validated what we do out on the skid pad. It is on the skid pad where students really learn about grip; really learn about traction.

[21:27]

PRESENTATION TITLE SLIDE: USE OF SKID PAD FOR TRAINING TRUCK DRIVERS**SLIDE 2: DRIVER DEVELOPMENT COURSE**

As I was saying before, our in-class portion of our training is really a driver development course. We say that achieving accountability through advanced understanding and techniques, with emphasis on advanced understanding, so people don't have to use superior skills when they encounter a very stressful driving situation.

SLIDE 3: OUR GOAL

Our goal is to help people to become more proactive drivers; to develop advanced insight as a driver. A proactive driver is defined as a one who uses superior knowledge to avoid situations that require superior skill. In other words, we want people to think more about their driving so that they can do less. In other words, not have to react to an out of control situation and have to recover.

SLIDE 4: EYESIGHT IS DIMINISHED IN STRESSFUL SITUATIONS

We believe that the driver is accountable for the assumed risk of a decision. I think we would all agree that anytime we get behind the wheel, we take an assumed risk. That assumed risk is something I believe most Americans take for granted because they really have no training, formal training after they leave driver's education. Everything after that is just based on their own experience.

Driving decisions start with the driver's eyes. Information through the eyes is combined with insight, which we discussed on the last slide, gained from previous experiences and/or training

and the resulting motor skill is used by the driver. Of course the motor skills are steering, braking, accelerating, and decelerating. These decisions cause weight shift, grip to change, and affect the vehicle stability.

Eyesight is diminished during stressful situations. This couldn't be more true. I'm going to give you an example. During stressful situations I think most people would say that all our senses are heightened, which is probably true. Your eyesight is diminished because of that stressful situation. What happens is people get tunnel vision and I'll give you an example of that. When I was in law enforcement in about 1979-1980, I graduated from the state patrol academy and went on my coaching trip, which is about a six-week long trip where I have an experienced trooper who rides with me to help me learn about doing my job. Shortly into that coaching trip I got into a 10 or 15-minute vehicle pursuit, high speeds, two land roads in rural Washington. During that pursuit we again had high speeds, we ran stop signs and we ran traffic lights and we cut corners. At the end of that vehicular pursuit, the suspect crashed—had a minor crash—didn't get hurt. We took him into custody; of course it was a drunk driver. After we processed him into jail it was time to write reports, and my coach asked me a series of questions. He asked me what kinds of speeds were involved in this pursuit.

I looked at him and said, "Yeah, they were really fast."

He said, "How fast?"

I said, "I have no idea." So, he had to tell me.

He then asked me how many stop signs we ran. Of course I said, "Yeah I remember running some stop signs."

He goes, "How many?"

I said, "I have no idea."

He asked me about how many times the suspect traveled in dangerous situations such as curves in an oncoming lane, and I said, "Yeah, I remember that, but I can't tell you how many times."

He went on a series of questions that I could not answer. What I learned at that time was that even though I had really heightened senses, the only thing I saw during the pursuit was the backend of that car I was pursuing. I knew I was driving fast, I knew we'd ran some stop signs, but I wasn't counting, I wasn't observing the whole situation that we were in. I couldn't even tell him much about other characteristics. Even though I had heightened senses, I got tunnel vision.

During my time as a supervisor I investigated a lot of traffic collisions involving high-speed chases and, when I would interview the law enforcement driver, especially the young ones, the young and inexperienced ones, they couldn't tell me a lot about a lot of things. It's very, very true that under stressful situations eyesight is diminished—tunnel vision.

SLIDE 5: OUR MODEL

Our model is the stable platform concept of driving. It has basically two parts. The most important part is mental—how your decision will affect or your change your grip. The other part is physical, which is vehicle dynamics and how to manage them.

[27:07]

SLIDE 6: VEHICLE DYNAMICS: *HOW WEIGHT TRANSFER AFFECTS GRIP*

We'll talk to our students about vehicle dynamics first. Here's a photograph of a skid car system.

SLIDE 7: STABLE PLATFORM

This slide shows the vehicle is a stable platform supported by the four tires. The physical starting point for grip is literally where the rubber meets the road. As you can see in this slide, your stable platform is your four tires. You see the top arrow that points down that represents gravity. So, grip equals traction equals stability equals control and equals safety. It doesn't matter whether we're talking about driving a car, an SUV or a truck. The scientific laws that affect us on the roadway all remain the same.

SLIDE 8: CONTACT PATCH

Where the tire meets the road is called contact patch. It's about the size of the palm of your hand. This is a fact: two people standing toe to toe have more surface area in contact with the ground than a 4000-pound car.

SLIDE 9: VEHICLE CONTROLS

Using the vehicles controls not only changes speed and direction, they also control the amount of weight on each of these contact patches.

In this photograph you see I believe some kind of a sports car, a Lamborghini that was donated to a law enforcement agency in Europe. They don't actually use this, I understand, on the roadways, but it's used for driver's education in the schools. Kind of a neat little car though.

SLIDE 10: VEHICLE WEIGHT

When the vehicle is at rest, the vehicle's weight is mostly evenly distributed and is most stable. This is also true of a vehicle moving at a constant speed in a straight line. For those of you that are accident re-constructionists, engineers or scientists that's part of Newton's First Law of Motion. Letting off of the gas or applying the brakes moves weight to the front of the vehicle.

SLIDE 11: EFFECT ON THE CONTACT PATCH

On the left-hand side of the slide here you see the normal grip, evenly distributed weight on all four tires. On the right-hand side you see grip under braking. You see the front tires still have the weight evenly distributed and the rear tires actually lose some contact with the roadway.

SLIDE 12: EFFECT ON THE CONTACT PATCH

Releasing the brakes or applying the gas moves weight to the rear of the vehicle.

SLIDE 13: EFFECT ON THE CONTACT PATCH

This is another slide; in this situation it shows normal grip on the left-hand side. On the right-hand side you see grip under acceleration. For acceleration now you have normal grip to the rear tires and you have less grip to the front tires.

SLIDE 14: GRIP IN THE CORNER

This is a great slide on weight shift. It talks about changing direction shifts weight from side to side and slightly forward. This is obviously a law enforcement vehicle going through an EVOC course. From this corner you can look at this vehicle and can actually see the weight shift. As you can see the grip in the corner, the most grip now because of weight shift is the passenger side front tire. The least grip is the driver's side rear tire. The other two tires have about the same amount of grip.

SLIDE 15: GRIP IN THE CORNER

Anytime the contact patch is turned you have less grip. When you are driving forward your front tires are rolling which gives you the most grip. As you turn those front tires or wheels you reduce the grip. If you forward accentuate that turn, you can actually go into a slide with the front tires.

SLIDE 16: DECISIONS EFFECT GRIP

Then we talk about how our decisions affect grip. Again, there's a photograph of our skid truck.

SLIDE 17: GOOD INFORMATION

Good information is essential to making good driver decisions. The only information you can trust comes from the three most important senses for driving: your sight, your touch and sound.

SLIDE 18: LINE OF SIGHT

The largest percentage of your good information is from sight. Drivers' decisions are based upon information obtained with their eyes. Eyesight is diminished during stressful situations, as we talked about. Sight lines or line of sight should be established as far as the environment will allow. Drivers need to look far ahead so they can see and anticipate possible hazards rather than just looking over out the windshield over the front of their car or truck. Sight lines include activity near peripheral vision—very important. The issue is simple. You should always be able to stop within your line of sight.

[32:40]

SLIDE 19: LIFE EXPECTANCY

Your life expectancy or your future is based on what you see. Let us ask you these questions:

Do you tailgate? When you tailgate you decrease your stopping distance.

SLIDE 20: REDUCED VISIBILITY

Do you pass in areas of reduced visibility?

SLIDE 21: OVERDRIVING HEADLIGHTS

Here's the one that we all do. Do you ever overdrive your headlights? At night, at 65 miles an hour on low beam, we're all overdriving our headlights, and we have to be very careful about that.

SLIDE 22: TOUCH IS ESSENTIAL TO MAKE GOOD DECISIONS

Touch is essential to making good decisions. Touch accounts for a smaller percent of driver input than eyesight. Touch validates information expected in the brain. The caution here is that once you feel something that is happening when you're driving, it's already occurred. When you feel it, let's say you're on ice or snow, when you feel that it's slick you are now in the recovery mode. Of course, increased G-force increases risk of losing grip.

SLIDE 23: SOUND (HEARING) IS ESSENTIAL TO MAKE GOOD DECISIONS

Sound or hearing is essential to making good decisions. Listen to the sound between the driving surface and the tires. Be aware of changes in road surface noise. As frequency or pitch increases, your grip decreases.

SLIDE 24: BRAKING DECISIONS

Braking decisions—long braking, where you brake sooner with less pressure, helps to maintain stability rather than dynamiting your brakes. Apply the brakes sooner and longer with less overall pressure. The chassis will stay more squarely loaded and is therefore more stable. Panic braking to slow or stop occurs when a driver's surprised. For example, driving down a two-lane rural road and a deer jumps out in front of you.

Anti-lock or ABS braking, if vehicle is equipped, assists in maintaining directional control under emergency braking conditions. In our training, we get out on the skid pad we actually validate these anti-lock or ABS braking systems. We do some exercises—straight line ABS braking and a steer maneuver. The reason we do this is because most vehicles today are equipped of course with anti-lock or ABS braking. Most people have never really experienced a situation where they had to use them. Or if they have, they felt the ABS, they could hear the ABS and they really don't know what was going on. In our training, we put them through some ABS exercises so they could feel it, they could hear it, so they can learn that with ABS they can brake, and with ABS they can also brake and have some steer ability.

[35:42]

SLIDE 25: THE PRO-ACTIVE DRIVING LINE

Then we talk about proactive driving line. In this photograph you see a road that is similar to what we have out here, but you can see a “curve ahead” sign and it is a blind corner. We talk about the proactive drive line and how people should approach this type of situation, of course, which is to slow down and be prepared. Not only do you have to manage your own lane of stability, but you have to anticipate what you can't see. That is past the top of this hill and a curve to the right. You don't know what may be there. There may be a vehicle stopped in the middle of the road. There may be an animal in the road. There may be a bicyclist. There may be a traffic accident there or there may be a vehicle coming in the opposite direction that is in your lane.

SLIDE 26: CORNERS

You have to approach and enter a corner at a speed you are certain you can safely exit the corner. You must maintain control in your lane. That's really the key, especially in the kind of environment we have here in our region, with most of the roadways being two-lane roadways. You must be able to steer, slow down and stop and maintain stability within your own lane. You must be able to stop within your line of sight.

SLIDE 27: VISION, TRAINING AND EXPERIENCE

Here is another photograph that is probably representative of a lot of regions. This is a fairly complex driving maneuver. You have three curves. The last curve you can't see the end of it—it goes around the corner. As you get into this curve you can see that there's not many escape

routes either. If you look closely in the lane on the right you can see the skid marks leaving the road from someone else that had a problem on this road. Also, on the left-hand lane, you can see another set of skid marks.

Factors to consider: quality and length of line of sight, and the condition of the road surface. Your vision allows you to consider all those variables. Your training and experience help you to select the best path.

SLIDE 28: THE EXIT

The exit begins as you straighten the wheel. The exit is the most dangerous part of the turn. Limited lines of sight and mistakes made during the approach in the entry to the turn lead to crashes in the final part of the turn.

SLIDE 29: CORNER SUCCESS OR FAILURE

Here's a couple of roadways that also show what we've been talking about.

Note the blind corners and the lack of shoulders.

SLIDE 30: THE PRO-ACTIVE DRIVING LINE WORKS . . .

Here's another photograph that's very representative of a lot of the parts of our region—another two-lane roadway. It doesn't even have a center line. As you can see, there are no escape routes. As you approach this corner, you would want to make sure that you were staying as far outside as possible, because you have no idea what's coming in the other direction.

SLIDE 31: TURNING EARLY

Turning early reduces your line of sight. As you can see with the arrow, in this particular roadway if you hug that inside fog line rather than stay in the middle of the lane or go outside, you're actually negotiating this curve with reduced visibility.

SLIDE 32: VIEW OF EXIT

This is the view of the exit of this curve when this vehicle is on the red path in the previous photograph. The exit is still visually blocked.

SLIDE 33: WIDE RADIUS

Here's a photograph of the same curve using a wide radius.

SLIDE 34: MAINTAINING WIDE RADIUS UNTIL THE EXIT IS VISUALLY IDENTIFIED

Maintaining that wide radius until the exit is visually identified, now you can see actually a road sign where you couldn't see it with an early entry.

SLIDE 35: WIDE RADIUS—BICYCLIST

Continuous wide radius allows the driver identify the bicyclist early and exit in a straight line with no conflicts. You can also look at this photograph—there were some—a couple of people—that did have some conflicts and you can see their skid marks there to prove it.

[40:09]

SLIDE 36: THE BOTTOM LINE

The bottom line is no matter what path you drive or how great of a driver you are, if you go too fast for the conditions you will crash. In this slide, this is an EVOC course, this particular officer lost grip, lost traction and had a little minor collision.

SLIDE 37: SKIDS

Now we talk to our students, the drivers about the different types of skids.

SLIDE 38: FRONT WHEEL SKIDS

We talk to them about front-wheel skids. The basic definition is when a driver—when the vehicle doesn't steer as sharp as you would like it. Terms such as plowing, pushing, or tight also describe this loss of front-wheel grip.

SLIDE 39: FRONT WHEEL SKID CAUSES

The causes for front-wheel skids are:

- Improper weight on the front wheels—could be too much or too little,
- Brakes released too quickly,
- Steering-wheel turned too quickly or too far causing diminished grip, or
- Driving too fast—too much weight being carried for the grip levels and speed of the vehicle.

SLIDE 40: FRONT -WHEEL SKID CURES

Cures for front-wheel skids are to:

- Straighten the wheel for maximum efficiency of grip;
- Move weight using vehicle controls;

- Look in the direction you want to go and steer in that direction.

SLIDE 41: CRASH MANAGEMENT

Or stop before you leave the road. If you brake to slow down to stop, the steering wheel must be pointed straight. This really gets validated when our students go on to the skid pad where they get into a skid and they find out if they straighten the wheel and get off of the brakes just a little bit, they regain grip or traction. This of course is crash management.

SLIDE 42: REAR-WHEEL SKIDS

Rear-wheel skids—when the vehicle steers sharper than you would like. Terms such as loose or fish-tail and power-slide describe this loss of rear-wheel grip.

SLIDE 43: REAR-WHEEL SKID CAUSES

Causes are too much braking, too much gas, or most often too much steering. That's another issue that we will deal with our students. They learn that when you turn that steering wheel too much, even if you are not on the brakes, you can go into a slide. You have to get those wheels turned straight to regain your grip.

SLIDE 44: REAR-WHEEL SKID CURES

Straighten the steering wheel first, look in the direction you want to go, and steer in that direction. These are some of the cures. For a braking rear-wheel skid move weight to the rear using vehicle controls to enhance rear-wheel grip. For an over-acceleration skid ease off the throttle to gain grip.

Note: If you use the gas to accelerate, steering wheel again must be pointed straight.

SLIDE 45: ONE SKID AT A TIME

Remember, one skid at a time. Correct one skid before moving to the other. The second skid is always the driver's fault.

Again, because of my years in law enforcement, I can always use myself as the worst example. When I was working as a Sergeant in Seattle, it was a wet late night, I was coming around one of those clover leafs and I got into a rear skid. The rear of my patrol car started coming out. I corrected that skid, which put me into a second skid. I corrected that one which put me into a third skid. By that time, time ran out and I went sideways into a concrete barrier. I know full well what happens when you correct the first skid and go into two or even a third. Yes, it was my fault.

SLIDE 46: WHAT WE WILL BE DOING . . .

Then we'll talk to the students about what we will be doing when we take them out on the skid pad to validate what they've learned in the classroom. We will tell them that they will be behind the controls of the vehicle; that I, the instructor, will adjust the skid car mechanism to duplicate stressful situations where it will be possible you to lose control. I will not adjust the grip without warning you beforehand. You will not be surprised.

SLIDE 47: EMERGENCY BUTTON

I will show them that there is an emergency button. I will suggest to them that when I say brake, I do mean brake. I will be holding the control box that you see here. This is actually the inside of our skid truck. I'll be holding the control box only in case it becomes necessary to return full grip back to the vehicle for safety, and that red vehicle does just that. If we're running through an exercise, if someone gets out of control, I can tell them to brake, push the red button and return them to full traction for safety reasons.

SLIDE 48: WHAT WE WILL BE DOING . . .

What we will be doing as you drive, we will analyze how you got into a skid. When they get into a skid, my instructors will talk to them about how they got into it and what are the cures for that skid. This will help them to develop insight to avoid the skid in the first place and to manage skids that do occur. Remember, think more, do less.

SLIDE 49: DRIVER DEVELOPMENT COURSE

Okay, Kirse. That is the end of our classroom presentation. We would like to show the folks the video of our skid truck.

[45:50]

Kirse Kelly:

Okay. We'll go ahead and put that video right up there. Thank you very much, Phil.

Phil Liggins:

Oh, my pleasure. Thank you.

Kirse Kelly:

Great, here's the video—it's loading. Do you have an introduction or do you want me to start it?

Phil Liggins:

This demonstration is a video of our skid truck on the skid pad. This was made during our instructor training. The gentleman behind the wheel that you will hear talking is Dane Pitarresi. He was our instructor from SkidCar.

Please note, the demonstration video has not been included in this recording.

Why don't we switch over to questions and maybe can you just explain sort of what was going on in the video for those that didn't see it or hear it.

Phil Liggins:

Yeah, this was just Dane putting myself and one of the other instructor students—showing us what the platform can do. We went through some ABS exercises that I talked about in the presentation. The ABS exercises were outstanding. He went through a front-wheel skid and a rear-wheel skid and talked about those things, and talked about maintaining a stable platform.

Some of the people wrote in here in the questions, that the video worked fine for them. Maybe it was just my end.

[47:30]

QUESTIONS AND ANSWERS

Kirse Kelly: Are there any questions that people had out there? We'll go ahead and switch over to questions. If you want to ask a question, you can submit them in the **Q&A Box** which is on the left side of your screen. To ask questions over the phone, you just need to hit *1. You'll state your name to the recorded message. When your line is opened, our phone operator will announce you by name. Please state your name clearly for proper pronunciation. Questions will be answered in the order that they are received. As mentioned at the beginning of the call, please note that you will be given an opportunity to download a copy of the presentation at the end of the webinar or to return to our website tomorrow for the second presentation. If you have to leave early, once again, you can return to this website or the FMCSA website.

It looks like we have a question here.

Ronald

Skudlarek: *What is the cost for using the skid pad, Phil?*

Phil Liggins: For our skid car program, about \$119 a session, per person; for our skid truck program, about \$149 per session.

Konstantin Sizov: *Have you tried to measure the efficacy of the training?*

Phil Liggins: We just completed development. We'll actually be starting with the public here in about 30 days. With our program, we don't have anything to measure that with as of today. During research for development of this project, I spoke with skid car users, some of them across the country and in the eastern part of the United States there's one company that has both a skid car and skid truck program. They have seen very successful deductions in accidents for some of the corporate people who have taken the skid truck training.

Guest: *How long is a training session?*

Phil Liggins: That depends on the number of people in the session. Including the classroom, it can be anywhere from two and a half hours to four hours.

FMCSA Host: *Is it a single session? Or are some of them a day session? Or are some of them do a four-week long course or things like that?*

Phil Liggins: The basic session that we offer—like I said, it depends on the number of people in the session. The maximum number of people that can go in a car at a time is four students. The basic that we'll offer is again a two and a half to four hour session depending on the numbers. We'll also, will have sessions that will go longer and those are contracted sessions. A good example is law enforcement agencies. Law enforcement has been using the skid car for some time. Here in Idaho, southern Idaho, the Idaho Post, where they train the officers; they have a skid program. Their sessions are much longer because they have a different curriculum and understandably because they are EVOC people, emergency responders. Their training in skid car is much longer. What we'll do with those people that want to use our facility, they can use their own curriculum. If they want to use our facility and want to use our cars they will be able to do so or they can bring their own. I guess you would call that customized training. We have a basic training course and then we have customized to meet whoever our client's needs are.

FMCSA Host: *With the basic training, is that for just the ordinary driver pretty much then?*

Phil Liggins: Yeah. The basic curriculum will meet the needs of anyone in community or the region who is like ourselves; moms and dads and young people in drivers' ed. It would be a very good program for Department of Transportation with their snow plows. It'll meet those needs.

[52:10]

Guest: *The video showed a dry pad, does it get watered down or iced over?*

Phil Liggins: No. That's really the beauty of having a skid pad with this technology over having—I'll call it the older skid-pan system, where you did not use any kind of technology. You were doing exercises on a flooded surface. With the old skid pan and the use of water you were limited as to the kind of exercises that

you could do. Most of those exercises were in a straight line, and most of those exercises were not proactive or preventative. They were reactive and recovery. In this program we're trying to train people how to prevent skids. Also, with the old skid pans you had a problem with your water systems. You had to develop a big water system and you had the environmental problem with what to do with all that water. With our system you don't have any of those.

Leigh Merino: *Is the program only for driver training? Can the pad be made available to companies such as brake manufacturers for testing?*

Phil Liggins: Absolutely. In this program we have designed it so that we could actually have a facility usage. You just gave one example. There are a lot of motorcycle training courses around our region that have been talking to us about possibly doing training here. I hope to have the RV people, the RV societies here to do some training. As I said before, law enforcement is interested in coming here and training, as are fire departments, the Department of Transportation. Anyone who can use this facility and this piece of pavement we have here to do driver safety training, even if they don't use our skid car or skid truck is welcome.

Kirse Kelly: Great. Are there any questions on the phone lines?

Sarah: We are currently showing no questions from the line. Again, just a reminder, it is *1 if you would like to ask a question.

Kirse Kelly: Okay.

Victoria
Chapman: Kirse, I have a question.

Kirse Kelly: Yes?

**Victoria
Chapman:** *How much land is needed for a Skid Pad Project? Is there an ideal number of acres?*

Phil Liggins: As you see, we have a skid car and a skid truck. The skid truck takes more room. Our skid pad is about four and a half acres, and it is sufficient for what we are doing. There are a lot of skid pad projects—I won't call them skid pad projects, I'll call them skid car projects—around the country who have the technology and the platforms you've seen, but they don't actually have a skid pad. They rent out sections of airports or parking lots, so it really limits them. I would say if someone is going to build a skid pad for what we're doing, no less than four and a half to five acres.

**Victoria
Chapman:** *Thank you.*

Quon Kwan: *Phil, this is Quon. Could you tell us what the Europeans are doing with skid pad technology?*

Phil Liggins: You know Quon I can tell you what they are doing in general, but if Dane is on the line he's really the person to talk to about that. He's been in the skid car business for 20 years; he has trained and delivered skid cars all over the world. Dane, are you on the line?

Dane Pitarresi: I am.

Phil: Did you get the question?

Dane Pitarresi: I did.

Kirse Kelly: Could you introduce yourself?

Dane Pitarresi: Yes. My name is Dane Pitarresi. I'm the owner of SkidCar System Incorporated in the U.S. SkidCar System is the North and South American distributor for the technology that's built out of Sweden.

[56:34]

The history of using the SkidCar technology actually goes back to 1985 or 1986, where in Europe skid pan training was mandatory. This type of training was used to train drivers in how to correct for skids once they got in them. The classic way to do that was with a wet skid pan. With the advent of the skid car technology, they could get rid of the—well kind of the ecological nightmare of a skid pan and use the skid car frames to raise the vehicle from the ground to decrease grip. What the Europeans have been so good at, and what we have been watching happening for the last 20 years that we've been involved, is that they've gone from actually training skid control to skid prevention. Through the use of this technology, they've been able to use or utilize teaching drivers the thought process of keeping out of that skid or keeping out of that dangerous situation in the first place by showing them actually how they're not very good at skidding. If you don't practice skidding all the time it's going to be a perishable skill or a lot worse that people know so well about. We know it too. We always—the first time, when the first snows arrive, we're always out there at least the most experienced of us go out, we kind of try to see how slick it is. We kind of get our feet wet a little bit—I guess you can take it that way of practicing a little bit. What the skid cars do is allow drivers to practice this in an environment where they're not going to either hurt themselves, hurt other drivers on the roadway, or damage their cars or someone else's property. The skid cars have been used really to increase the thought process of how to drive correctly and how to drive safely. Rather than waiting to get into a situation, we're trying to teach drivers how to stay out of it in the first place.

Kirse Kelly: Thanks.

Dane Pitarresi: Does that answer your question?

Quon Kwan: *I just want to continue with that thought a little bit further. Is there any requirement in getting a driver's license in Europe that involves requiring some kind of skid training?*

Dane Pitarresi: Yes. In Scandinavia, if you take a driver course, you actually have to take a course in a skid car as part of that curriculum. In fact, in Europe today they're just rolling out regulations for driver training that will have to be implemented and then have to be retrained; I believe it's every three or four years for truck drivers, bus drivers and heavy equipment operators. I'm not sure on the timing of this, but I do believe every three to four years those truck drivers and heavy equipment operators and bus drivers will have to have continuing education and part of that continuing education will be on a skid pan—skid pad.

Quon Kwan: Thanks Dane, that's good for us to know.

Kirse Kelly: Are there any questions on the line right now Sarah?

Sarah: We're currently showing no questions from the phone lines.

Kirse Kelly: Okay. We don't have any typed in right now. Do you have any other comments that you would like to make, Phil? Before we move on to evaluations?

Phil Liggins: No Kirse. I would just like to thank you and Quon and everybody that participated in this webinar today. Also Dane Pitarresi, you heard at the end, you saw for yourself by the way he answered the question, he has an enormous wealth of information in what we're doing here.

[1:01:00]

Kirse Kelly: Thank you, Phil.

Quon Kwan: Thank you all of you at Lewis-Clark State College for putting on and giving the presentations.

Kirse Kelly: This concludes the presentation of our webinar. Before you sign off we just want to ask you to please complete the evaluation you see here on your screens. We welcome all your comments about this webinar and your suggestions for the future webinars. If you want more information on this topic or others please let us know. We need you to simply type comments in the space at the bottom of this pod and click on the return arrow. Those comments submitted can be viewed by all of the participants in the meeting room. If you would like to remain anonymous just click on **Everyone** and choose **FMCSA Host** and that's in the spot where it says do you have any suggestions for future webinars. You can download a PDF version of the first

presentation, Skid Pad Development, at this time. Simply, highlight the document in the download presentation pod and click **Save to My Computer**. The other presentation as well as the video will be available on our website at *fmcsa.dot.gov/art*. That should be available by tomorrow or at the latest, Wednesday. As a reminder, members of the trade or local media participating in today's webinar should contact the FMCSA office of communications at 202-366-9999 if you have any questions. Our next webinar will be just a week or two away, you will be given information on that webinar next week. If you can contact me if you are not on our list, feel free to do so. My address is Kirse.Kelly@dot.gov. If you are not on our mailing list at this time, please just send me an email and I will put you on our list. Thank you very much for participating. Those of you who are on open lines, please stay on, the rest of you thanks again and have a good afternoon, bye.

Sarah: That does conclude today's conference. Thank you all for participating. You may disconnect at this time.

[1:04:03]