

NOTE: Reading this PDF course book is not a substitute for completing the Self-Paced Online training portion of this course. This PDF course book is a resource that accompanies the online training.



B5

TRADITIONAL INSERT CAR SAFETY

Slide 1 - Welcome

The slide features a blue header with the 'CS CONTRACT SERVICES' logo on the left. Below the logo, text reads: 'Presented by Contract Services', 'As part of the Safety Pass Training Program for the Motion Picture and Television Industry'. The main image shows a silver pickup truck with a trailer carrying a silver sedan. A white notification box in the top right of the image says: 'YOU SHOULD BE HEARING NARRATION NOW. If not, check your volume, mute, and/or auto-play settings.' At the bottom, a blue box contains the text 'B5' in white, followed by 'TRADITIONAL INSERT CAR SAFETY' in large black letters. A small copyright notice '© 2025 Contract Services. All Rights Reserved.' is at the bottom left.

Presented by
Contract Services

As part of the
Safety Pass Training
Program for the
Motion Picture and
Television Industry

YOU SHOULD BE HEARING NARRATION NOW.
If not, check your volume, mute, and/or auto-play settings.

B5 **TRADITIONAL
INSERT CAR SAFETY**

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Hello, and welcome to course B5, *Traditional Insert Car Safety*.

This 90-minute course is part of the Safety Pass training program for the motion picture and television industry; it is presented to you by the Contract Services Administration Training Trust Fund.

When you reach the end of the presentation, you will be directed to a test. You must score at least 70 percent to successfully complete the course.

If you're ready to begin, click START.

Slide 2 - Navigation and Resources



At any time during the presentation, you can use the buttons on the side of the player window to view the Table of Contents, open the course book PDF, link to course references and resources, get technical support or help from an instructor about course content, and control the player.

When you're ready to continue, select the NEXT arrow.

Slide 3 - IIPP

Injury and Illness Prevention Program

This course is part of your employer’s safety program.

In the state of California, this is known as an Injury and Illness Prevention Program (IIPP).

The IIPP and Safety Pass training courses are part of your employer’s safety program.

- 1**
It’s your personal responsibility.
- 2**
It’s the law.
- 3**
It’s an industry requirement.

This course is part of your employer’s safety program.

In the state of California, this is known as an Injury and Illness Prevention Program (IIPP). The IIPP and Safety Pass training courses are part of your employer’s safety program.

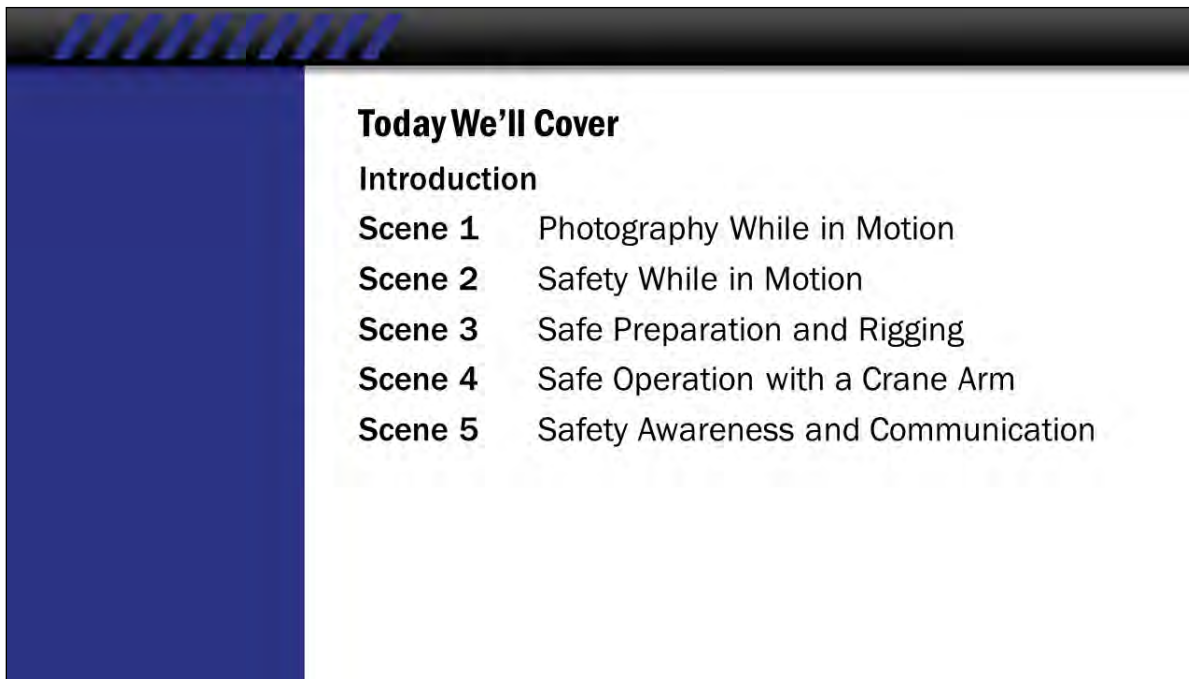
There are three reasons to get safety training.

First, you are personally responsible for your safety. You owe it to yourself and to your coworkers to avoid accidents and injury. The way you make a living and your quality of life depend on it.

Second, it is the law. Occupational safety and health standards guarantee the right to a safe workplace and require employers to train their employees in safety.

And third, the industry requires it. This course is part of a cooperative commitment between major motion picture and television studios and industry labor unions to deliver safety training.

Slide 4 - Today We'll Cover



Today We'll Cover

Introduction

- Scene 1** Photography While in Motion
- Scene 2** Safety While in Motion
- Scene 3** Safe Preparation and Rigging
- Scene 4** Safe Operation with a Crane Arm
- Scene 5** Safety Awareness and Communication

In this course, we are going to cover general safety rules for filming from a traditional insert car.

We'll look at the various options for capturing moving shots using vehicles.

We'll discuss precautions that need to be used when working in roadways and around vehicles in motion.

We'll review prepping and rigging.

We'll discuss safety considerations when using a camera crane on an insert car, and we will finish up with a discussion of safety awareness and communication during insert car operations.

Slide 5 - Introduction



Introduction.

Slide 6 - Insert Car/Camera Car

Introduction

Insert Car/Camera Car

Capabilities:

- ▶ Mounting cameras
- ▶ Mounting crane arms
- ▶ Mounting lighting equipment
- ▶ Providing secure seating for limited crew
- ▶ Towing a picture vehicle or process trailer



A traditional insert car, commonly known as a camera car, has a truck chassis with a bed or deck designed for the purpose of mounting cameras, lighting equipment, and for carrying a limited crew to operate the equipment.

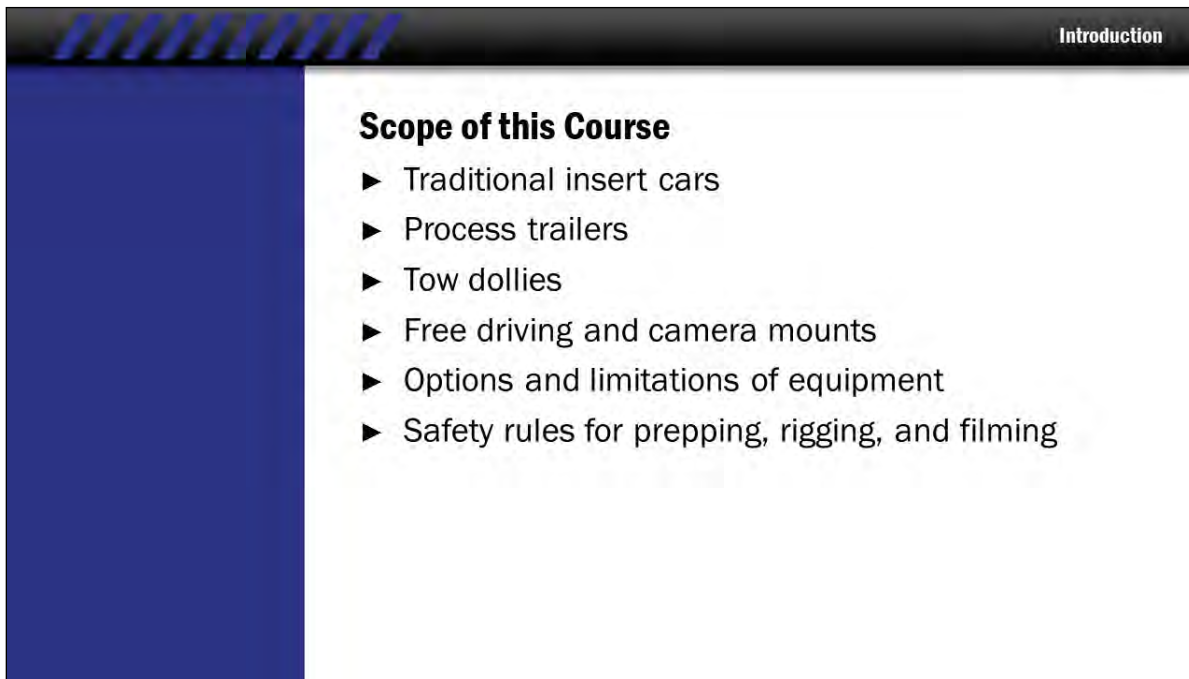
An insert car may also be used to tow a picture vehicle or process trailer.

The term *camera car* refers to any purpose-built vehicle used for filming vehicles and fast tracking shots.

In this course we'll use the term *traditional insert cars* to refer to camera cars like the one shown here, as opposed to other more specialized types of camera cars.

Another term we'll be using a lot is *picture car* (or *picture vehicle*). A picture car is the vehicle being photographed.

Slide 7 - Scope of this Course

A presentation slide titled "Introduction" in the top right corner. The slide has a dark blue header with a diagonal striped pattern on the left. The main content area is white with a dark blue vertical bar on the left. The title "Scope of this Course" is in bold. Below it is a bulleted list of six items: Traditional insert cars, Process trailers, Tow dollies, Free driving and camera mounts, Options and limitations of equipment, and Safety rules for prepping, rigging, and filming.

Introduction

Scope of this Course

- ▶ Traditional insert cars
- ▶ Process trailers
- ▶ Tow dollies
- ▶ Free driving and camera mounts
- ▶ Options and limitations of equipment
- ▶ Safety rules for prepping, rigging, and filming

This course covers using traditional insert cars, process trailers, tow dollies, and free driving.

It also covers options and limitations of the equipment used, as well as basic safety rules for prepping, rigging, and filming when using insert cars. This course does not cover every possible way of doing driving shots.

Vendors have developed many types of custom equipment and methods over the years.

Any special safety considerations for custom-made vehicles are under the supervision of the personnel provided by the equipment supplier.

Slide 8 - What Situations Create Hazards?

A presentation slide with a dark blue header bar on the left and a white main content area. The header bar contains a blue and white striped pattern and the word "Introduction" in the top right corner. The main content area has a blue vertical bar on the left and a white background for the text. The text is titled "What situations create hazards?" and lists ten bullet points.

Introduction

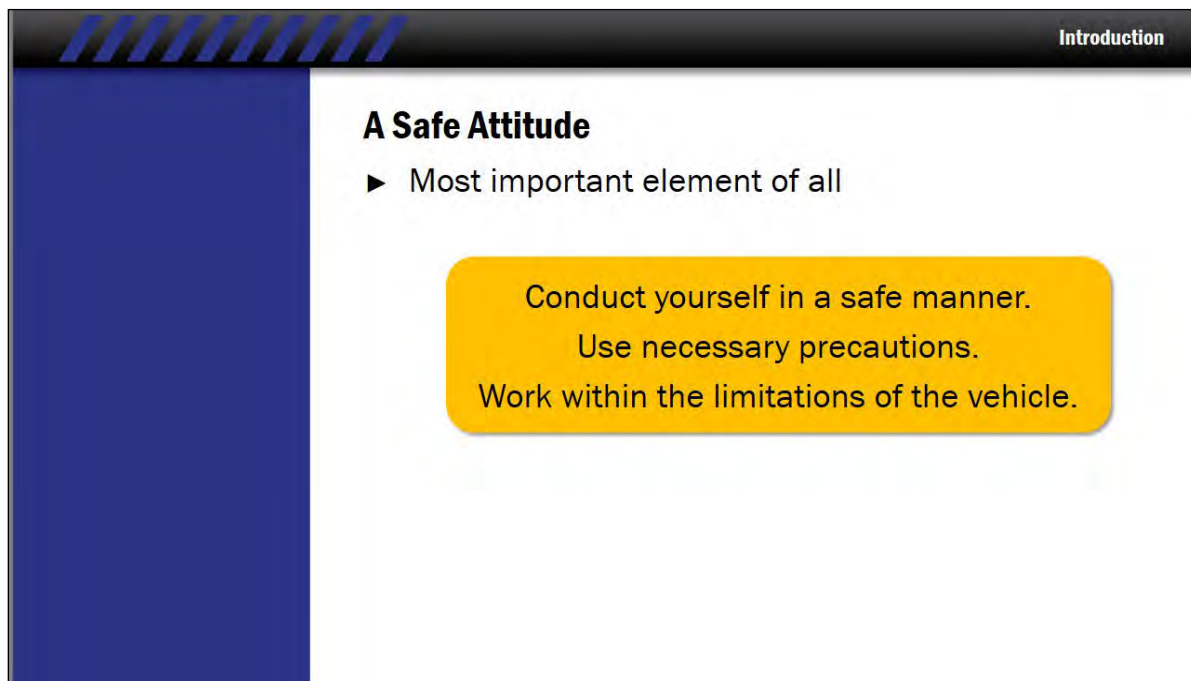
What situations create hazards?

- ▶ Overloading
- ▶ Excess speed
- ▶ Lack of rehearsal
- ▶ Improper rigging
- ▶ Incorrect or unsafe equipment
- ▶ Inadequately secured equipment
- ▶ Lack of secure places for passengers
- ▶ Inadequate traffic control
- ▶ Not adequately scouting the entire route

Today we will be covering many potential hazards associated with filming from a vehicle in motion.

Hazards include: overloading the vehicle with people and equipment, excess speed, lack of rehearsal, improper rigging, using incorrect or unsafe equipment, inadequately securing equipment, lack of restraint or secure places for passengers, inadequate traffic control, and not adequately scouting the entire route. These are some of the situations that can create hazards.

Slide 9 - A Safe Attitude



The slide features a black header with the word "Introduction" in white on the right. Below the header is a blue vertical bar on the left. The main content area is white and contains the following text:

A Safe Attitude

- ▶ Most important element of all

Conduct yourself in a safe manner.
Use necessary precautions.
Work within the limitations of the vehicle.

When working on roadways and on moving vehicles, everyone needs to be especially safety conscious.

A safe attitude is an important element of preventing accidents. Do not accept situations that pose unnecessary risk to yourself or others.

Some examples include failing to wear the orange vest when working in roadways, standing on a moving vehicle when you should be seated, texting or talking instead of paying attention to announcements, tunnel vision, rushing, and not being aware of people and events around you.

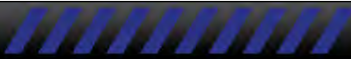
Do not let external pressures affect your safe decision making. These are the kind of things that lead to accidents.

On a camera car, everyone must remain continuously aware of their environment. This requires people to adjust their normal way of working.

Decide to conduct yourself in a safe manner and use all necessary safety precautions during operations on and around a traditional insert car.

Working within the limitations of the vehicle and having a safe attitude can help prevent accidents.

Slide 10 - Applicable Bulletins

Introduction

Applicable Bulletins

- ▶ Safety Bulletin #4, *Stunts*
- ▶ Safety Bulletin #8, *Guidelines for Traditional Camera Cars*
- ▶ Safety Bulletin #8, *Addendum “A” Process Trailer/Towed Vehicle*
- ▶ Safety Bulletin #8, *Addendum “B” Camera Boom Vehicles*
- ▶ Safety Bulletin #8, *Addendum “C” Power Line Distance Requirements*
- ▶ Safety Bulletin #25, *Camera Cranes*
- ▶ Safety Bulletin #38, *Guidelines for Inclement or Severe Weather*

Safety Bulletins can be viewed or downloaded at www.csatf.org.

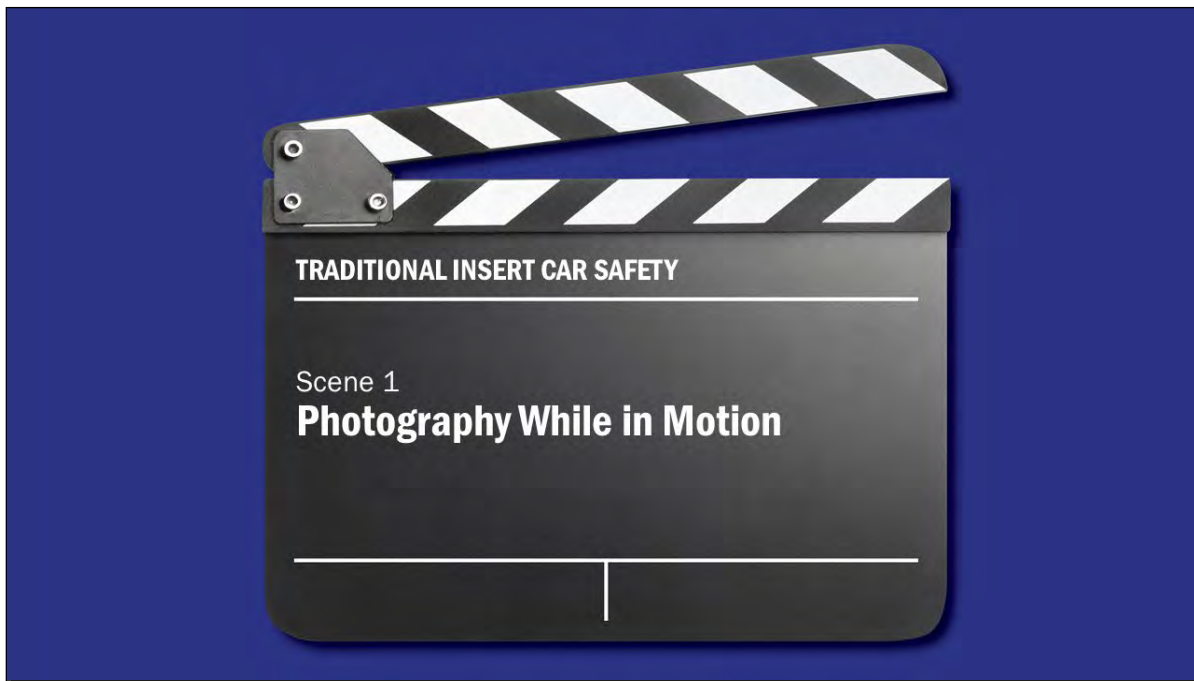
Safety Bulletin #8 should be available to crew and also kept in the camera car.

The safety bulletins listed here are part of the source material for this course, and can also be downloaded at www.csatf.org.

When a camera car is on set, Safety Bulletin #8 should be available to crew.

Typically, it is attached to the call sheet. A copy should also be kept in the camera car.

Slide 11 - Photography While in Motion

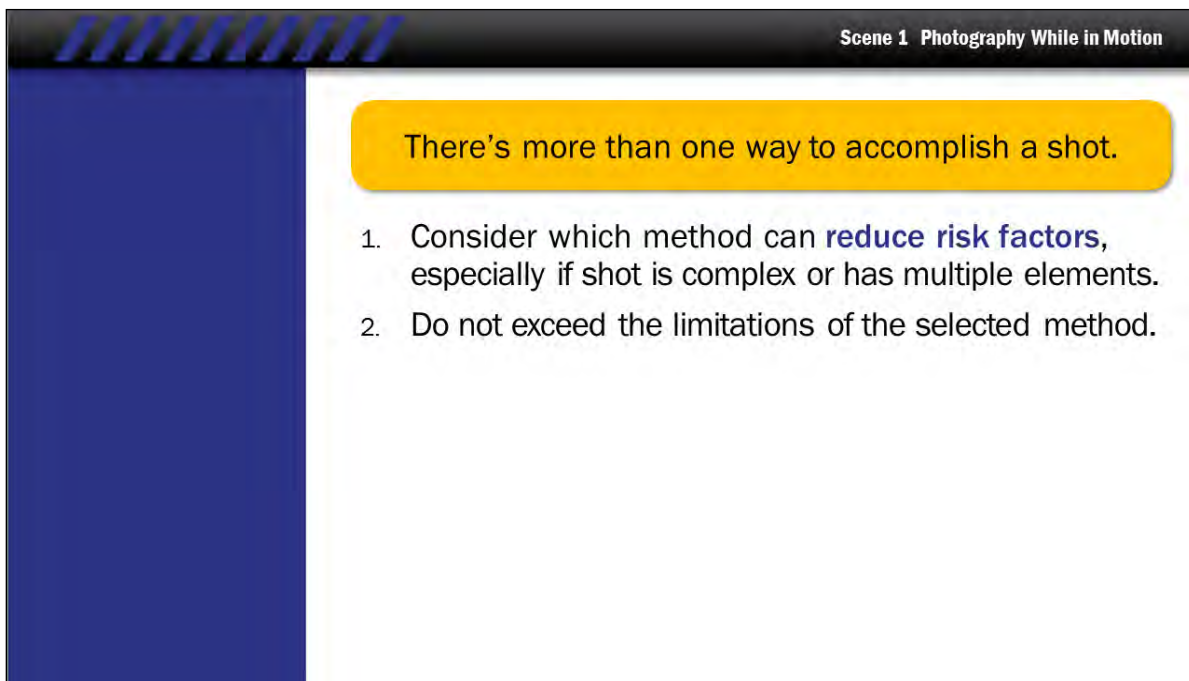


Scene 1, Photography While in Motion.

Let's begin with an overview of the different ways moving shots can be captured.

In this scene we'll go over some of the pros and cons of different methods and identify associated safety concerns.

Slide 12 - Accomplish a Shot



The slide features a dark blue header with a white diagonal striped pattern on the left and the text "Scene 1 Photography While in Motion" on the right. Below the header is a large blue vertical bar on the left side. The main content area is white and contains a yellow rounded rectangle with the text "There's more than one way to accomplish a shot." followed by a numbered list of two items.

Scene 1 Photography While in Motion

There's more than one way to accomplish a shot.

1. Consider which method can **reduce risk factors**, especially if shot is complex or has multiple elements.
2. Do not exceed the limitations of the selected method.

There's more than one way to accomplish a shot.

The people who are responsible for planning the work should consider which method can reduce risk factors, especially if the shot is complex or has multiple elements.

Problems can occur when you start pushing the limits of the selected method. Consider the capabilities and limitations of the vehicle, and address safety concerns of each option. Stay current with technology and consult qualified professionals.

Slide 13 - Methods

Scene 1 Photography While in Motion

There's more than one way to accomplish a shot.

Methods

- ▶ Towing picture vehicle
 - ▷ Process trailer
 - ▷ Tow dolly
 - ▷ Tow bar
 - ▷ Side tow
- ▶ Running shots
- ▶ Free driving
- ▶ Insert car with camera on crane
- ▶ Specialty camera vehicles
- ▶ Remote-driven picture vehicle

Consider all options when selecting equipment.

Here is a list of common methods for capturing vehicle action. First, there is towing.

There are a variety of ways to tow the picture vehicle, such as using a process trailer, a tow dolly, a tow bar, or using a side tow.

Next, running shots are when the camera car acts as a moving camera platform that is free from the picture car. With free driving, no insert car is used and the performer is actually driving the vehicle.

A camera crane uses a camera crane mounted to the camera car enabling greater versatility for camera positions and camera movement. Another method for capturing vehicle action is by using specialty vehicles. There are a variety of specialty camera vehicles, such as motorcycles and ATVs, that may be better suited for certain conditions than a traditional camera car.

And lastly, there are remote-driven picture vehicles, which are picture cars that are significantly modified so a professional driver actually controls the vehicle from a pod mounted in front, behind, or above the passenger compartment of the picture car. Remote-driven vehicles are beyond the scope of this course, but we will take a look at each of the other methods.

Slide 14 - Features of an Insert Car



Features of an Insert Car

- ▶ Horsepower
- ▶ Sound-blimped generator
- ▶ Rigging points for mounting equipment
- ▶ Secure places for crew to ride

An insert car typically has the horsepower to tow a process trailer and its load, a sound-blimped generator to power the lights and other equipment, rigging points for mounting equipment, and secure places for the crew to ride.

Slide 15 - Experienced, Qualified Driver:

Scene 1 Photography While in Motion

Consult with the insert-car driver regarding safety and protection.

Experienced, Qualified Driver:

- ▶ Resource for planning moving shots
- ▶ Knows capabilities/limitations of equipment

Driver must possess:

- ▶ Commercial driver license
- ▶ Appropriate experience

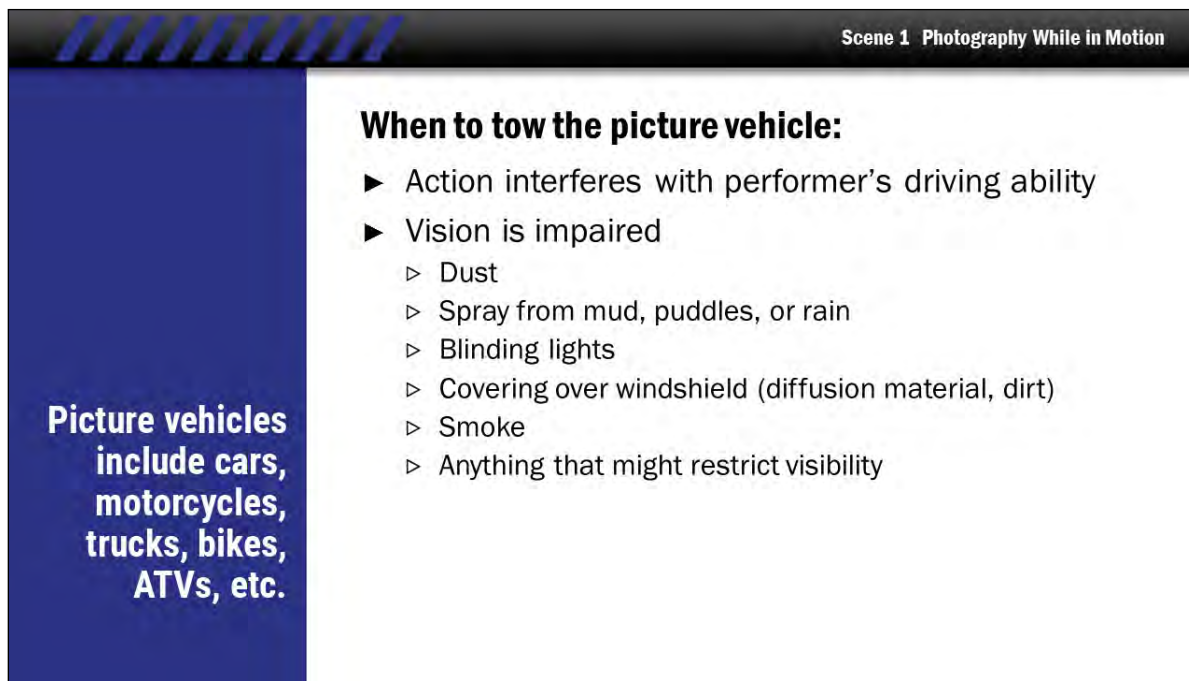
An experienced and qualified insert-car driver usually accompanies and operates the insert car.

The insert-car driver is a valuable resource when planning a moving sequence to help evaluate the capabilities and limitations of different equipment and approaches.

The insert-car driver must possess a commercial driver license and should have the appropriate experience for the type of work to be performed.

Consult with the insert-car driver regarding safety and protection.

Slide 16 - When to Tow the Picture Vehicle 1



Scene 1 Photography While in Motion

Picture vehicles include cars, motorcycles, trucks, bikes, ATVs, etc.

When to tow the picture vehicle:

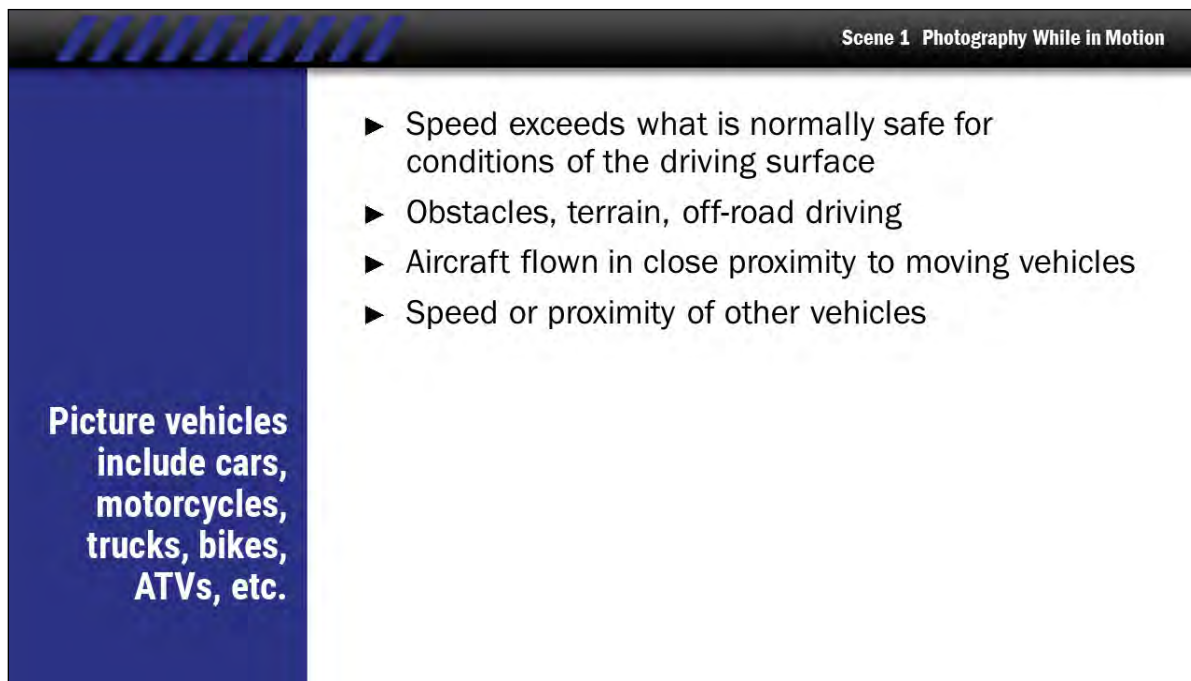
- ▶ Action interferes with performer’s driving ability
- ▶ Vision is impaired
 - ▷ Dust
 - ▷ Spray from mud, puddles, or rain
 - ▷ Blinding lights
 - ▷ Covering over windshield (diffusion material, dirt)
 - ▷ Smoke
 - ▷ Anything that might restrict visibility

Some considerations that may determine if the picture vehicle should be towed include: if the performance could interfere with the actor’s ability to drive safely, and if the performer’s vision will be impaired.

For example, the driver’s vision may be impaired by clouds of dust and dirt in the air or obscuring the windshield by spray from driving through water and mud. It may also be impaired by lights shining at the performer or by diffusion materials covering the windshield. There may be smoke effects.

There may be other items, such as a hood-mounted camera, that restrict the driver’s normal vision.

Slide 17 - When to Tow the Picture Vehicle 2



Scene 1 Photography While in Motion

Picture vehicles include cars, motorcycles, trucks, bikes, ATVs, etc.

- ▶ Speed exceeds what is normally safe for conditions of the driving surface
- ▶ Obstacles, terrain, off-road driving
- ▶ Aircraft flown in close proximity to moving vehicles
- ▶ Speed or proximity of other vehicles

Other conditions to consider include when: the speed of the vehicle exceeds what is normally safe for the conditions of the driving surface; obstacles or difficult terrain exist or when off-road driving is required; aircraft are flown in close proximity to the vehicle; or when speed or close proximity of other vehicles create potentially hazardous conditions.

Additionally, some performers simply cannot drive, such as children, animals, animatronic characters, and so on.

Slide 18 - Process Trailer



Process Trailer

Common uses:

- ▶ Dialogue in moving vehicles
- ▶ Performer riding: bike, motorcycle, animatronic device, spacecraft, etc.

Process trailers allow for more equipment options.

A process trailer is a low riding trailer used to mount the picture vehicle in order to produce driving shots without requiring the actor to actually drive. It is used when filming ordinary driving sequences, such as performers conversing in a moving car. It can also be used when filming a performer on a bike, motorcycle, animatronic device, or spacecraft.

A process trailer also allows for more equipment options.

Slide 19 - Features of a Process Trailer



Features of a Process Trailer

- ▶ Wide working platform
- ▶ Low ground clearance
- ▶ Rail system
- ▶ Tie-down points and often a wooden deck

The process trailer typically has a wide working platform, ranging from 12 to 16 feet wide and 18 to 35 feet long, with room for a vehicle, cameras, dollies, lights, grip equipment, and crew. It has low ground clearance so that the scene visible to the camera looks realistic.

However, this may cause the trailer to bottom out where there are dips in the road, high spots, and on driveway aprons.

A process trailer has a system of rails to provide personal safety for passengers, and mounting positions for cameras, lights, and grip rigging.


It has an adaptable system such as E-clips and a track, D-rings, welded tie-down points, and a wooden deck to secure the picture vehicle and equipment to.

Slide 20 - Types of Process Trailers 1

Scene 1 Photography While in Motion

Types of Process Trailers

- ▶ Maneuverability and distribution of weight vary between types.
- ▶ Weight capacity of any trailer depends on number of wheels and weight rating of tires and axles.



The image contains three photographs of process trailers. The first photo on the left shows a white sedan on a standard trailer with a single axle and two wheels. The middle photo shows a steering axle trailer with two axles and four wheels. The third photo on the right shows a fifth wheel trailer with two axles and four wheels, featuring a large metal coupling structure.

Process trailers can be divided into three types based on the configuration of the wheels: a *standard* trailer, *steering axle*, and *fifth wheel*.

Maneuverability and distribution of weight vary between types.

The weight capacity of any trailer varies depending upon the number of axles and wheels.

Slide 21 - Types of Process Trailers 2

Scene 1 Photography While in Motion

Types of Process Trailers

Standard Trailer
Wheels in center

A photograph of a white sedan on a standard process trailer. The trailer has a flat deck and side wings. The car is positioned on the deck, and its wheels are centered. The trailer is on a paved surface, and the background shows a building and other trailers.

On a standard process trailer, the wheels are near the center of the trailer and the center of gravity is slightly forward of the middle of the trailer.

The photo shows a standard trailer that is fitted with side *wings* which provide side platform space for crew and equipment.

You can see the wheel well of the trailer is just behind the front wheel of the car, which can make it difficult to open the vehicle's doors.

Slide 22 - Types of Process Trailers 3



A steering-axle-type process trailer has wheels on the outer corners of the trailer, allowing the trailer to accommodate wider vehicles, like large SUVs.

Slide 23 - Types of Process Trailers 4



A fifth-wheel-type trailer has wheels off the back end and distributes a significant amount of the trailer load directly onto the insert car.

Slide 24 - Limits for Process Trailers 1

Scene 1 Photography While in Motion

Limits for Process Trailers

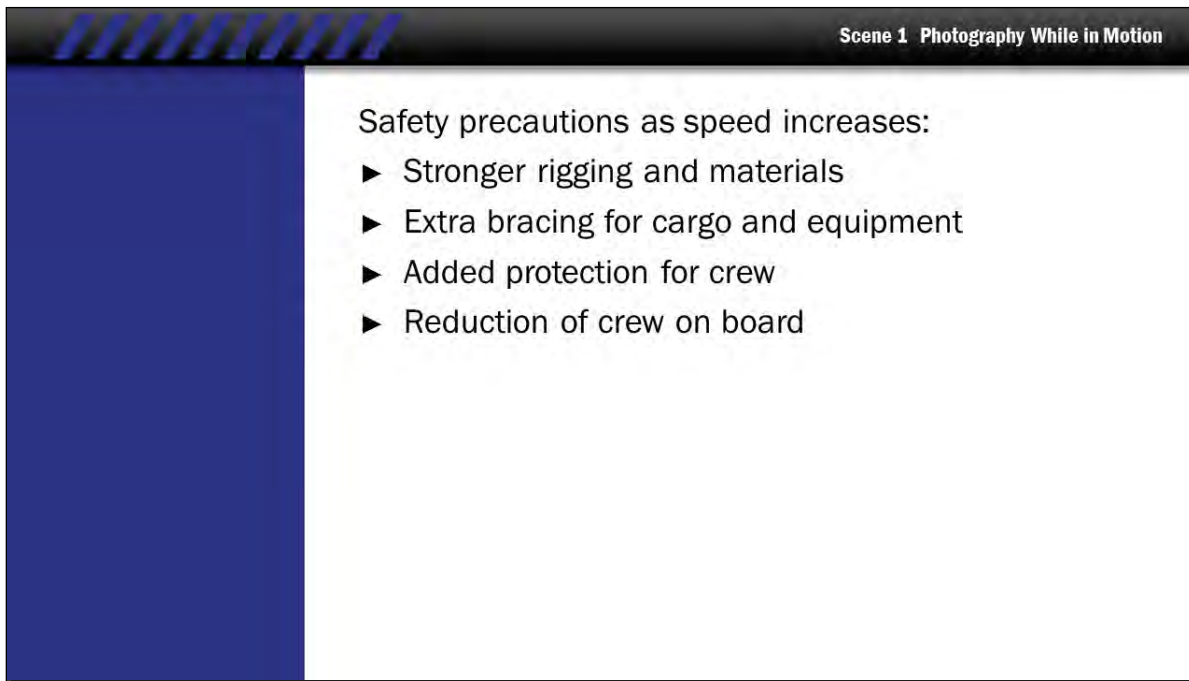
Operate under 35 mph (typically)

As speed increases:

- ▶ Diffusion frames tend to rattle loudly, come loose, or rip
- ▶ Road noise increases
- ▶ Vibration increases
- ▶ Forces on passengers and equipment increase (inertial forces and wind)

The maximum speed for a typical process trailer is 35 miles per hour and usually operating speeds are closer to 25 miles per hour. As speed increases, diffusion frames start to rattle loudly (which can come loose or rip), road noise and vibrations increase, and forces on passengers and equipment increase.

Slide 25 - Limits for Process Trailers 2



Scene 1 Photography While in Motion

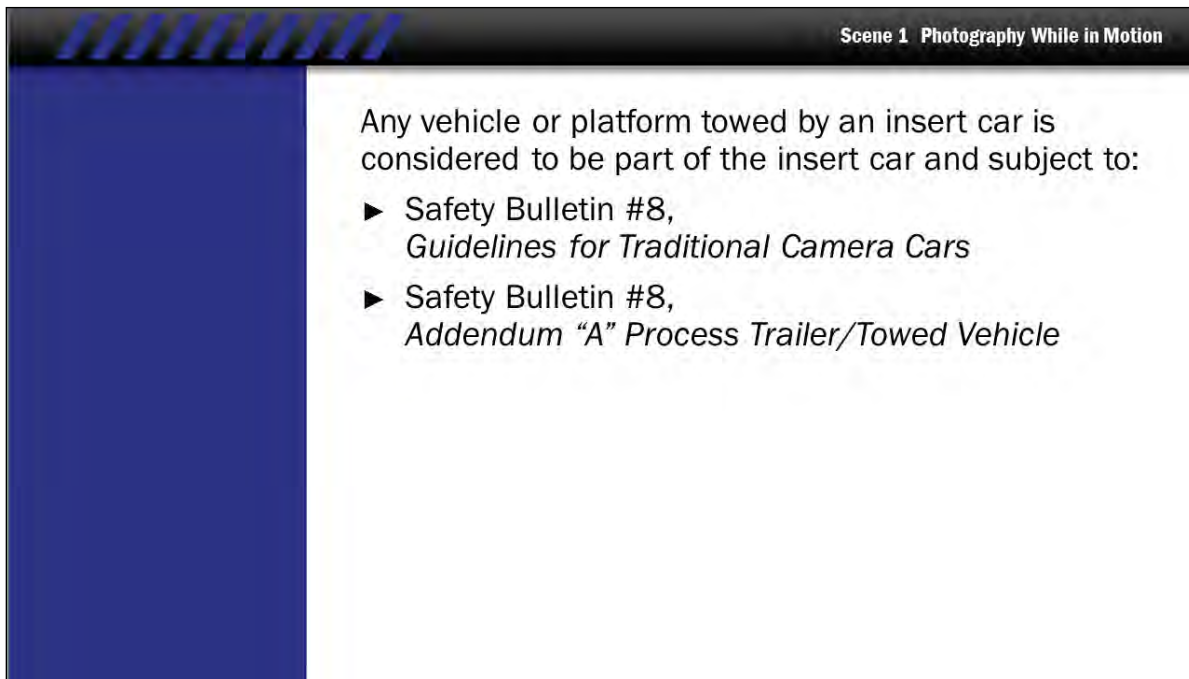
Safety precautions as speed increases:

- ▶ Stronger rigging and materials
- ▶ Extra bracing for cargo and equipment
- ▶ Added protection for crew
- ▶ Reduction of crew on board

At higher speeds, additional precautions need to be taken.

These precautions may include stronger rigging and extra bracing to secure cargo and equipment, added protection for crew, and possibly a reduction of crew members on board the process trailer.

Slide 26 - Limits for Process Trailers 3



Scene 1 Photography While in Motion

Any vehicle or platform towed by an insert car is considered to be part of the insert car and subject to:

- ▶ Safety Bulletin #8,
Guidelines for Traditional Camera Cars
- ▶ Safety Bulletin #8,
Addendum “A” Process Trailer/Towed Vehicle

Any vehicle or camera platform towed by an insert car is considered to be a part of the insert car and is subject to the guidelines outlined in the relevant safety bulletins.


For example, if there is a nine-person limit for the number of passengers, that limit **includes** the crew riding on the process trailer.

Slide 27 - Tow Dolly and Tow Bar 1

Scene 1 Photography While in Motion

Tow Dolly and Tow Bar

Tow Dolly
Front wheels ride on dolly



A tow dolly or tow bar can be used to tow the picture vehicle as an alternative to using a process trailer. With a tow dolly, only the front wheels of the vehicle ride on the dolly.


Slide 28 - Tow Dolly and Tow Bar 2



When using a tow bar all wheels are in contact with the road. With a tow bar, tabs or clamps are attached to the picture vehicle.

Cars with molded bumpers usually require vehicle modifications, such as bolting or welding the tow-tabs to the chassis.

Slide 29 - Tow Dolly and Tow Bar 3

Scene 1 Photography While in Motion

Tow Dolly and Tow Bar (compared to a process trailer)

Advantages	Disadvantages
<ul style="list-style-type: none">▶ More maneuverable▶ Tighter turns▶ Not as wide (9 ft.)▶ Lower to the road▶ Back tires can be visible▶ With tow bar, front and back tires can be photographed	<ul style="list-style-type: none">▶ No platform▶ Limits positions for lights and camera▶ Tow bar requires customized modification▶ Tow dollies are not compatible with every drive system

There are advantages of using a tow bar or tow dolly instead of a process trailer.

Some of these advantages include that the vehicle is more maneuverable and can make tighter turns.

Also, the rig is not as wide (a tow dolly is approximately 9 feet wide as compared to a process trailer which is about 12 to 16 feet wide). The vehicle is lower to the road, and the back of the picture car can be shown in the shot whereas when using a process trailer, the trailer has to be framed out.

However, there are also disadvantages to tow dollies and tow bars, such as: there is no platform for equipment and crew, there are limited positions for lights and cameras, the tow bar may require customized modification of the vehicle, and tow dollies are not compatible with some drive systems.

Slide 30 - Tow Dolly and Tow Bar 4

Scene 1 Photography While in Motion

Tow Dolly and Tow Bar

Towing can damage some vehicles. Drive systems vary. Check with transportation coordinator and/or vehicle manufacturer.

- ▶ Transmission must be in neutral if drive wheels are rotating.
- ▶ With tow dollies, front-wheel-drive vehicles should not be in gear unless the engine is off.
- ▶ Full-time 4-wheel-drive vehicles normally use a tow bar (not tow dolly) and the transmission must remain in neutral.

It is important to check with the transportation coordinator and/or the manufacturer before using a tow dolly or tow bar because drive systems vary and towing could damage some vehicles.

Ensure the following guidelines are met when using a tow dolly and/or tow bar:

Transmissions must be in neutral if drive wheels are rotating.

When using a tow dolly with a front-wheel-drive vehicle, the vehicle should *not* be in gear unless the engine is off.

When the engine needs to be on (because the performers need air conditioning or heat for example), front-wheel-drive vehicles should never be put into a drive gear (forward or reverse) when the drive wheels are secured to the tow dolly.

And finally, full-time four-wheel-drive vehicles normally use a tow bar (not a tow dolly) and the transmission *must remain in neutral*.

Slide 31 - Side Tow 1

Scene 1 Photography While in Motion

Side Tow

Side Tow
Tow picture vehicles alongside the camera car



Insert cars that are designed with the side tow capability can tow a picture vehicle alongside the insert car.

Slide 32 - Side Tow 2



Scene 1 Photography While in Motion

Advantages

- ▶ No process trailer
- ▶ Profile shots

Disadvantages

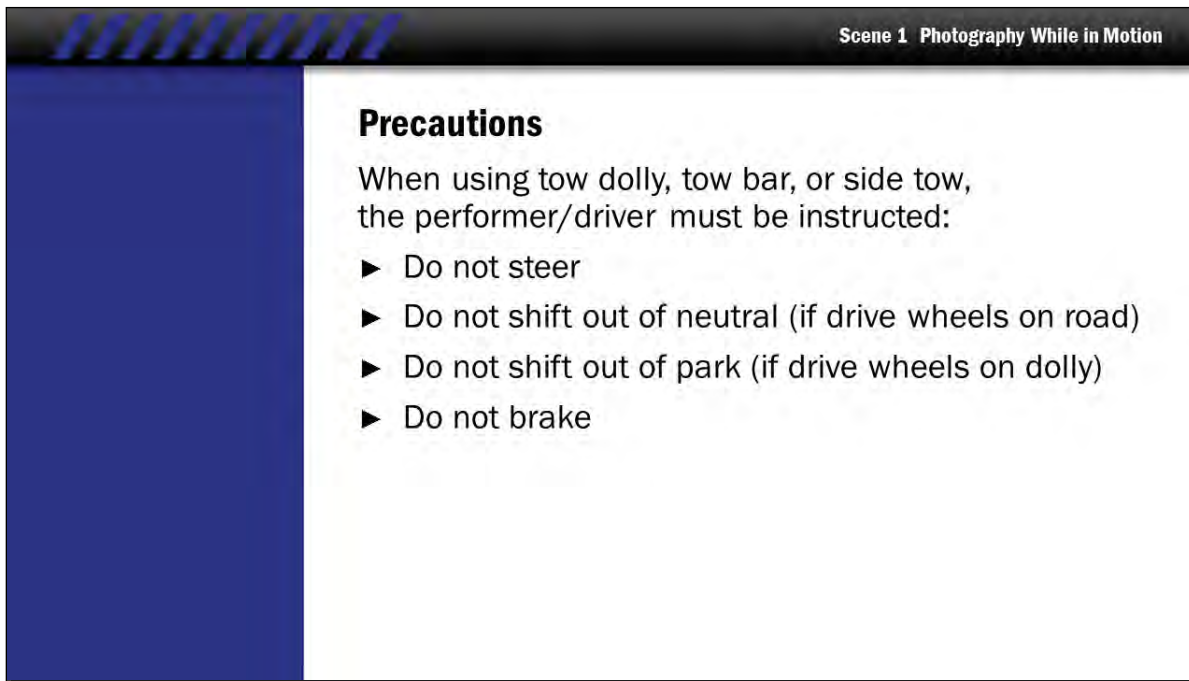
- ▶ No turns away from picture vehicle
- ▶ Two lanes wide

The advantage of the side tow is that cameras can shoot profile shots from the back deck of the insert car, and lighting and grip equipment can be mounted to the insert car or on the picture vehicle.

This eliminates the need for a process trailer.

There are also a couple of disadvantages to using a side tow, such as: the insert car can turn sharply in only one direction-with the picture vehicle on the inside of the turn; additional road space is needed with the side tow, usually at least two lanes wide; and adequate space must be available to turn around at the end of the run.

Slide 33 - Precautions

A presentation slide with a black header bar on the right containing the text "Scene 1 Photography While in Motion". The main content area is white with a blue vertical bar on the left. The text "Precautions" is bolded, followed by a paragraph and a bulleted list of four items.

Scene 1 Photography While in Motion

Precautions

When using tow dolly, tow bar, or side tow, the performer/driver must be instructed:

- ▶ Do not steer
- ▶ Do not shift out of neutral (if drive wheels on road)
- ▶ Do not shift out of park (if drive wheels on dolly)
- ▶ Do not brake

When towing a vehicle with a tow dolly, tow bar, or side tow, the person in the driver's seat of the picture car must be instructed not to attempt to steer the vehicle, change gear, shift out of neutral, or step on the brakes.

Slide 34 - Crane Arm on an Insert Car 1

Scene 1 Photography While in Motion



Crane Arm on an Insert Car

Advantages

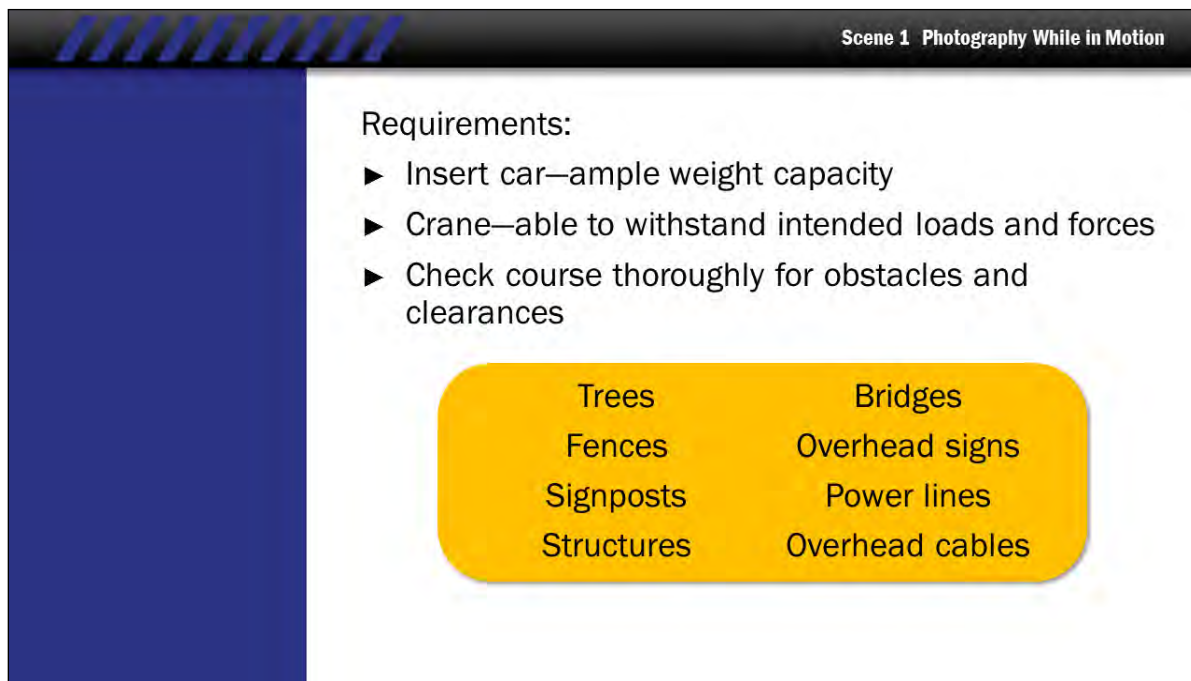
- ▶ Camera movements
- ▶ Ease in placing the camera
- ▶ Illusion of movement
- ▶ Use of crane for non-driving shots

Using a crane arm on an insert car for traveling shots enables camera mobility and provides the ease and flexibility of placing the camera in almost any position around the picture vehicle.

For example, by moving the crane arm the illusion can be created of a car accelerating into or out of a shot that would otherwise require a performer or driver with precision driving skills.

Cranes also provide production efficiency for filming sequences that are not traveling shots.

Slide 35 - Crane Arm on an Insert Car 2



Scene 1 Photography While in Motion

Requirements:

- ▶ Insert car—ample weight capacity
- ▶ Crane—able to withstand intended loads and forces
- ▶ Check course thoroughly for obstacles and clearances

Trees	Bridges
Fences	Overhead signs
Signposts	Power lines
Structures	Overhead cables

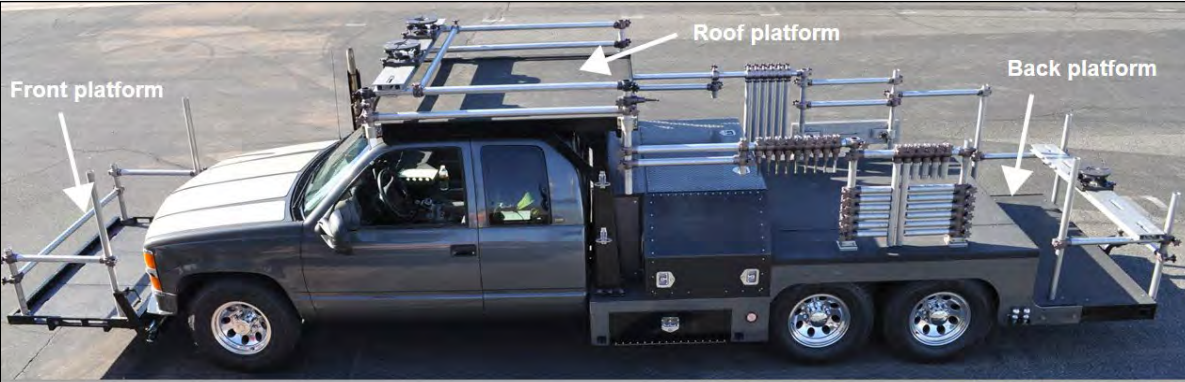
The insert car must have ample weight capacity to support the crane.

The crane and equipment used on the insert car should be able to adequately handle intended loads and forces.

When using a crane on an insert car, the planned course must be checked thoroughly for obstacles and clearances from objects such as trees, fences, signposts, structures, bridges, power lines, and overhead cables.

The consequences of a crane strike can be very serious.

Slide 36 - Running Shots



Running Shots

- ▶ Shots that lead, chase, or drive alongside moving action


Moving vehicles	Bicycles
Performers running	Motorcycles
Horses	Plate shots

The insert car can be used to chase, lead, or drive alongside moving action.

This moving action may be another vehicle, but it could also be a person running, riding a horse, or on a bicycle. It can also be used to film plate shots.

Insert cars typically provide a variety of camera platforms. A front platform allows a 180 degree view forward and to the sides. A back platform allows a 180 degree view rearward and to the sides. A roof platform, allows a 360 degree view.

Slide 37 - Free Driving



Scene 1 Photography While in Motion

Free Driving

Potential risk factors and limitations:

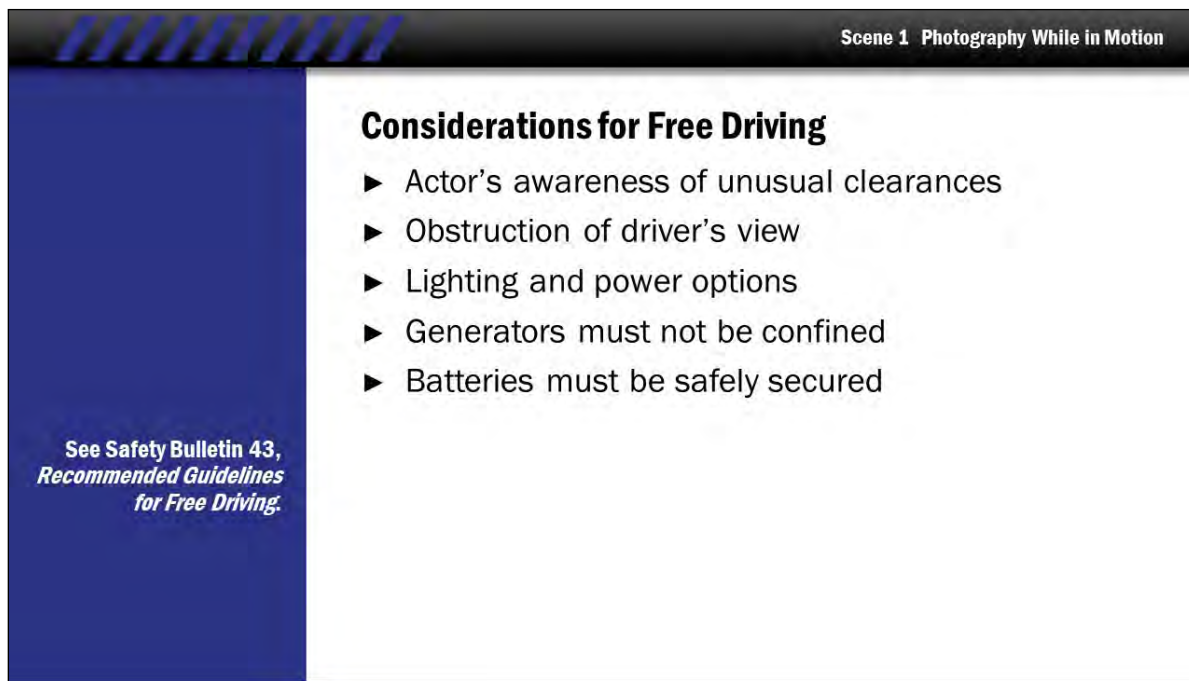
- ▶ Performer drives the picture car
- ▶ Camera and lighting equipment mounted to picture car
- ▶ Camera positions:
 - ▷ Mounted to the vehicle
 - ▷ Operated from passenger seat or back seat

Free driving presents a large number of potential risk factors and is the most limited option for accommodating the camera, lighting, and sound equipment.

The primary concern is that the actor is required to drive the vehicle while performing and being photographed.

The camera operator shoots from the passenger or backseat of the car, or the camera is mounted to the vehicle, locked off, and has no camera operator.

Slide 38 - Considerations for Free Driving 1



Scene 1 Photography While in Motion

Considerations for Free Driving

- ▶ Actor's awareness of unusual clearances
- ▶ Obstruction of driver's view
- ▶ Lighting and power options
- ▶ Generators must not be confined
- ▶ Batteries must be safely secured

See Safety Bulletin 43,
*Recommended Guidelines
for Free Driving.*

Some of the safety issues that have to be addressed before selecting this method of filming include the ability of the actor to remain aware of the additional side clearance required for rigging equipment that extends beyond the vehicle body, while simultaneously performing dialogue and driving the vehicle.

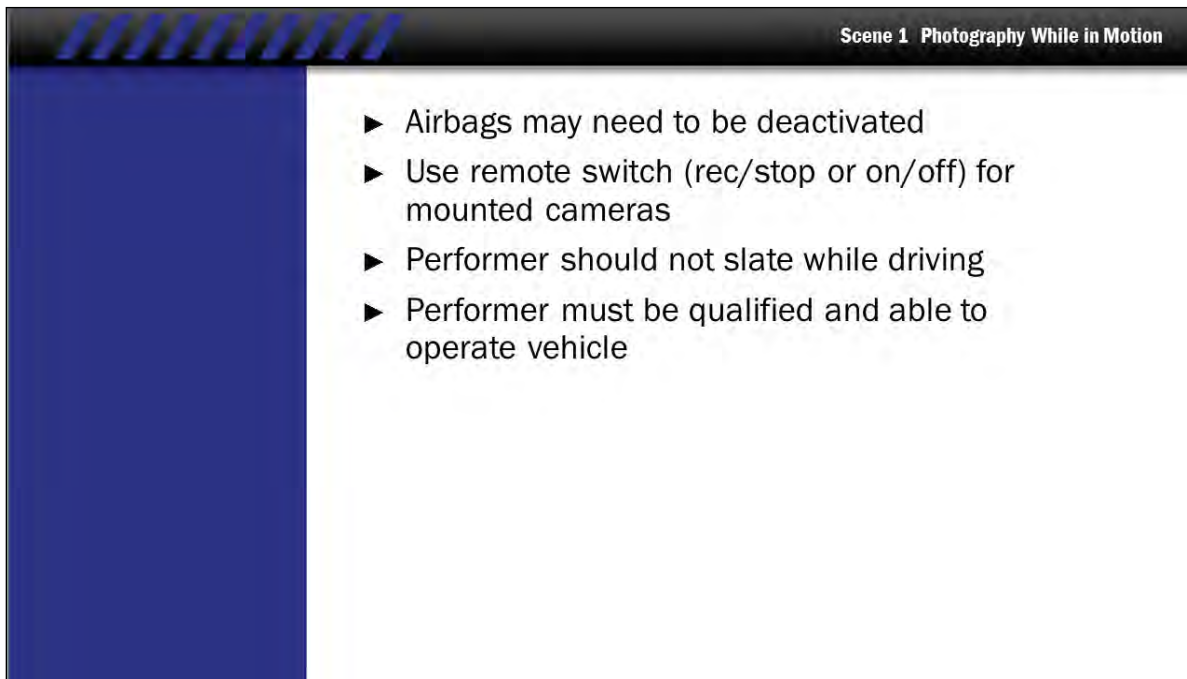
The driver's view cannot be substantially obstructed by cameras, lights, or other equipment, and lighting options are limited, including the means for powering lights.

Also, a generator, when needed, must *not* be confined within the trunk, or placed inside the vehicle or positioned anywhere the cast and crew could be exposed to the exhaust.

And, if using batteries, the batteries must sit flat and be secured in an upright position.

Batteries can get hot and should not be placed against anything combustible.

Slide 39 - Considerations for Free Driving 2



Scene 1 Photography While in Motion

- ▶ Airbags may need to be deactivated
- ▶ Use remote switch (rec/stop or on/off) for mounted cameras
- ▶ Performer should not slate while driving
- ▶ Performer must be qualified and able to operate vehicle

In addition, airbags may need to be deactivated for safety.

The position and posture of camera personnel in the passenger seat could expose them to injury if the airbags deploy.

A remote on-off control switch should be used to run and stop the camera when it is mounted to the vehicle.

Avoid having camera personnel rushing up to the picture vehicle to turn off the camera as that can be hazardous.

The performer should not be the one who slates the shot if the vehicle is moving.

Of course, the performer must also be qualified to operate the vehicle and should have the appropriate license, although, on a closed course, a license may not be required by law.

Some performers may need additional training to be qualified to drive an unfamiliar vehicle or course.

Slide 40 - Specialty Camera Vehicles 1

Scene 1 Photography While in Motion

Specialty Camera Vehicles

- ▶ Some shots are better accomplished by a specialty vehicle.



See also
Safety Bulletin #42,
*Guidelines for Alternative
Driving Systems.*

Specialized vehicles are designed to enable shots that may be too difficult to accomplish with the traditional insert car.

These vehicles are equipped with a roof-mounted, remote-operated crane arm and camera.

The vehicles have upgraded internal structure, engine, and suspension.

Everything is controlled from inside the vehicle where crews are buckled into legal car seats with 5-point harnesses.

The vehicle is capable of tackling rough terrain and speeds that would be high risk in a traditional insert car.

Slide 41 - Specialty Camera Vehicles 2

Scene 1 Photography While in Motion



Utility Task Vehicle (UTV)

- ▶ Employer approval and additional training are required before using specialty camera vehicles.

UTVs (utility task vehicles)
ATVs (all-terrain vehicles)
Golf carts
Snowmobiles
Rally/race cars
Motorcycles
Sidecars

Camera vehicles have been built from converted utility-task vehicles (UTVs), all-terrain vehicles (ATVs), golf carts, snowmobiles, rally or race cars, motorcycles, and sidecars.

Before any crew members may ride in a specialty camera vehicle, the employer must approve them to do so, and they must receive a complete safety briefing from the camera car vendor's representative.

The completion of this course does not fulfill those additional safety training requirements.

Slide 42 - Safety While in Motion



Scene 2, Safety While in Motion.

Slide 43 - Insert Car Safety Factors

Scene 2 Safety While in Motion

Insert Car Safety Factors

The insert-car driver has the authority to suspend operation of the vehicle for any reason if he or she deems the situation unsafe.

To maintain safety, the driver must limit:

- ▶ Number of passengers
- ▶ Weight of the load
- ▶ Speed
- ▶ Degree of aggressiveness

The insert-car driver has the authority to suspend operation of the insert car for any reason if he or she deems the situation to be unsafe. In order to maintain safety, the insert-car driver must limit the number of passengers, the weight of the load, the speed of the insert car, and the degree of aggressive driving used.

Slide 44 - Safety Factors

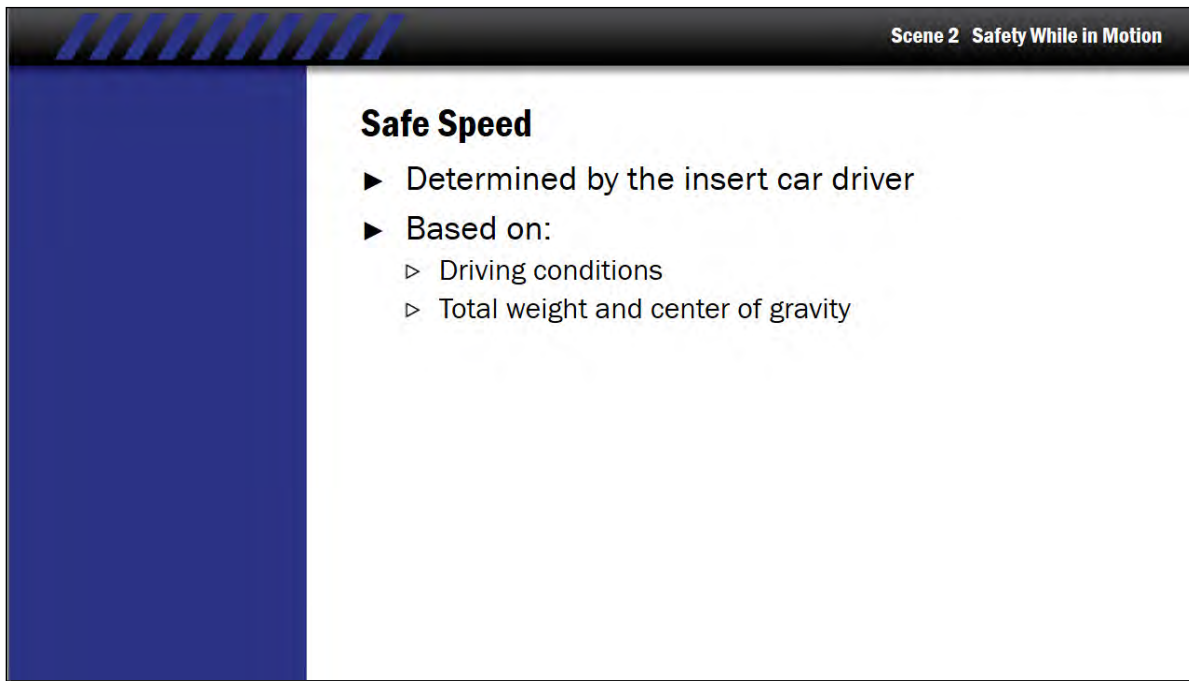
Scene 2 Safety While in Motion

Safety Factors

- ▶ Road surface
- ▶ Weather conditions
- ▶ Route configuration
- ▶ Topography
- ▶ Obstructions
- ▶ Capabilities of insert car
- ▶ Rigging and equipment
- ▶ Experience of the driver
- ▶ Vehicle weight rating
- ▶ Requirements of the shot

Some factors that influence the driver's assessment of safe limits are the road surface, weather conditions, route configuration, topography, overhead and side obstructions, the capabilities of the insert car, rigging and equipment attached to the vehicles, the ability and experience of the insert-car driver, the gross vehicle weight rating of the insert car and the process trailer or tow dolly, and the requirements of the shot at hand.

Slide 45 - Safe Speed 1

The slide features a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. Below the header is a large blue vertical bar on the left side. The main content area is white and contains the following text:

Safe Speed

- ▶ Determined by the insert car driver
- ▶ Based on:
 - ▷ Driving conditions
 - ▷ Total weight and center of gravity

The insert-car driver will determine a safe driving speed based on road conditions, and consider the total weight of the insert car and the center of gravity of the load to determine a speed that maintains adequate stability.

Slide 46 - Safe Speed 2

Scene 2 Safety While in Motion

As speed increases:


- ▶ Forces on the riders and equipment increase
- ▶ Additional precautions are needed to secure equipment and riders
- ▶ Dollies become a challenge
- ▶ Diffusion and gel frames become impractical

Consider all safety factors when determining limits.

As speed increases, so does the force on riders and equipment.

Additionally, precautions may be needed to secure equipment or personnel, the use of camera dollies may become challenging, and diffusion gel frames may become impractical.

Slide 47 - Secure Place to Ride 1



**As speed increases,
so do the forces.**

Scene 2 Safety While in Motion

Secure Place to Ride

Each passenger shall have a secure place to ride.

Do not underestimate forces while riding without seats or seatbelts.

All personnel riding on the insert car must be provided a safe and secure place to ride to avoid the possibility of a fall.

Do not underestimate the forces acting on personnel when traveling in a vehicle without car seats and seatbelts.

For example, if a person is traveling on a vehicle that is moving at 20 mph, and the vehicle suddenly stops, unless there is something to stop their forward momentum, that person will continue to travel at 20 mph.

Again, as speed increases, forces also increase exponentially.

Slide 48 - Secure Place to Ride 2

Scene 2 Safety While in Motion

Each person should be protected against changes in speed and direction:

- 1 **Stay seated**
- 2 **Do not stand unless:**
 - ▶ Duties require it, and
 - ▶ Safely secured by guard rails, restraint straps, or both


Personnel riding on the insert car should be protected from sudden changes in speed or direction.

Everyone should be seated when the vehicle is moving.

Exceptions can be made for persons required to stand in order perform work duties, such as the crane operator.

In that case, guardrails, restraint straps, or both should be used to provide a safe work position.

Slide 49 - Secure Place to Ride 3



Scene 2 Safety While in Motion

- 3 Plant both feet for support**
- 4 Keep center of gravity low**
- 5 Have a guardrail to grab onto**
- 6 Use rails, belts, and harnesses to limit movement**

While in motion, place both feet on the floor and keep a low center of gravity.

Have something secure to grab onto, such as guardrails, and use rails, belts, and harnesses to limit movement.

All individuals must be positioned safely and securely.

Slide 50 - Secure Place to Ride 4

Scene 2 Safety While in Motion

- ▶ Protection, such as a railing, must be provided for all personnel riding on the insert car or process trailer.
- ▶ Position guardrails at or above the riders' center of gravity.



When personnel are on the insert car or process trailer, protection such as railings must be provided for all occupants.

Railings must be placed at the appropriate height—at or above the riders' center of gravity—waist to shoulder height when seated.

Never sit or stand on the rails.

Slide 51 - Secure Place to Ride 5

Scene 2 Safety While in Motion

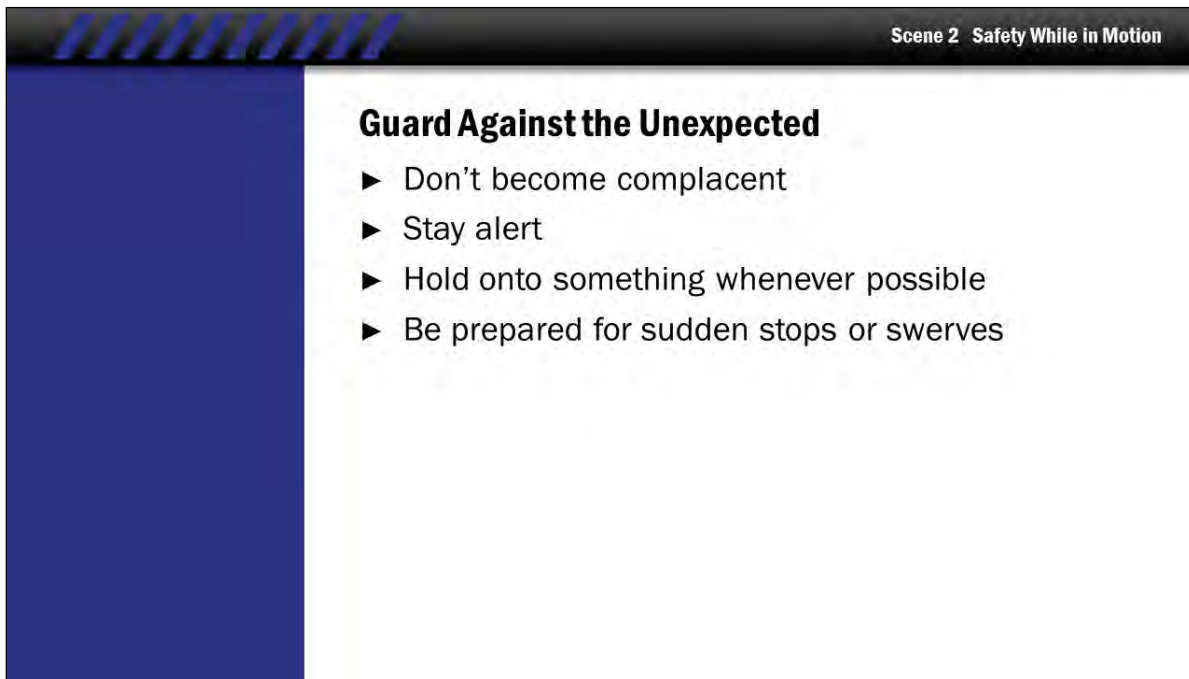
No one shall ride:

- ▶ On the railing
- ▶ On the tow bar
- ▶ Outside the railing of:
 - ▷ Insert car
 - ▷ Process trailer
 - ▷ Tow dolly

No one is permitted to ride on the railing, on the tow bar, or outside the railing of the insert car, process trailer, or tow dolly.

Personnel are to remain in a secure position when the insert car or process trailer is moving.

Slide 52 - Guard Against the Unexpected



The slide features a dark blue header with a diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. The main content area is white with a dark blue vertical bar on the left. The title "Guard Against the Unexpected" is in bold, followed by a bulleted list of four items.

Scene 2 Safety While in Motion

Guard Against the Unexpected

- ▶ Don't become complacent
- ▶ Stay alert
- ▶ Hold onto something whenever possible
- ▶ Be prepared for sudden stops or swerves

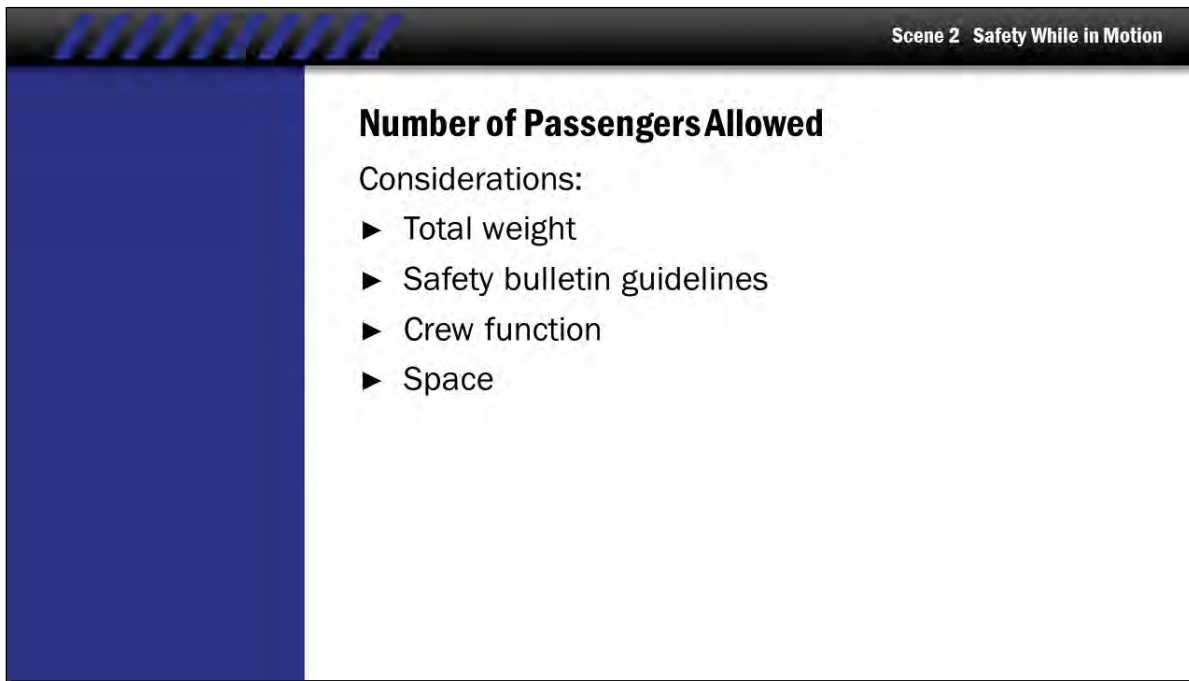
Guard against the unexpected. A camera car can make a series of runs that are perfectly smooth and then encounter a sudden bump or need to swerve or stop.

Complacency causes people to let down their guard. Stay alert.

Consider what you will do if the vehicle has to stop or swerve suddenly.

Hold onto something whenever possible.

Slide 53 - Number of Passengers Allowed



Scene 2 Safety While in Motion

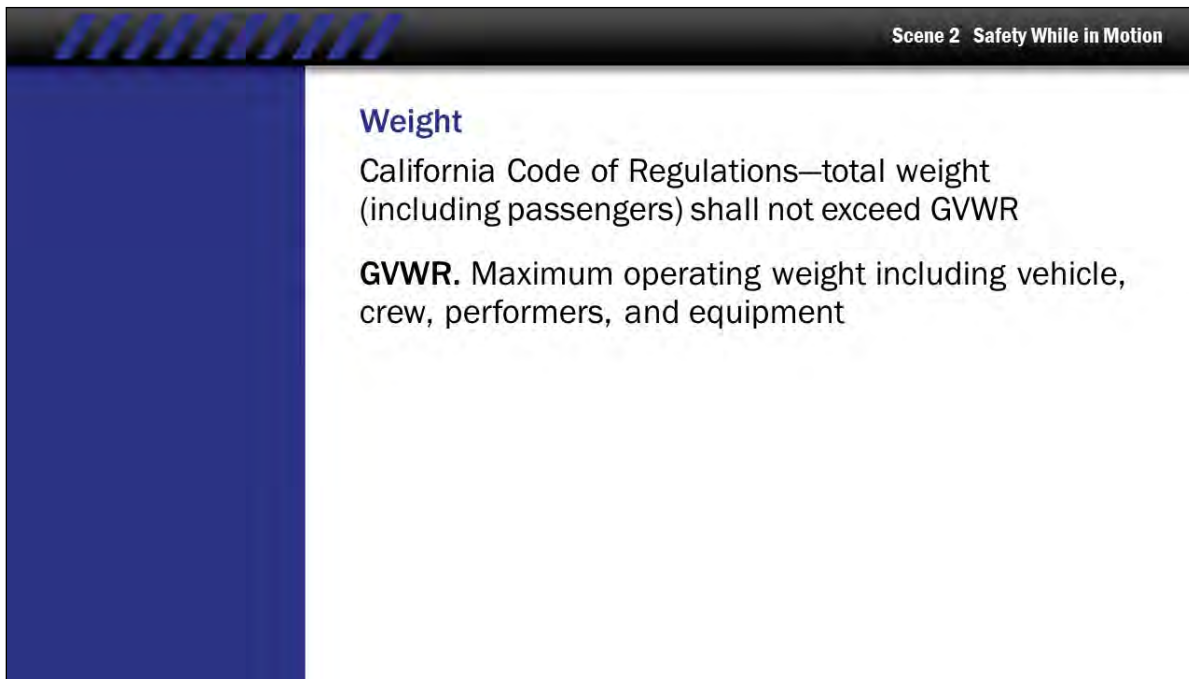
Number of Passengers Allowed

Considerations:

- ▶ Total weight
- ▶ Safety bulletin guidelines
- ▶ Crew function
- ▶ Space

The maximum number of passengers allowed on the insert car and process trailer is based on the vehicle's weight rating, the recommendations of industry guidelines (from Safety Bulletin #8), crew function, and available space.

Slide 54 - Weight 1

The slide features a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. Below the header is a large blue vertical bar on the left side of the slide content area. The main text is on a white background to the right of the blue bar.

Scene 2 Safety While in Motion

Weight

California Code of Regulations—total weight (including passengers) shall not exceed GVWR

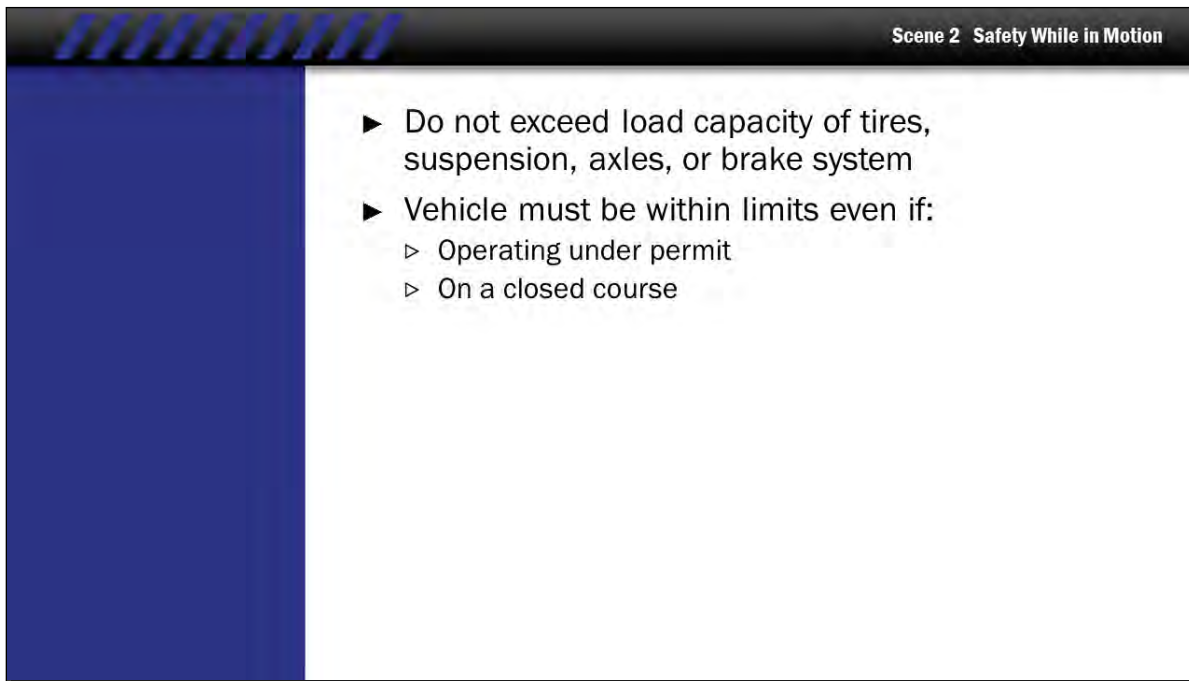
GVWR. Maximum operating weight including vehicle, crew, performers, and equipment

The California Code of Regulations mandates that the total weight, including passengers, shall not exceed the Gross Vehicle Weight Rating (GVWR).

The GVWR is the maximum operating weight including the vehicle, crew, performers, and equipment.

The insert-car driver knows the rating of their vehicle.

Slide 55 - Weight 2

The slide features a dark blue header with a diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. The main content area is white with a blue vertical bar on the left side. It contains a bulleted list of safety instructions.

Scene 2 Safety While in Motion

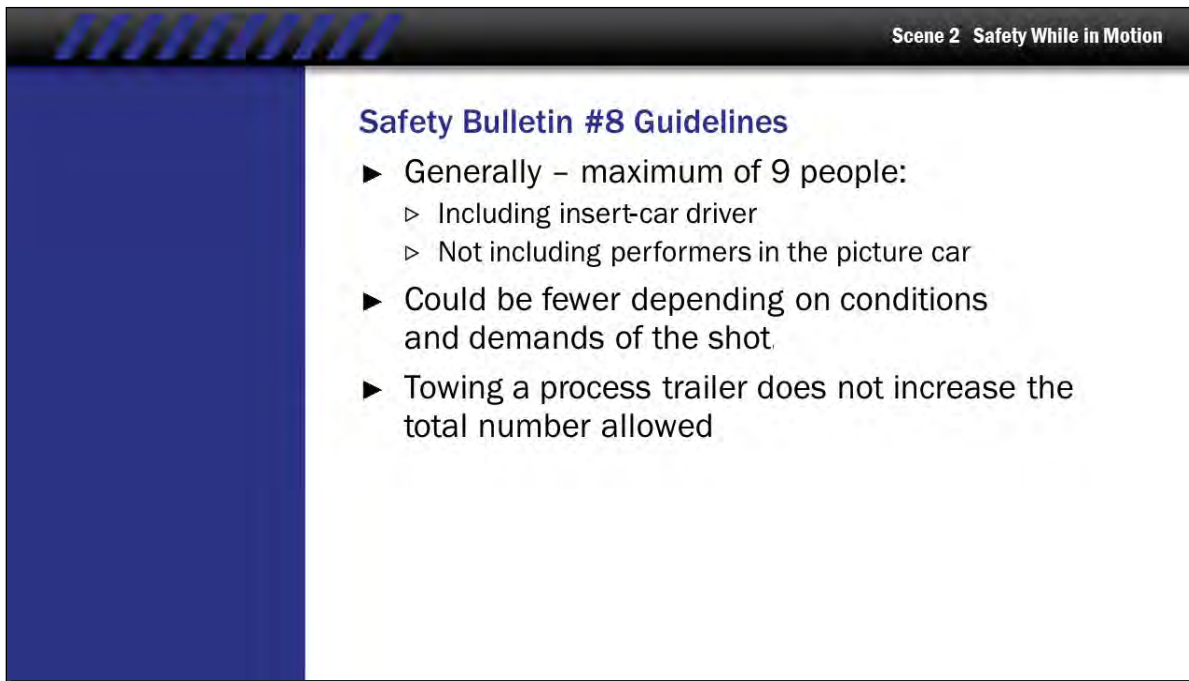
- ▶ Do not exceed load capacity of tires, suspension, axles, or brake system
- ▶ Vehicle must be within limits even if:
 - ▷ Operating under permit
 - ▷ On a closed course

Exceeding the load capacity of the tires, suspension, axles, or brake system is potentially dangerous.

Sometimes operating under permit or on a closed course allows use of the road that would not normally be legal, but even with a permit, you can't bend the laws of physics.

The vehicle must remain within its designed weight limit.

Slide 56 - Safety Bulletin #8 Guidelines

The slide features a dark blue header with a diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. The main content area is white with a blue vertical bar on the left. The title "Safety Bulletin #8 Guidelines" is in blue. The list items are in black with blue arrowheads.

Scene 2 Safety While in Motion

Safety Bulletin #8 Guidelines

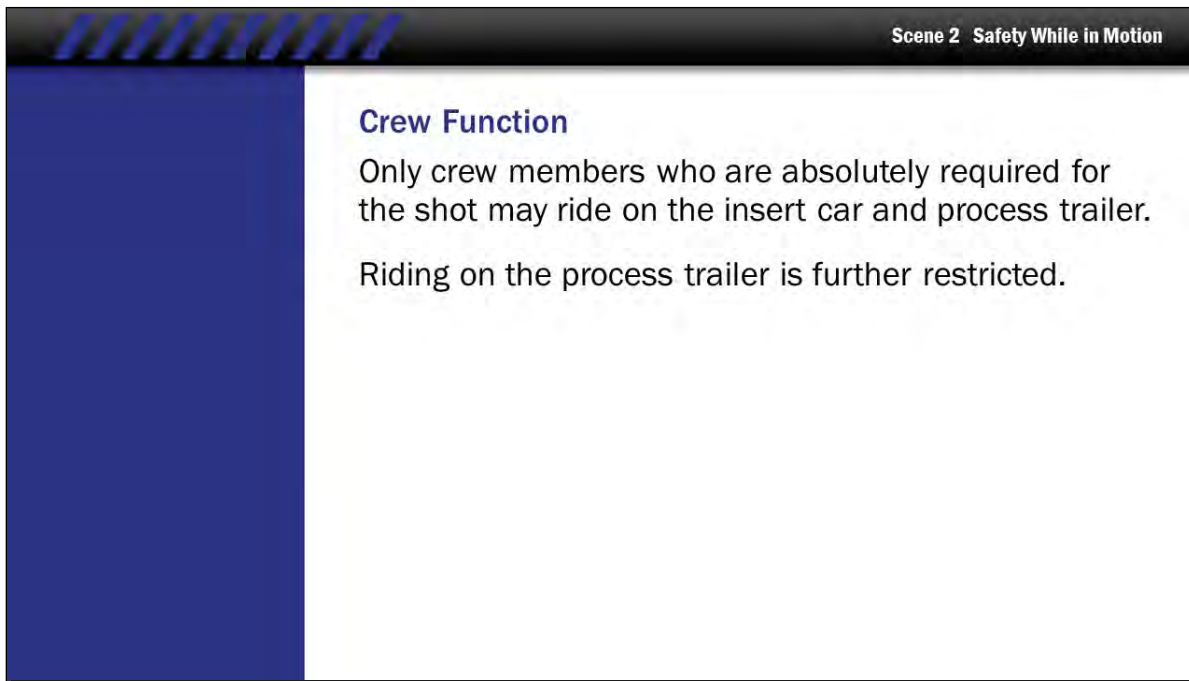
- ▶ Generally – maximum of 9 people:
 - ▷ Including insert-car driver
 - ▷ Not including performers in the picture car
- ▶ Could be fewer depending on conditions and demands of the shot.
- ▶ Towing a process trailer does not increase the total number allowed

Generally the maximum number of crew members allowed on an insert car should not exceed **nine**.

This includes the insert-car driver but does not include actors riding in the picture vehicle. Keep in mind, in some cases, conditions may exist where operations cannot be safely performed with nine people on board.

Towing a process trailer does not increase the total number of crew allowed on board, because the process trailer is considered part of the insert car.

Slide 57 - Crew Function

A presentation slide with a black header bar on the right containing the text "Scene 2 Safety While in Motion". The main content area is white with a blue vertical bar on the left. The text on the slide reads: "Crew Function", "Only crew members who are absolutely required for the shot may ride on the insert car and process trailer.", and "Riding on the process trailer is further restricted." data-bbox="87 145 815 467"/>

Scene 2 Safety While in Motion

Crew Function

Only crew members who are absolutely required for the shot may ride on the insert car and process trailer.

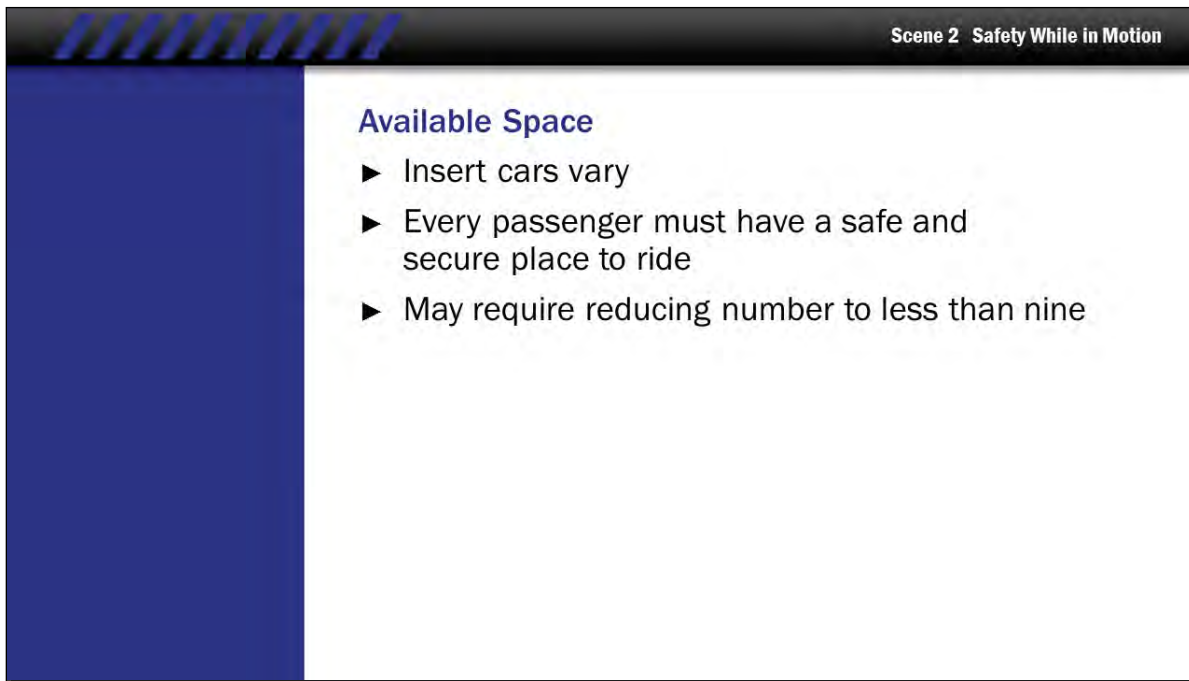
Riding on the process trailer is further restricted.

Only crew members absolutely required for the shot may ride on the insert car or process trailer.

All other persons should be riding in the **follow** vehicle.

Personnel riding on the process trailer should be limited to those whose job requires them to ride there.

Slide 58 - Available Space

The slide features a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. Below the header is a large blue vertical bar on the left side of the slide content area. The main content area is white and contains the title "Available Space" in blue, followed by three bullet points in black text.

Scene 2 Safety While in Motion

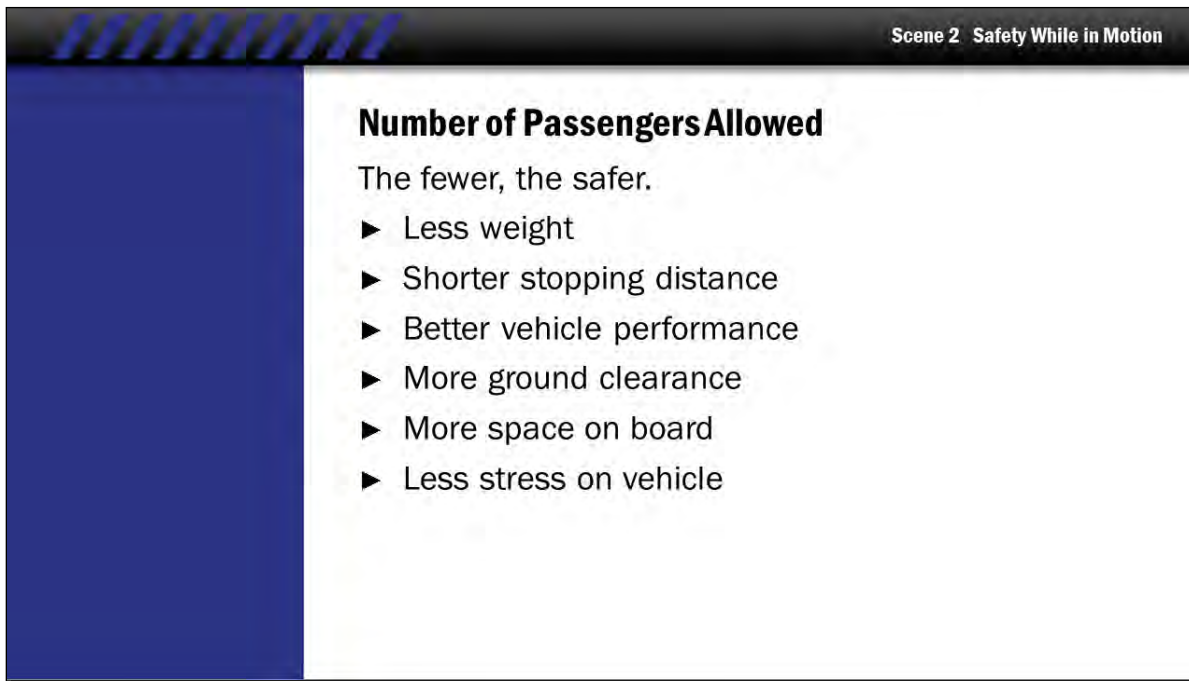
Available Space

- ▶ Insert cars vary
- ▶ Every passenger must have a safe and secure place to ride
- ▶ May require reducing number to less than nine

The performance and capacity of insert cars vary, and the number of people on board may be limited by space available.

Each person must have a safe and secure place to ride, and this may require reducing the number of crew to less than nine.

Slide 59 - Number of Passengers Allowed



Scene 2 Safety While in Motion

Number of Passengers Allowed

The fewer, the safer.

- ▶ Less weight
- ▶ Shorter stopping distance
- ▶ Better vehicle performance
- ▶ More ground clearance
- ▶ More space on board
- ▶ Less stress on vehicle

Fewer people means less weight, shorter stopping distance, better vehicle performance, more ground clearance, more space on board, and less stress on the vehicle. The fewer, the safer.

Slide 60 - Insert-Car Driver Authority

Scene 2 Safety While in Motion

The insert-car driver has the authority to make the final determination of the number of people that can be safely accommodated.

The insert-car driver has the authority to make the final determination on the number of people that can be safely accommodated.

Slide 61 - Embarking and Disembarking

Scene 2 Safety While in Motion

Embarking and Disembarking

Insert Car Engine Off and vehicle parked in a safe location	Insert Car Engine Running or stopped in non-secured location
<ul style="list-style-type: none">▶ Crew are permitted to freely get on and off the vehicle and work around the vehicle.	<ul style="list-style-type: none">▶ DO NOT get on or off unless instructed by the insert car driver or the 1st AD.▶ DO NOT walk between the insert car and towed vehicle.▶ NEVER get on or off when the vehicle is moving.▶ If in doubt, ASK.

While people are working around the insert car and climbing on and off the vehicle, the insert car driver ensures safety by leaving the insert car's engine off.

When the insert car is parked in safe location, free from hazards, with the engine is off, crew are permitted to freely get on and off the insert car and work around and between the insert car and the process trailer, as necessary.

The rules change when the insert car's engine is running. Whenever the engine is on, crew are only permitted to get on or off when instructed by the insert-car driver or the first assistant director that it is safe to do so.

When the engine is running, no one is permitted to walk between the insert car and the towed vehicle.

Once the insert car is working on the road, if it stops somewhere other than the designated end point or start point, the location may pose other hazards, like close proximity to traffic.


Crew should coordinate with the 1st AD before getting off the vehicle to ensure safety is maintained.

Never get on or off the insert car or process trailer when the insert car is moving, no matter how slowly.

Generator noise can make it hard to tell if the engine is running.

If you're not sure, ask the insert-car driver or the 1st A.D.

Slide 62 - Riding on the Front Deck 1



Scene 2 Safety While in Motion

Riding on the Front Deck

- ▶ Essential crew only
- ▶ Should be protected by guardrails and possibly restraint straps
- ▶ Should be protected (flying debris, gravel, dirt etc.)
 - ▷ Safety glasses or goggles
 - ▷ Helmets
 - ▷ Face shields
 - ▷ Other shielding

Only personnel required for the shot should ride on the front deck. For example, this may be the camera operator, first assistant camera (1st A.C.), or possibly a grip flagging the lens.

All crew riding on the front deck should be protected by guardrails and possibly safety restraint straps. Protection, such as safety glasses, goggles, helmets, face shields, or other types of shielding should be used to guard against flying debris, such as gravel, dirt, other road hazards, rain, and anything that can get into your face or your eyes.

Slide 63 - Riding on the Front Deck 2

Scene 2 Safety While in Motion



- ▶ Driver may reposition crew/equipment if it:
 - ▶ Blocks the driver's view
 - ▶ Blocks airflow to the engine

The insert-car driver may need to reposition crew or equipment if it blocks the insert-car driver's view or blocks the airflow to the engine.

Slide 64 - Protective Equipment 1

Scene 2 Safety While in Motion

Harnesses may be needed to prevent falling or unsafe movement.

Protective Equipment

Restraints

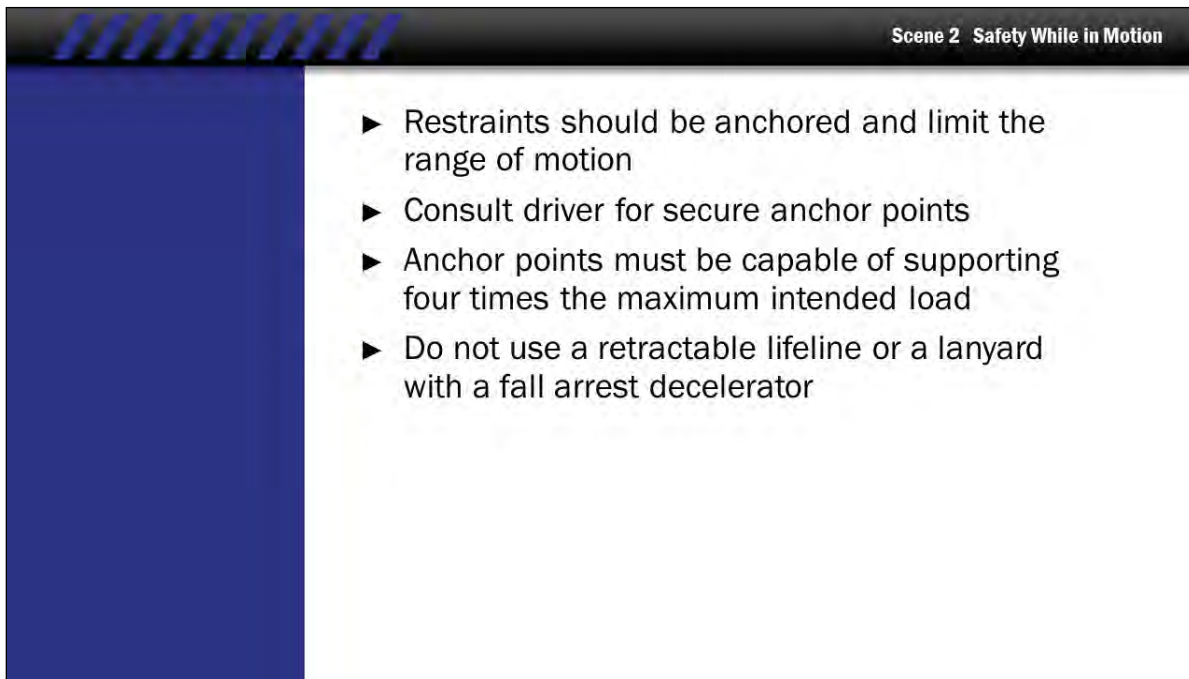
- ▶ If fast acceleration, braking, or hard turning is planned, consider whether each passenger should be restrained with a seat belt, body belt, or appropriate harnesses.
- ▶ This is critical for people whose hands are occupied and can't hold on.

If fast acceleration, braking, or hard turning is planned, consider whether passengers should be restrained with the seatbelt, body belt, or appropriate harness.

This is critical for people whose hands are occupied and can't hold on.

Harnesses may be needed to prevent falling or being thrown around.

Slide 65 - Protective Equipment 2



Scene 2 Safety While in Motion

- ▶ Restraints should be anchored and limit the range of motion
- ▶ Consult driver for secure anchor points
- ▶ Anchor points must be capable of supporting four times the maximum intended load
- ▶ Do not use a retractable lifeline or a lanyard with a fall arrest decelerator

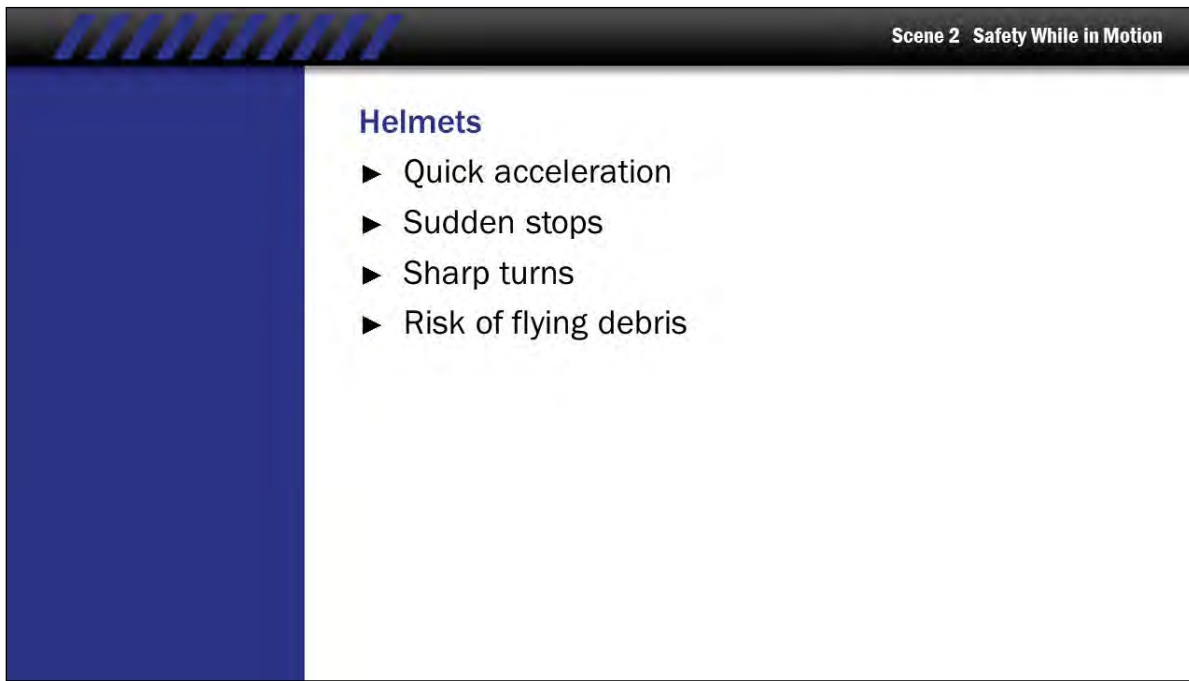
The restraint strap should be anchored and limit the range of motion to that which is required to perform the job.

Consult with the insert-car driver for secure anchor point locations, each of which must be capable of supporting four times the maximum intended load.

Do not use fall arrest equipment, such as a retractable lifeline or shock-absorbing lanyard.

The range of motion is not limited properly by that type of equipment.

Slide 66 - Helmets

A presentation slide titled "Slide 66 - Helmets". The slide has a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 2 Safety While in Motion" on the right. The main content area is white with a blue vertical bar on the left. The text "Helmets" is written in blue, followed by a bulleted list of four items: "Quick acceleration", "Sudden stops", "Sharp turns", and "Risk of flying debris".

Scene 2 Safety While in Motion

Helmets

- ▶ Quick acceleration
- ▶ Sudden stops
- ▶ Sharp turns
- ▶ Risk of flying debris

There are times when wearing a helmet should be considered, such as when the shot requires a high rate of speed, quick acceleration, sudden stops, sharp turns, or there is a risk of flying debris.

This should be discussed during prep so that appropriate head protection will be available when needed.

Some insert car vendors will provide helmets if requested.

Slide 67 - Eye Protection



Scene 2 Safety While in Motion

Eye Protection

- ▶ High speed
- ▶ Risk of debris in the air

**Contact the employer
or safety department
to obtain PPE.**

At high rates of speed or any time there is risk of debris in the air, appropriate safety glasses or goggles should be worn by anyone riding in the open on the insert car or process trailer.

Consult your employer or safety department to obtain the needed PPE.

Slide 68 - High-Visibility Reflective Vest



Scene 2 Safety While in Motion

High-Visibility Reflective Vest

- ▶ Required for all personnel exposed to vehicular traffic
- ▶ Must meet safety standard (ANSI/ISEA 107)

All personnel exposed to vehicular traffic on public streets, highways, and rights-of-way must wear American National Standards Institute (ANSI) / International Safety Equipment Association (ISEA) approved reflective high-visibility vests.

Please contact your employer or safety department to obtain the high-visibility vest.

Slide 69 - Special Considerations



Scene 2 Safety While in Motion

Special Considerations

- ▶ Surface of the roadway
- ▶ Weather conditions
- ▶ Lightning—see Safety Bulletin #38, *Guidelines for Inclement or Severe Weather*

Work may need to be put on hold until more favorable weather conditions exist.

The surfaces of the roadways need to be considered. Are they wet? Is it soft dirt?

Are there other surface conditions that could affect the operation of the insert car, process trailer, or camera crane?

These elements need to be carefully considered when planning the route for the vehicle.

Also, consider weather conditions and use caution during times of high winds, rain, hail, snow, or other adverse weather.

When there is a potential of lightning, the use of a reliable lightning detection system is highly recommended, such as a lightning app on a mobile device or a lightning meter.

Do not work on or around an insert car, process trailer, or camera crane during a lightning storm.


Seek shelter in a sturdy building, or if that is not an option, inside a hardtop vehicle with the windows rolled up.

Work may need to be put on hold until more favorable weather conditions exist.

Safety Bulletin #38, regarding inclement weather, can be viewed or downloaded using the Safety Bulletin link under the *Safety Pass Information* tab.

Slide 70 - Limits of the Permit

Scene 2 Safety While in Motion



Limits of the Permit

Using an insert car on public roadways requires:

- ▶ A permit
- ▶ Police officers for ITC

The camera car must remain within the permitted area.

These provisions make it possible to:

- ▶ Occupy two lanes
- ▶ Allow personnel to ride on the back of the insert car and on the process trailer

Using an insert car or process trailer on a public roadway requires a permit from the authority having jurisdiction (AHJ) and police officers to perform intermittent traffic control (ITC).

While the insert car is rigged for carrying personnel, it must remain within the operating area of the permit.

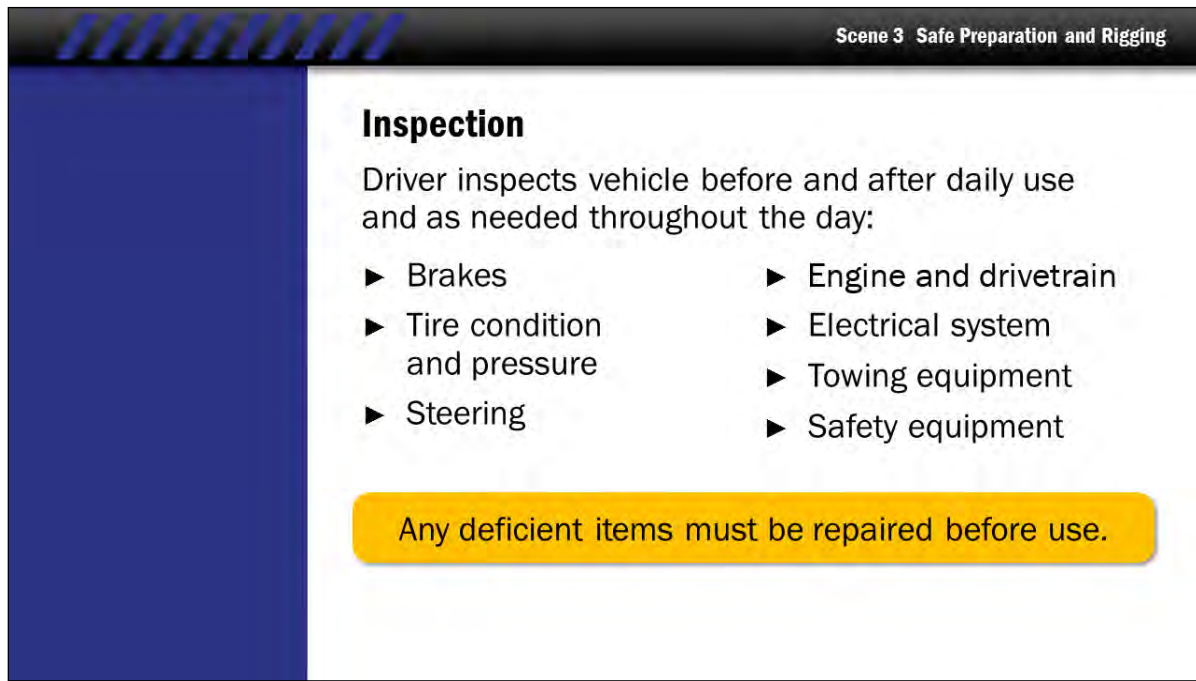
The closed course provided by the permit and the officers performing ITC make operations possible that are not normally allowed by law, such as occupying two lanes with the process trailer, or having personnel on the back deck of the insert car and process trailer.

Slide 71 - Safe Preparation and Rigging



Scene 3, Safe Preparation and Rigging.

Slide 72 - Inspection



The slide features a dark blue header with a diagonal striped pattern on the left and the text "Scene 3 Safe Preparation and Rigging" on the right. The main content area has a white background with a dark blue vertical bar on the left. The text is centered and includes a title, a paragraph, a bulleted list, and a highlighted yellow box.

Scene 3 Safe Preparation and Rigging

Inspection

Driver inspects vehicle before and after daily use and as needed throughout the day:

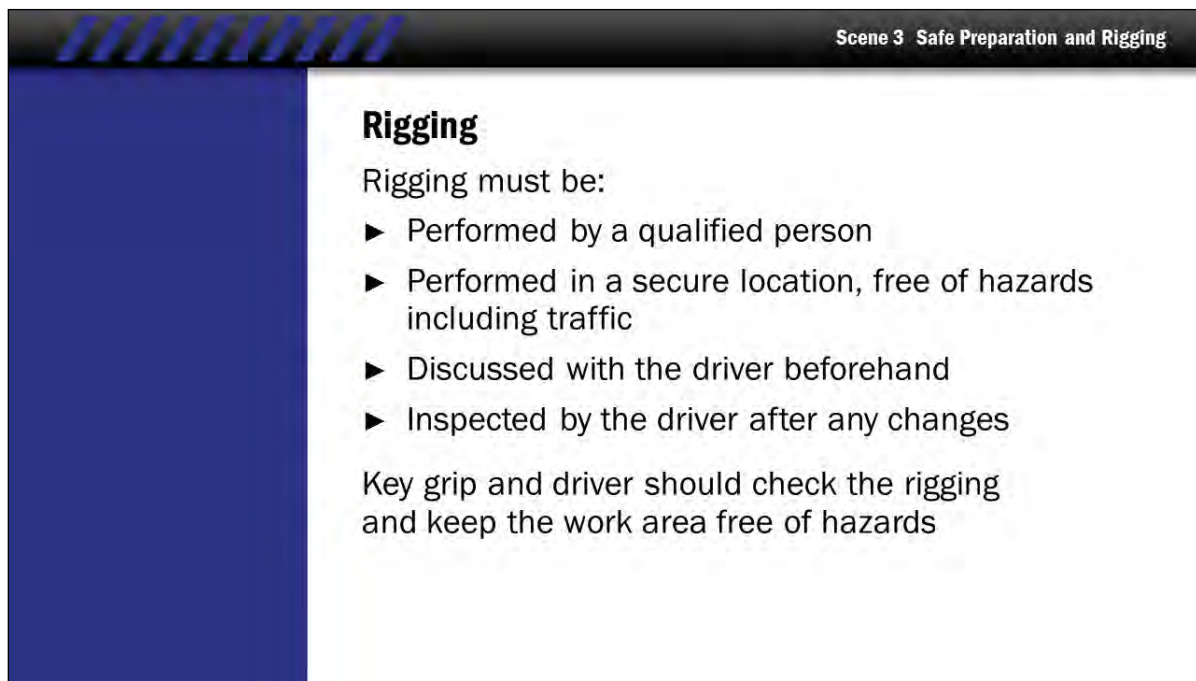
- ▶ Brakes
- ▶ Tire condition and pressure
- ▶ Steering
- ▶ Engine and drivetrain
- ▶ Electrical system
- ▶ Towing equipment
- ▶ Safety equipment

Any deficient items must be repaired before use.

The insert-car driver must inspect the insert car and process trailer before and after daily use and as needed throughout the day. The inspection should include brakes, tire condition and pressure, steering, engine and drivetrain, vehicle electrical system, towing equipment including the safety chain and ball mount, and all safety equipment. Any items not fully functioning must be repaired by a qualified person before use.

Note: Towed vehicles or trailers must be secured to the insert car with adequate safety chains. If you ever see a safety chain that is not connected, please bring that to the attention of the insert-car driver.

Slide 73 - Rigging

The slide features a dark blue header with a diagonal striped pattern on the left and the text "Scene 3 Safe Preparation and Rigging" on the right. The main content area has a white background with a dark blue vertical bar on the left. The text is as follows:

Rigging

Rigging must be:

- ▶ Performed by a qualified person
- ▶ Performed in a secure location, free of hazards including traffic
- ▶ Discussed with the driver beforehand
- ▶ Inspected by the driver after any changes

Key grip and driver should check the rigging and keep the work area free of hazards

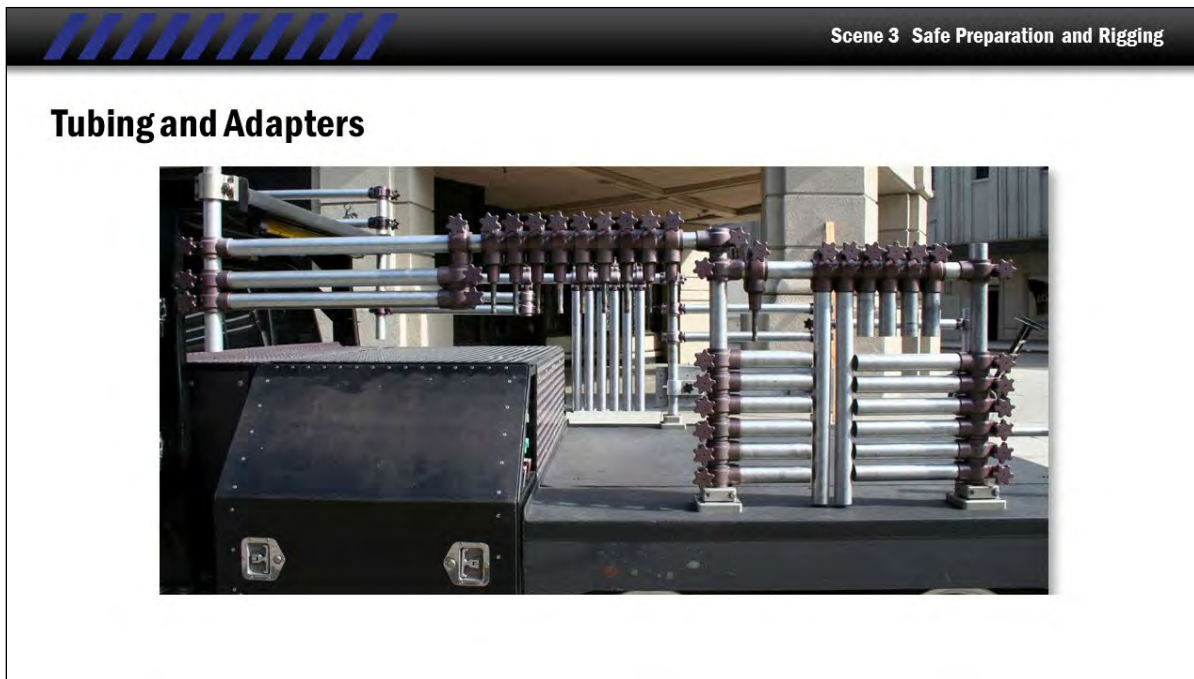
Rigging must be performed by a qualified person and must be performed in a secure location, free of hazards, including traffic. All rigging must be discussed with the insert-car driver beforehand and inspected by the insert-car driver after any changes.

This is important for safety because rigging can affect visibility and clearances.

In addition, the driver often can provide accessories that provide a more secure way to achieve the goal.

The key grip and insert-car driver should check the rigging and keep the work area free of hazards.

Slide 74 - Tubing and Adapters 1

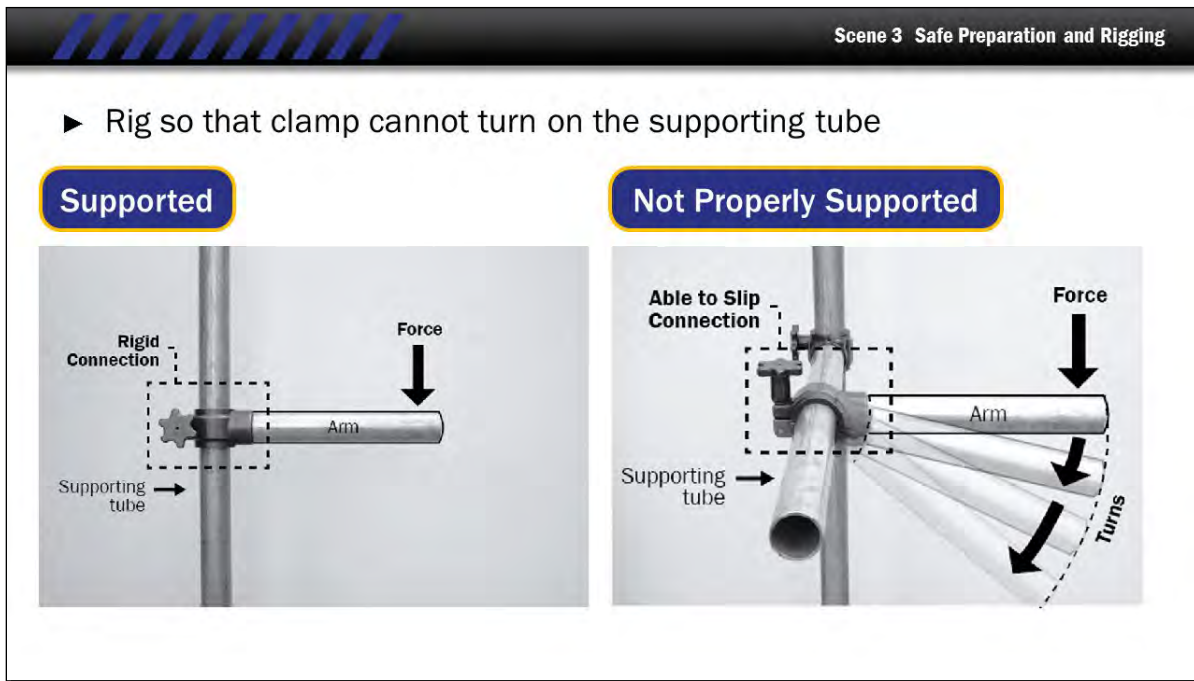


Insert cars provide a post and rail system using 2-inch tubing and a friction clamp system.

Tubing is not the same size as common Speed-Rail®.

Check with the insert-car driver for connection options and adapters.

Slide 75 - Tubing and Adapters 2



Tubing clamps make a strong, reliable connection between two pieces of tubing.

However, no amount of tightening can guarantee that the clamp will not turn on the tubing, especially when the tubing is subjected to a lot of leverage in one direction.

Therefore, it is safer to attach tubes that will have downward forces acting on them to vertical posts and attach tubes that will have lateral forces acting on them to horizontal rails.

Slide 76 - Tubing and Adapters 3

Scene 3 Safe Preparation and Rigging

Brace the arm vertically and laterally:

- ▶ When clamp could turn
- ▶ When subject to multi-directional forces
- ▶ When supporting heavy loads

Never use clamps that apply a crushing force to tubing.
Always consult the insert-car driver.

When the forces will act on a joint in multiple directions, or when any heavy load is attached, the load should be supported and braced vertically and laterally as necessary.

Consider the forces of wind, vertical forces caused by bumps, and forces of acceleration and braking.

Camera cars are typically equipped with pre-made hardware such as welded right-angle braces that are used to mount heavier lights.

When rigging, crew members should work in conjunction with the insert-car driver.

The insert-car driver may be able to supply equipment, such as Speed-Rail® adapters, junior pin adapters, and adapters to other common rigging equipment. In order to preserve the shape and integrity of the rail system on the insert car, the insert-car driver should oversee the attachment methods used.


Standard grip clamps that apply a crushing force to the tubing should not be used.

Do not alter any equipment on the insert car except with the explicit permission of the insert-car driver.

Slide 77 - Tubing and Adapters 4

Scene 3 Safe Preparation and Rigging


- ▶ Spare tubing must be properly stored and secured



Spare tubing should not be left where it could roll around.

It should be secured to the insert car, strapped or tied down, or stored in a jockey box.

Slide 78 - Securing to Deck 1




Scene 3 Safe Preparation and Rigging

Securing to Deck

On a plywood deck, screws or bolts can be used to secure hardware with consent of driver.

Typically the deck of the process trailer is thick plywood. On a plywood deck, screws or bolts can be used to secure hardware with the consent of the insert-car driver.

Slide 79 - Securing to Deck 2




Scene 3 Safe Preparation and Rigging

Rope and ratchet straps can be attached to posts, rails, or to D-rings, eyebolts, or E-track.

Ropes and ratchet straps can be attached to posts, rails, or to D-rings, eyebolts, or E-track.

Slide 80 - Securing to Deck 3

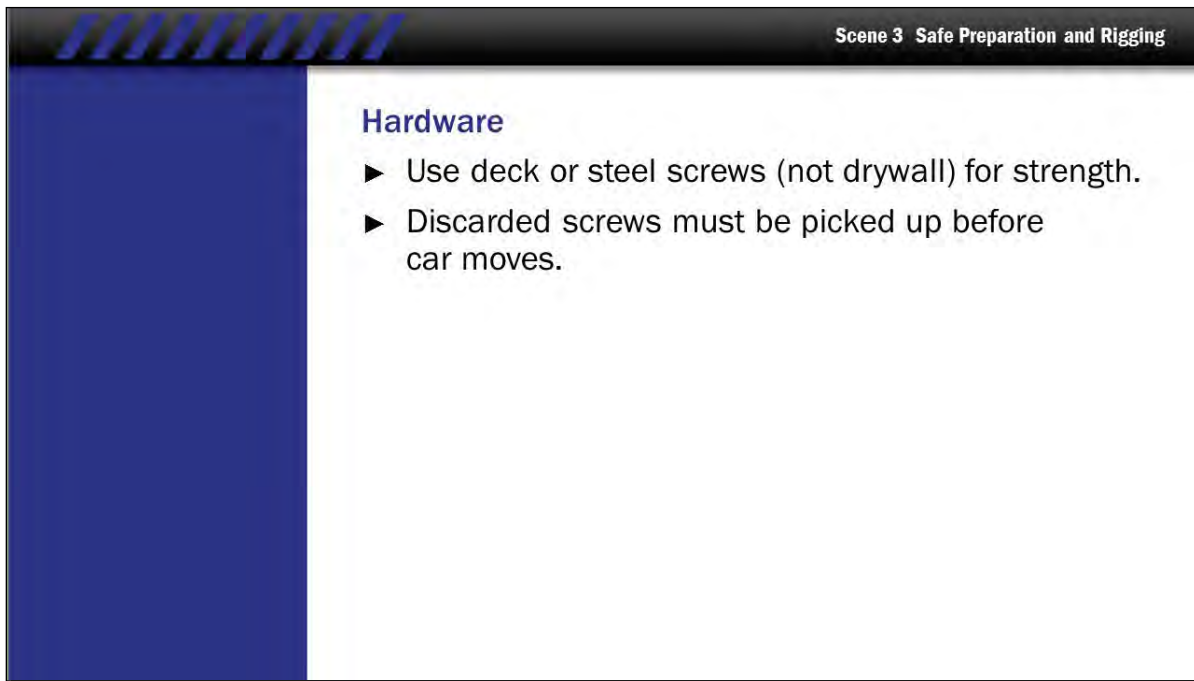
Scene 3 Safe Preparation and Rigging



Use L-brackets for wood-to-wood connections.

L-brackets or angle iron should be used for wood-to-wood connections, such as for mounting an apple box.

Slide 81 - Hardware

A presentation slide titled "Slide 81 - Hardware". The slide has a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 3 Safe Preparation and Rigging" on the right. The main content area is white with a blue vertical bar on the left. The text "Hardware" is in blue, followed by two bullet points: "▶ Use deck or steel screws (not drywall) for strength." and "▶ Discarded screws must be picked up before car moves." data-bbox="87 145 818 467"/>

Scene 3 Safe Preparation and Rigging

Hardware


- ▶ Use deck or steel screws (not drywall) for strength.
- ▶ Discarded screws must be picked up before car moves.

When attaching items to the deck, the type of screws used must have sufficient strength for the purpose.

Deck screws or steel screws are designed to provide strength. Drywall screws are brittle and should not be used.

Collect any discarded screws as the work is done. They must be picked up before the insert car moves.

Slide 82 - E-track



Scene 3 Safe Preparation and Rigging


E-track

- ▶ Permanently mounted in the deck
- ▶ Used to secure the vehicle to the trailer
- ▶ E-track clips make a secure attachment point for rigging

E-track is a thick metal that is permanently mounted to the deck of the process trailer and is used to secure the straps that hold the picture vehicle firmly on the process trailer.

E-track clips are designed to snap quickly and securely to the E-track. With the insert-car driver's permission, E-Track systems can provide a secure attachment point for rigging other equipment.

Slide 83 - E-clips



Scene 3 Safe Preparation and Rigging

E-clips should be:

- ▶ Adequately rated
- ▶ Compatible
- ▶ Adequate for the load

**Check with
insert-car driver
for attachment
points.**


Know the load rating of the system and its components. The E-track may be rated to hold the weight of a vehicle, but E-track clips are available with various ratings.

Be sure E-track clips are rated adequately for the load and compatible with the track.

Always check with the insert-car driver for attachment points on the deck of a process trailer.

Slide 84 - Guidelines for Cables

Scene 3 Safe Preparation and Rigging




Guidelines for Cables

- ▶ All cables on an insert car must be secured properly
- ▶ Prevent contact with moving parts

All cables must be secured properly and not come in contact with moving parts of the vehicle.

Slide 85 - Cables 1



Scene 3 Safe Preparation and Rigging

Cables

Between insert car and process trailer:

- ▶ Avoid excessive slack
- ▶ Do not allow cables to drag
- ▶ Secure on both sides of the hitch

When running cables between the tow vehicle and a process trailer, use only a small amount of slack between vehicles.


Big loops are not necessary and can pose a hazard. Do not allow cables to drag.

If you're not sure, follow the arc of the safety chain for the proper amount of slack.

Also, cables must be tied securely on both sides of the hitch.

Slide 86 - Cables 2

Scene 3 Safe Preparation and Rigging




- ▶ Do not wind cables around posts, rails, or knuckles.
- ▶ Use cable ties.
- ▶ Don't create a trip hazard including walkways and access points.

All cables must be secured. Use the appropriate ties that are easy to remove, such as rope, Velcro wraps, or bongo ties. Do not wind cables around rails or posts, or wrap them around tubing-clamp knuckles.

Do not allow cables to become a trip hazard. Keep cables away from walkways and access points.

Slide 87 - Hood Mount



Scene 3 Safe Preparation and Rigging

Hood Mount

- ▶ Speed-rail
- ▶ Pipe
- ▶ Leg braces
- ▶ Camera plate
- ▶ Ratchet straps

Use straps of sufficient strength that are in good condition.

Cameras are often attached directly to the picture vehicle by the use of hood mounts or side mounts.

Hood mounts usually consist of a Speed-Rail® pipe connection system using two 1¼-inch or two 1-inch pieces of aluminum pipe combined with two or four leg braces to form the body of the mount.

A camera plate can be attached to the pipe.

Threaded baby pins are sometimes added as mounts for lights.

Secure a hood mount with ratchet or cam straps attached to the frame, fender, or other secure anchor point on the vehicle.

Use straps that have sufficient strength for the tension required, and check that the webbing is in good condition before each use.

Slide 88 - Side Mount



Scene 3 Safe Preparation and Rigging

Side Mount

- ▶ Multiple legs
- ▶ Support arms
- ▶ Camera plate
- ▶ Ratchet straps
- ▶ Suction cups


Use straps of sufficient strength that are in good condition.

A side mount, also known as a hostess tray, hooks over the door, and has legs that brace against the bottom of the vehicle door.

The mount is secured to the vehicle with ratchet or cam straps.

Suction cups are another option for mounting hardware and equipment or for creating bracing points to stabilize a rig. Attach a tie-down strap or safety cable to a secure point of the vehicle to prevent the equipment flying off if it becomes dismounted from the rigging.

Slide 89 - Car Mount



Magazine clamp

Scene 3 Safe Preparation and Rigging

Car Mount

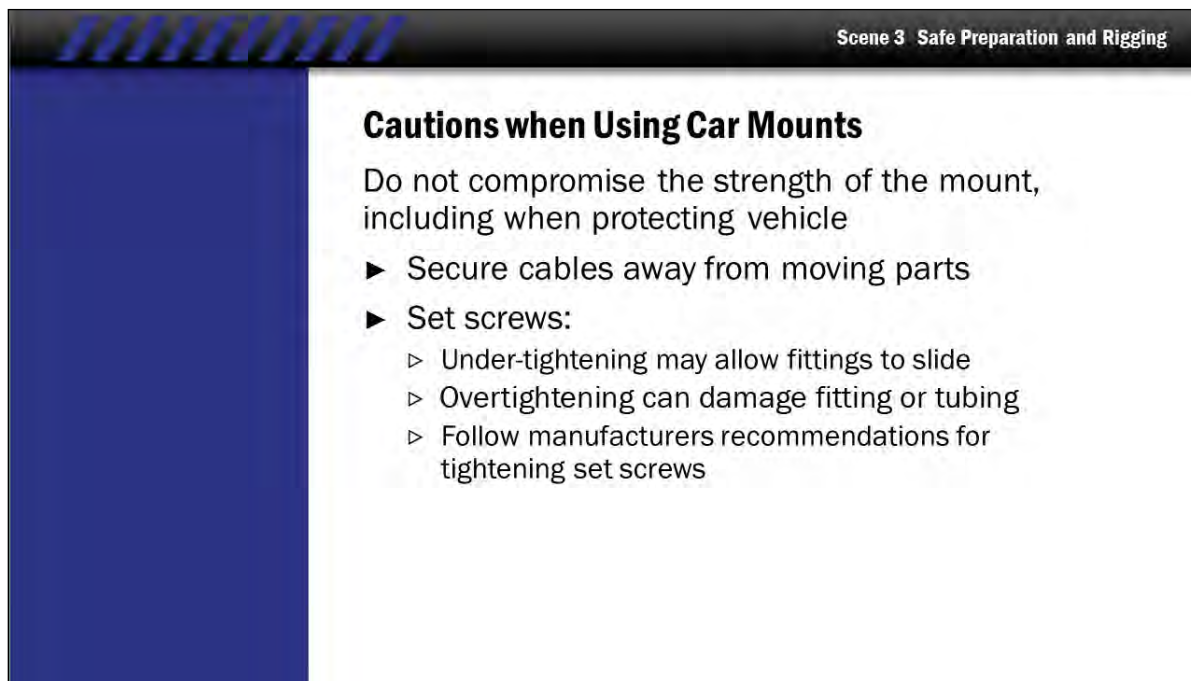
- ▶ Magazine clamps are used to stabilize film cameras.

Attach accessories properly and secure adequately.

Ball leveling heads or four-way leveling plates are used to level and position the camera.

Additional clamps are often used to stabilize the camera. Attach these accessories properly and secure them adequately to resist the forces acting on them when in motion.

Slide 90 - Cautions when Using Car Mounts 1



Scene 3 Safe Preparation and Rigging

Cautions when Using Car Mounts

Do not compromise the strength of the mount, including when protecting vehicle

- ▶ Secure cables away from moving parts
- ▶ Set screws:
 - ▷ Under-tightening may allow fittings to slide
 - ▷ Overtightening can damage fitting or tubing
 - ▷ Follow manufacturers recommendations for tightening set screws

Whether using hood mounts or side mounts, caution should be used when attaching cameras to vehicles.

The integrity of the mount should not be compromised, including when protecting the vehicle from physical damage.

Use care with cables when connecting to the camera or lights, secure properly, and do not allow contact with moving parts of the vehicle, including the wheels and suspension.

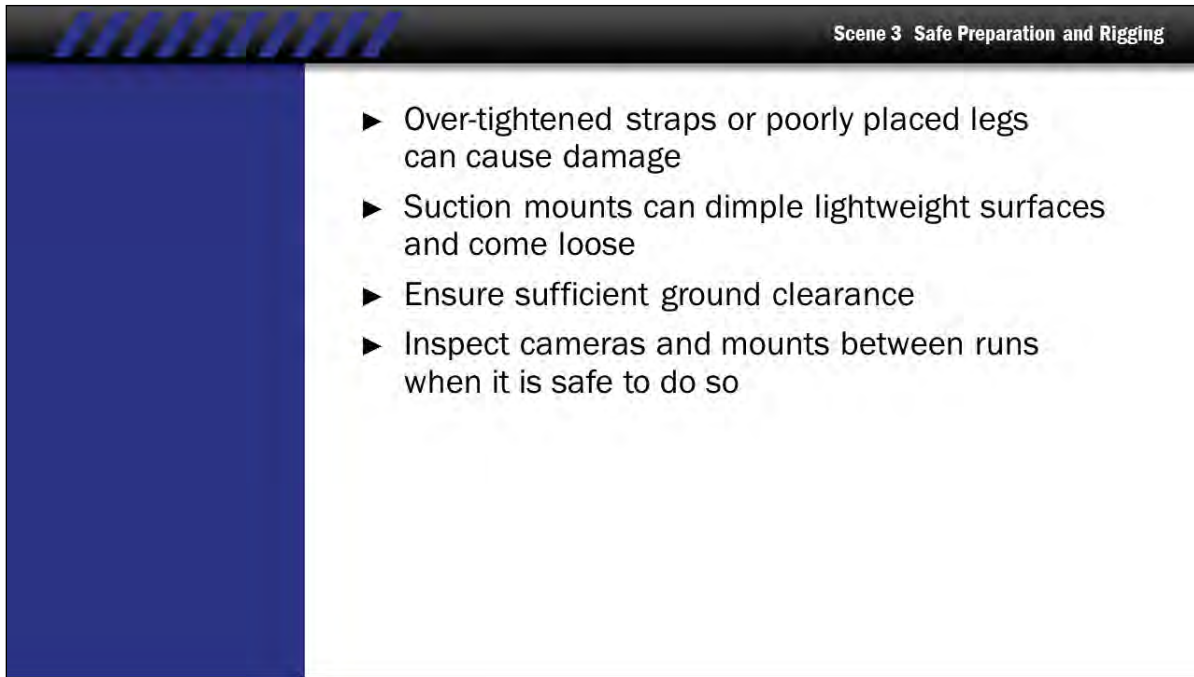
Set screws should be properly tightened to secure the fittings.

Under-tightening may cause the fitting to slide or come loose.

Overtightening can damage the tube or the fittings.

Always follow manufacture's recommendations for tightening set screws.

Slide 91 - Cautions when Using Car Mounts 2



Scene 3 Safe Preparation and Rigging

- ▶ Over-tightened straps or poorly placed legs can cause damage
- ▶ Suction mounts can dimple lightweight surfaces and come loose
- ▶ Ensure sufficient ground clearance
- ▶ Inspect cameras and mounts between runs when it is safe to do so

Overtightening of straps, or poorly placed legs, can compromise mount integrity and damage the vehicle.

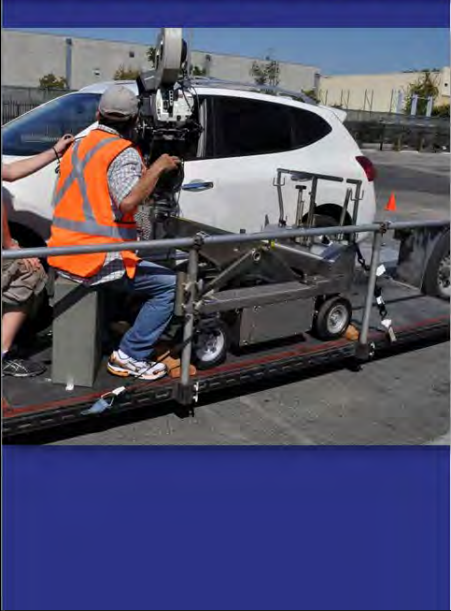
Take care when using suction cup mounts because they may cause dimpling of the surface, causing loss of suction.

Leave sufficient ground clearance between mounting hardware and the ground.

Allow for the fact that, with the weight of crew and equipment, the suspension will compress.

Inspect cameras and mounts between runs when it is safe to do so.

Slide 92 - Camera Dollies 1

A photograph showing a person wearing an orange safety vest and a cap, operating a camera dolly on a process trailer. The trailer is carrying a white car. The person is adjusting the camera on the dolly. The background shows an outdoor setting with buildings and a clear sky.

Scene 3 Safe Preparation and Rigging


Camera Dollies

Convenient, but require extra caution:

- ▶ Very large forces are possible
- ▶ Consider weight of dolly and the speed of the insert car
- ▶ Use a light-weight dolly when possible

It is often desirable to use a camera dolly on a process trailer to allow for easy camera adjustment or to make a camera move during a shot. However, given that dollies are heavy, abrupt stops or swerves can create significant forces. Use a lightweight dolly when possible.

Slide 93 - Camera Dollies 2



Scene 3 Safe Preparation and Rigging

Restraining the dolly:

- ▶ Limit range of travel
- ▶ Arrest movement if car stops suddenly
- ▶ Use rope or webbing with sufficient strength
- ▶ Tie off to substantial member or E-track

A physical restraint should be attached to the dolly to limit the range of travel.

The restraint should be designed to arrest the movement of the dolly if the vehicle stops suddenly.

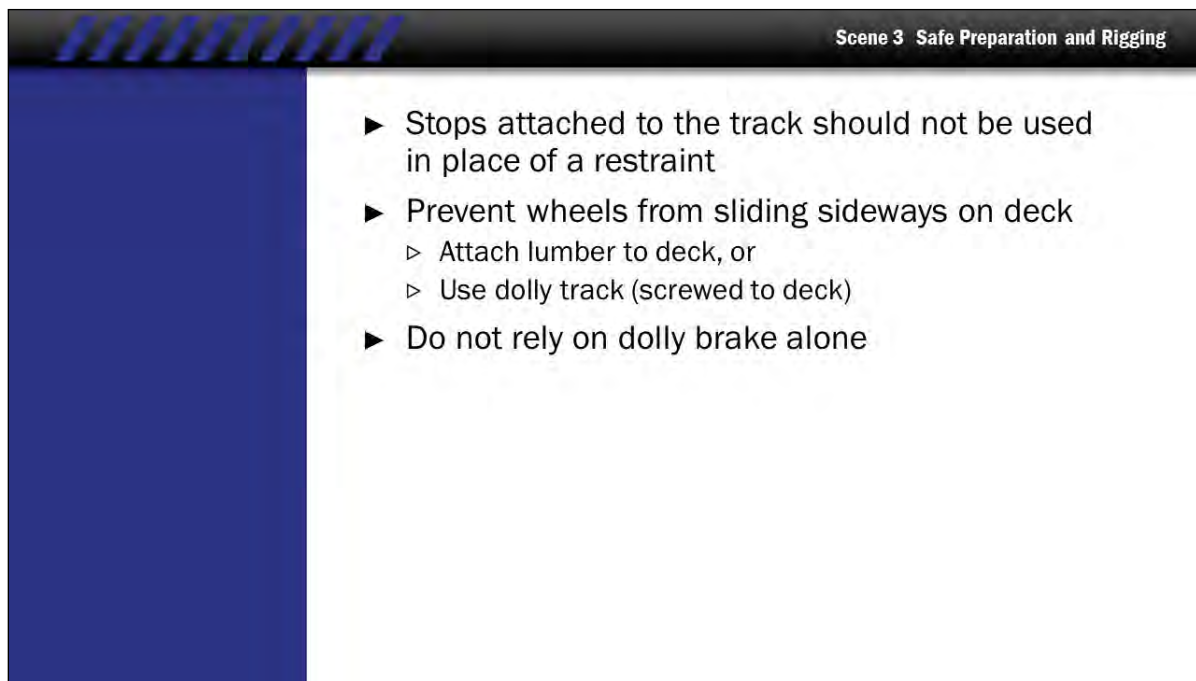
The material used (rope or webbing) must have the strength to absorb the forces.

A climbing rope that is designed to stretch under tension is ideal because it helps absorb shock.

Manila rope is not generally strong enough and should not be used.

Tie off the dolly restraint to a substantial structural part of the vehicle or to E-track as directed by the insert-car driver.

Slide 94 - Camera Dollies 3



Scene 3 Safe Preparation and Rigging

- ▶ Stops attached to the track should not be used in place of a restraint
- ▶ Prevent wheels from sliding sideways on deck
 - ▷ Attach lumber to deck, or
 - ▷ Use dolly track (screwed to deck)
- ▶ Do not rely on dolly brake alone

Placing stops, such as securing a clamp to the dolly track, should not be used in place of a restraint.

Consider ways to restrict lateral movement of the dolly.

Attaching a length of the lumber to the deck on the outside of the dolly helps prevent the wheels from sliding sideways on the deck.

Even when it is not required for the shot, it helps to put the dolly on track, because the track can be secured to the deck.

A fixed dolly with a moving jib arm may be better than moving the dolly itself.

If the dolly does not need to move, using wooden blocks attached to the deck is another way to keep the dolly stationary.

Do not rely on using the dolly's brake to prevent movement.

Slide 95 - Camera Dollies 4

Scene 3 Safe Preparation and Rigging

Consider alternatives for making camera moves such as a (motorized) slider or a jib arm.



Using a remote-operated dolly system, such as a powered slider, is another alternative for safely making camera moves.

Slide 96 - Tripods 1


Scene 3 Safe Preparation and Rigging

Tripods

The traditional method for securing a tripod (applying tension to the top of the leg section) is not effective on a moving vehicle.

Lateral forces on the legs often cause them to collapse enough to loosen the tie-down.

Tie down tripods by connection to the lower leg section.



A center pull is a traditional method of securing a tripod

The traditional method for securing a tripod to a platform is to use a center pull (like the one shown here) or a similar type of strap.

However, this method is likely to fail on a moving vehicle because lateral forces, from jolts or hard braking, can cause the telescoping tripod legs to collapse enough to loosen the tie-down.

A center pull relies on tension to secure the tripod in place, but lateral forces can overcome the holding power of the leg's friction locks.

The tripod should not be secured solely to the upper leg section.

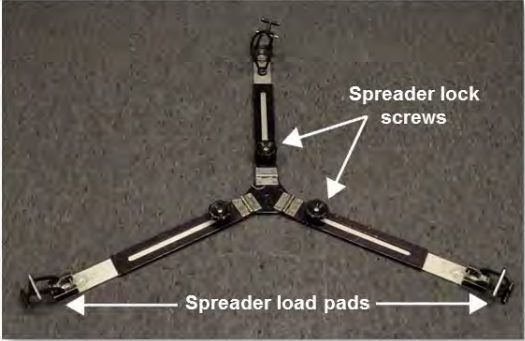
The lower leg section should be secured to the deck.

Slide 97 - Tripods 2

Scene 3 Safe Preparation and Rigging

Secure feet from slipping:

- ▶ Screw/chain feet to deck.
- ▶ Use a spreader:
 - ▷ Secure spreader to deck with screws or sandbags.
 - ▷ Be sure weight rests on deck.
 - ▷ Be sure spreader lock screws are tight.



Use a spreader under the tripod, or screw or chain the individual legs to the deck to ensure that the feet of the tripod cannot slip. The spreader should also be secured in place with screws or sandbags. Be sure that the spreader lock screws are tight.

Be sure the spreader's end pads are directly supported, sitting flat on the deck.

When the end pads extend over the edge or rest on an irregular surface they tend to make the center of the spreader bow upward, allowing the camera and tripod to move vertically, which can cause the tie downs to come loose.

Slide 98 - Equipment 1

Scene 3 Safe Preparation and Rigging



Equipment

All equipment must be secured:

- ▶ Held in place by tubing
- ▶ Strapped or tied down
- ▶ Held in place with sand bags—sand bags must be tied down

Consider the forces if the camera car swerves or stops suddenly.

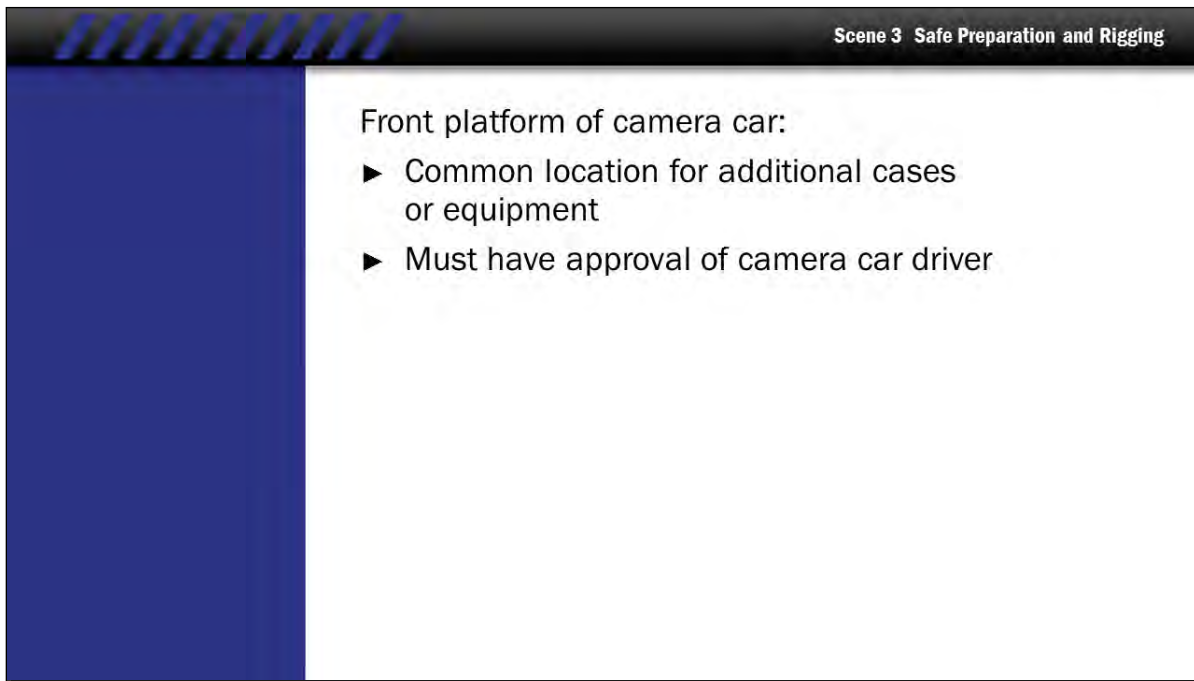
Cargo must be secured in place.

This can be done by placing tubing around it, strapping or tying it down, or holding it in place with sandbags.

Note: If you're using sandbags, the sandbags must also be tied down, and all equipment must be secured.

Consider the forces if the camera car swerves or stops suddenly.

Slide 99 - Equipment 2

The slide features a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 3 Safe Preparation and Rigging" on the right. Below the header is a large blue vertical bar on the left side of the slide content area. The main content area is white and contains the following text:

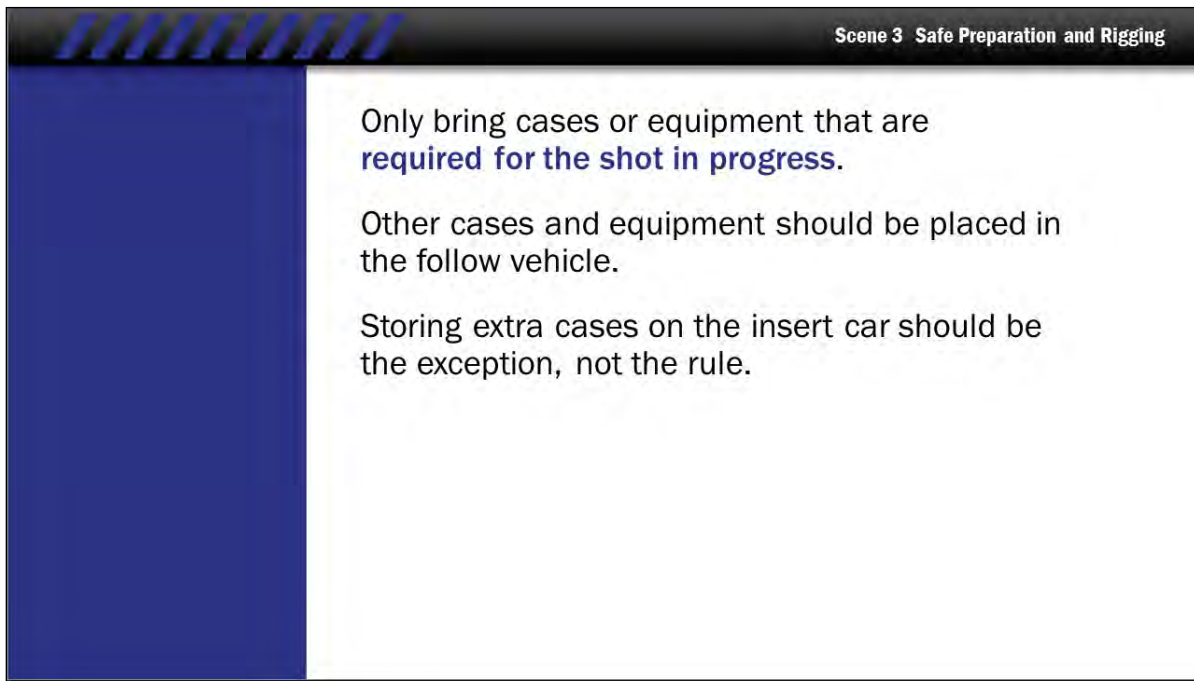
Front platform of camera car:

- ▶ Common location for additional cases or equipment
- ▶ Must have approval of camera car driver

The front platform of the insert car is sometimes used to carry additional cases or equipment, but excessive amounts of equipment can block airflow to the engine or block the view of the driver.

Check with the insert-car driver for appropriate cargo locations.

Slide 100 - Equipment 3

A presentation slide with a black header bar on the left containing blue diagonal stripes and the text "Scene 3 Safe Preparation and Rigging" on the right. The main content area is white with a blue vertical bar on the left. The text on the slide reads: "Only bring cases or equipment that are required for the shot in progress." "Other cases and equipment should be placed in the follow vehicle." "Storing extra cases on the insert car should be the exception, not the rule."

Scene 3 Safe Preparation and Rigging

Only bring cases or equipment that are **required for the shot in progress.**

Other cases and equipment should be placed in the follow vehicle.

Storing extra cases on the insert car should be the exception, not the rule.

Only bring cases or equipment that is required for the shot in progress.

Other cases of equipment should be placed in the follow vehicle.

Storing extra cases on the insert car should be the exception, not the rule.

Slide 101 - Safe Operation with a Crane Arm



Scene 4, Safe Operation with a Crane Arm.

Slide 102 - Crane Safety 1

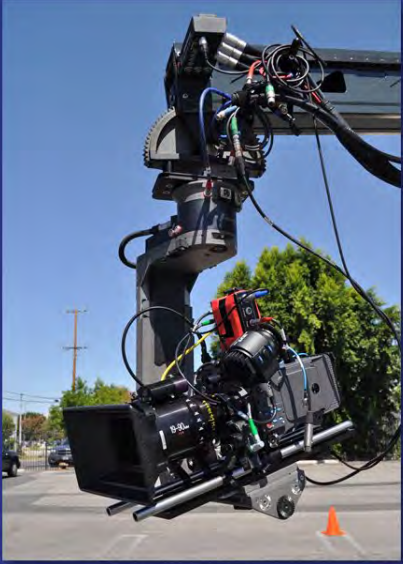


This scene considers safety when using a crane mounted to the back deck of an insert car.

This discussion does not include cranes permanently mounted on a motorized base, like the Chapman Super Nova or similar vehicles.

Slide 103 - Crane Safety 2

Scene 4 Safe Operation with a Crane Arm



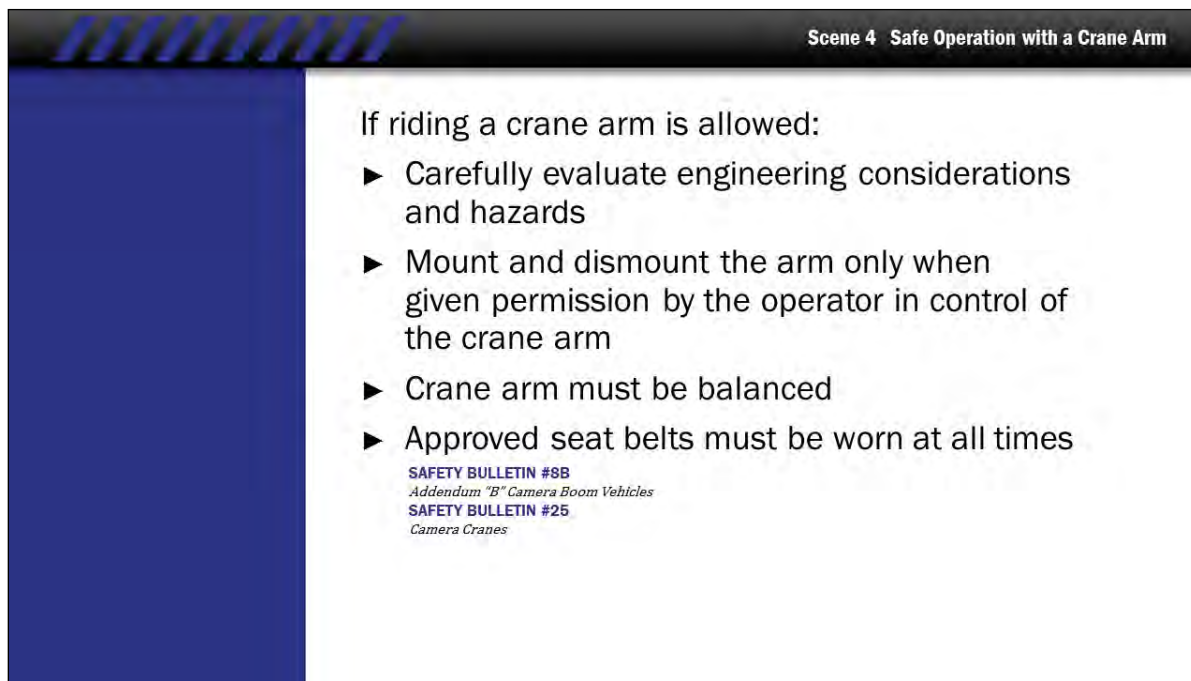
Camera operated via remote head is highly preferred.

Check with studio safety rep. to determine if riding is permitted.

When a camera crane is used on an insert car, the use of a remote head is highly recommended.

Contact your studio safety representative to determine whether personnel are allowed to ride a crane arm on an insert car.

Slide 104 - Crane Safety 3



Scene 4 Safe Operation with a Crane Arm

If riding a crane arm is allowed:

- ▶ Carefully evaluate engineering considerations and hazards
- ▶ Mount and dismount the arm only when given permission by the operator in control of the crane arm
- ▶ Crane arm must be balanced
- ▶ Approved seat belts must be worn at all times

SAFETY BULLETIN #8B
Addendum "B" Camera Boom Vehicles
SAFETY BULLETIN #25
Camera Cranes

If the employer and crane manufacturer allow personnel to ride the crane, additional safety precautions must be used.

The engineering would need to be evaluated for potential hazards.


Personnel must only mount and dismount the arm when given permission by the operator in control of the crane arm.

Crane balance must be maintained at all times.

Also, approved seatbelts must be worn at all times when riding the crane arm.

See the relevant Safety Bulletins.

Slide 105 - Crane Selection 1



Scene 4 - Safe Operation with a Crane Arm

Crane Selection

Crane must be appropriate for use on an insert car.

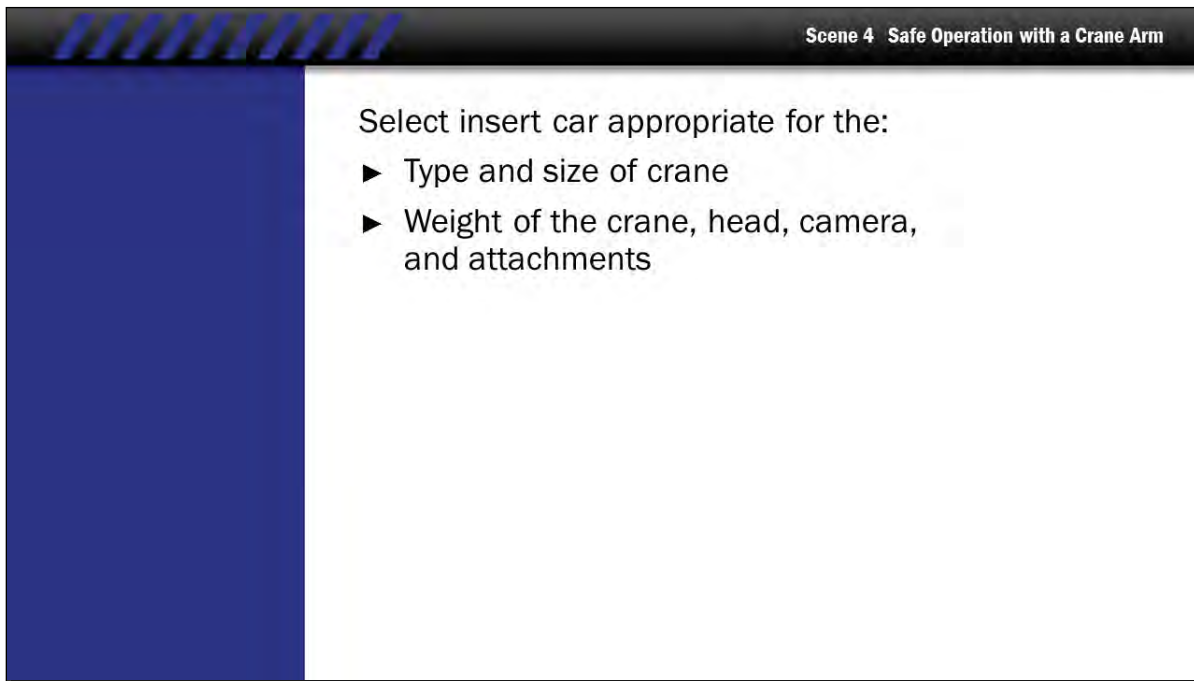
Consult vendor, manufacturer, or qualified person.

A crane mounted on an insert car experiences significant dynamic loading and G-forces in every direction.

Cranes selected for this purpose must be of sufficient strength to withstand these forces.

Check with the vendor, manufacturer, or qualified person to determine whether the crane is appropriate for this use.

Slide 106 - Crane Selection 2



Scene 4 Safe Operation with a Crane Arm

Select insert car appropriate for the:

- ▶ Type and size of crane
- ▶ Weight of the crane, head, camera, and attachments

Select the appropriate insert car for the type, size, and weight of the crane.

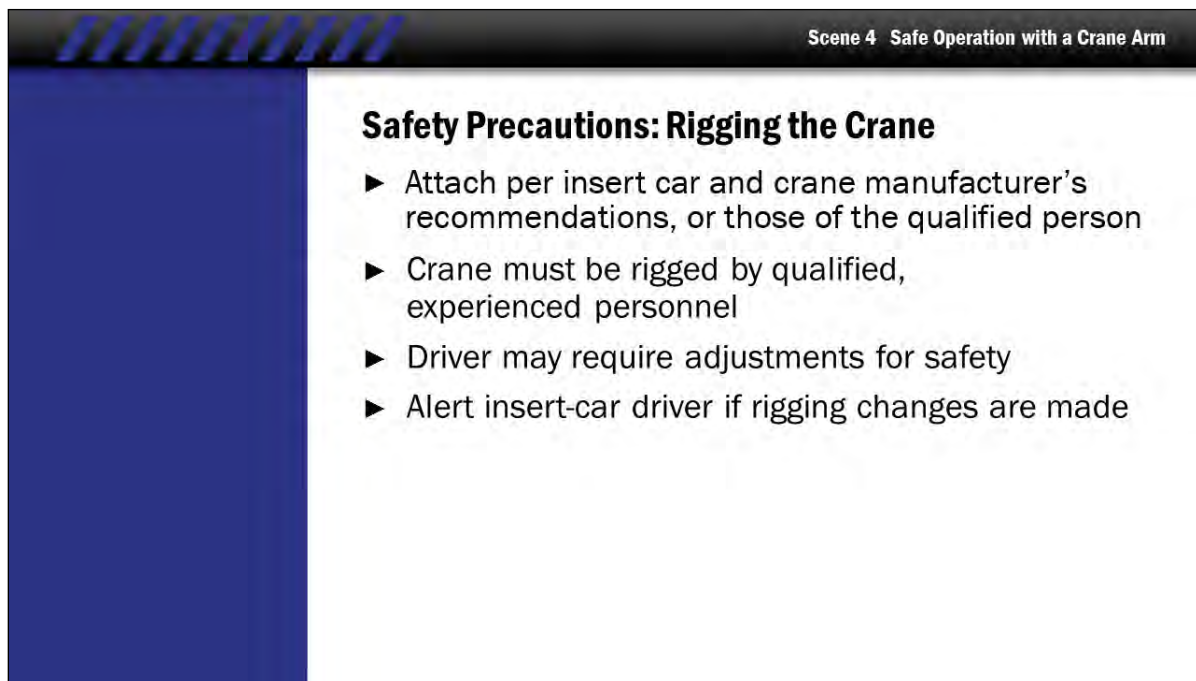
The weight of a telescoping arm will vary considerably between different makes and models.

Cranes can overload a typical two-axle insert car.

A standard flatbed truck that is not designed for this purpose should not be used as a platform for a crane.

Consult with the insert car vendor to determine the appropriate vehicle for the load.

Slide 107 - Safety Precautions 1



Scene 4 Safe Operation with a Crane Arm

Safety Precautions: Rigging the Crane

- ▶ Attach per insert car and crane manufacturer's recommendations, or those of the qualified person
- ▶ Crane must be rigged by qualified, experienced personnel
- ▶ Driver may require adjustments for safety
- ▶ Alert insert-car driver if rigging changes are made

The crane must be rigged by qualified experienced personnel and tied down using the method recommended by the crane manufacturer and appropriate for the insert car.

The insert-car driver may require adjustments for safety, and always alert the insert-car driver if rigging changes are made.

Slide 108 - Safety Precautions 2

Scene 4 Safe Operation with a Crane Arm


- ▶ Perform rigging in a secure area, free of known hazards
- ▶ Insert car and crane arm must be checked before and after use

Perform rigging of the crane in a secure area, free of known hazards.

The insert car and crane must be checked before and after use.

Slide 109 - Safety Precautions 3

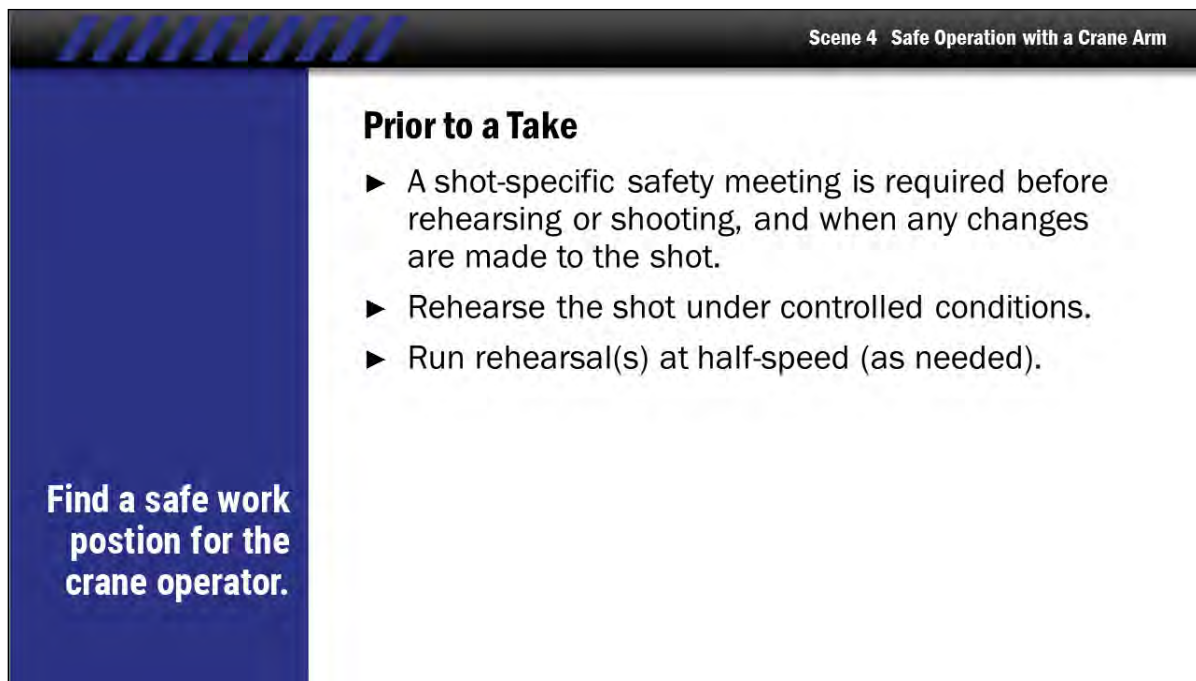
Scene 4 Safe Operation with a Crane Arm



Remember, the demands of the shot and the configuration of the crane will determine the safety measures needed.

If any rigging adjustments are needed, the insert-car driver must inspect the vehicle after the change.

Slide 110 - Prior to a Take



Scene 4 Safe Operation with a Crane Arm

Find a safe work position for the crane operator.

Prior to a Take

- ▶ A shot-specific safety meeting is required before rehearsing or shooting, and when any changes are made to the shot.
- ▶ Rehearse the shot under controlled conditions.
- ▶ Run rehearsal(s) at half-speed (as needed).

A shot-specific safety meeting is required before a rehearsal, a take, and when any changes are made to the shot.

Rehearse the shot under controlled conditions to confirm the safe movement of both the vehicle and the crane arm.

Begin with slow or half-speed rehearsals before rehearsing at full speed.

Slide 111 - During Operations



Scene 4 Safe Operation with a Crane Arm

During Operations

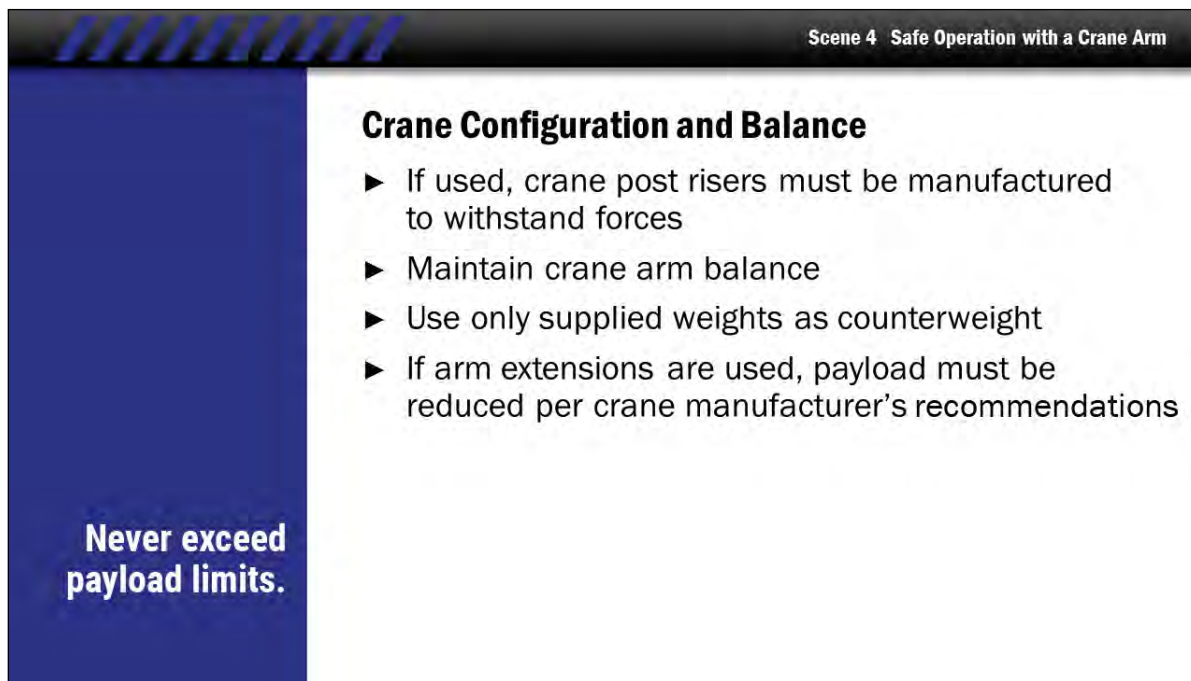
- ▶ Use of PLs or comm. sets is recommended
- ▶ Do not exceed safe speed

The use of private lines, also known as PLs or comm. sets, is recommended for communication between the director, insert-car driver, crane operators, and camera operators.

The combination of wind and movement of the vehicle can create significant wind resistance and impact control of the arm.

Do not exceed a safe speed.

Slide 112 - Crane Configuration and Balance



Scene 4 Safe Operation with a Crane Arm

Crane Configuration and Balance

- ▶ If used, crane post risers must be manufactured to withstand forces
- ▶ Maintain crane arm balance
- ▶ Use only supplied weights as counterweight
- ▶ If arm extensions are used, payload must be reduced per crane manufacturer's recommendations

Never exceed payload limits.


If a riser is used on the crane post, it must be a riser provided for that purpose by the crane supplier, and designed for this application. Maintain crane arm balance at all times.

The maximum payload on the nose of the crane should never be more than that which can be balanced by the supplied counterweight system. Do not add sandbags or other ballast as counterweight.

If you cannot achieve balance with the supplied weights, you are overloading the crane arm.

Never exceed payload limits.

Slide 113 - Clearances and Hazards



Scene 4 Safe Operation with a Crane Arm

Clearances and Hazards

- ▶ The planned route shall be carefully checked for clearances and hazards.
- ▶ Do not deviate from the planned route.
- ▶ Use a spotter when the back end of the crane extends past the perimeter of the insert car.

A crane strike can cause great bodily harm.

The planned route must be carefully checked for clearances and hazards.

Do not deviate from the planned route until the new route has been checked for power lines and other obstacles.


Use a spotter when the back end of the crane extends past the perimeter of the insert car.

Hitting the crane arm while the insert car is traveling can cause great bodily harm to the crane operator and anyone else riding on the insert car.

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Slide 114 - Power Lines 1



Scene 4 - Safe Operation with a Crane Arm

Power Lines

NEVER invade the minimum clearances.

The minimum clearance requirements for power lines must be observed at all times.

Slide 115 - Power Lines 2

Scene 4 Safe Operation with a Crane Arm

Erecting, operating, or dismantling any boom-type lifting device closer than the minimum clearances is an OSHA violation and is prohibited.

Safety Bulletin #8,
Addendum "C" Power Line Distance Requirements

- ▶ Work in California, use Table 2 (Cal/OSHA)
- ▶ In states that have their own state-OSHA program, use that state's standard (available on the state's OSHA website)
- ▶ In other states, use Fed OSHA Standard, Table 3

Placing any part of a camera crane where it is too close to power lines, either when building the crane, operating, or dismantling it, is unsafe.

It is an OSHA violation and is strictly prohibited.

Minimum clearance distances are based on the voltage of the power lines and are given in tables on the next slides.

They can also be found in the industry safety bulletin listed here.

Slide 116 - Table 2 - California

Scene 4 Safe Operation with a Crane Arm

Table 2—California
Boom-type Lifting or Hoisting Equipment Clearances
Required from Energized Overhead High-Voltage Lines

Nominal Voltage (Phase to Phase)	Minimum Required Clearance (Feet)
600 to 50,000	10
over 50,000 to 75,000	11
over 75,000 to 125,000	13
over 125,000 to 175,000	15
over 175,000 to 250,000	17
over 250,000 to 370,000	21
over 370,000 to 550,000	27
over 550,000 to 1,000,000	42

In California, the minimum clearance for voltages from 600 to 50,000 volts is 10 feet.

A typical residential street pole is in this range.

Transmission lines and sub-transmission lines are much higher voltage and require significantly greater clearance.

Slide 117 - Table 3 - Federal

Scene 4 Safe Operation with a Crane Arm

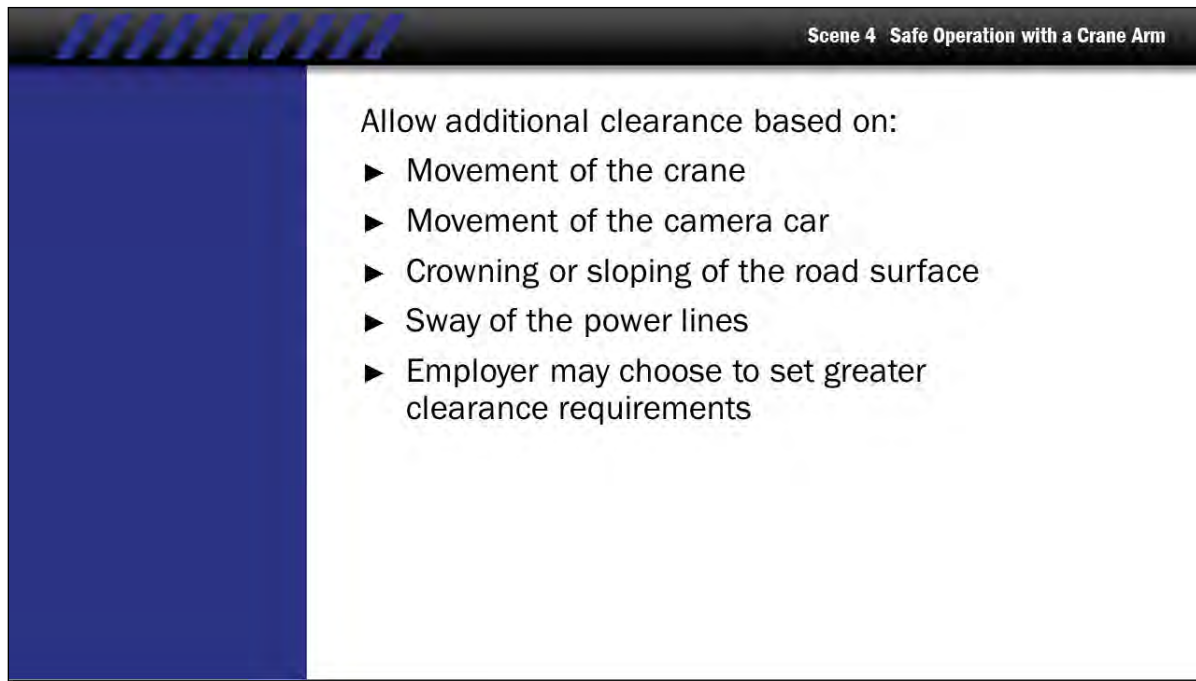
Table 3—Federal
Federal Clearances Required When Working On or Near Exposed Energized Parts

Nominal Voltage (Phase to Phase)	Minimum Required Clearance (Feet)
50,000 or below	10
over 50,000	10 feet plus 4 inches for every 10,000 volts over 50,000 volts

Fed/OSHA clearance requirements are slightly different, as shown here.

The minimum clearance, up to 50,000 volts, is still 10 feet.

Slide 118 - Power Lines 3

The slide features a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 4 Safe Operation with a Crane Arm" on the right. Below the header is a large blue vertical bar on the left side of the slide content area. The main content area is white and contains a bulleted list of five items under the heading "Allow additional clearance based on:". The items are: Movement of the crane, Movement of the camera car, Crowning or sloping of the road surface, Sway of the power lines, and Employer may choose to set greater clearance requirements.

Scene 4 Safe Operation with a Crane Arm

Allow additional clearance based on:

- ▶ Movement of the crane
- ▶ Movement of the camera car
- ▶ Crowning or sloping of the road surface
- ▶ Sway of the power lines
- ▶ Employer may choose to set greater clearance requirements

Allow additional clearance based upon movement of the crane, movement of the insert car, crowning or sloping of the road surface, and sway of the power lines.

Your employer may choose to set greater clearance requirements than listed in the safety bulletin.

Contact your studio safety department for more information and guidance.

Slide 119 - Safety Awareness and Communication



Scene 5, Safety Awareness and Communication.

Slide 120 - Awareness

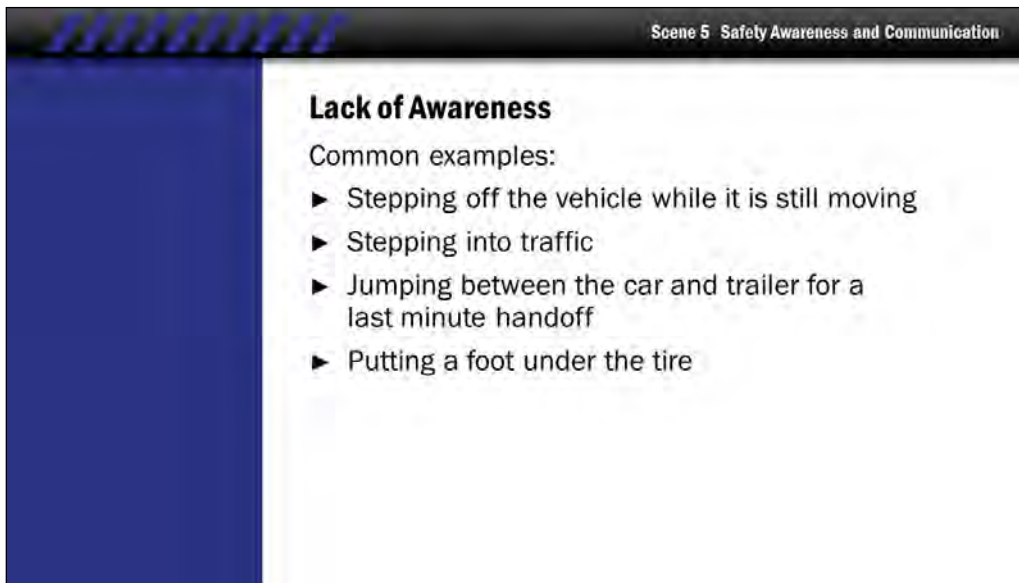
Scene 5 Safety Awareness and Communication

Awareness

Working around moving vehicles requires heightened awareness.

Working on and around moving vehicles requires a deliberate effort of heightened awareness. During normal work activity, most people are filtering out the noise and commotion around them. The filtering helps you function, but it also can cause you to become unaware of danger.

Slide 121 - Lack of Awareness 1



Scene 5 Safety Awareness and Communication

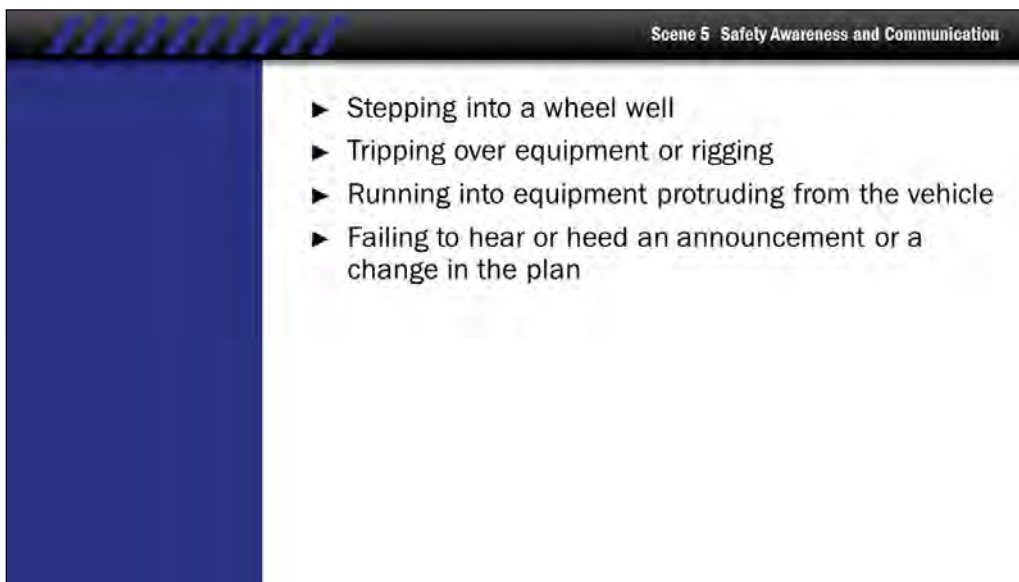
Lack of Awareness

Common examples:

- ▶ Stepping off the vehicle while it is still moving
- ▶ Stepping into traffic
- ▶ Jumping between the car and trailer for a last minute handoff
- ▶ Putting a foot under the tire

Lack of awareness can cause people to do dangerous things, such as: stepping off the vehicle while it is still moving, stepping into traffic, jumping in between the insert car and process trailer to handoff a last-minute item, or getting a foot run over by a tire.

Slide 122 - Lack of Awareness 2



Scene 5 Safety Awareness and Communication

- ▶ Stepping into a wheel well
- ▶ Tripping over equipment or rigging
- ▶ Running into equipment protruding from the vehicle
- ▶ Failing to hear or heed an announcement or a change in the plan

Lack of awareness can cause people to: step into the wheel well of the process trailer, trip over cables or run into rigging, run into equipment protruding from the insert car or process trailer, or fail to hear announcements or changes in the plan.

Slide 123 - Maintain Awareness 1

Scene 5 Safety Awareness and Communication

Maintain awareness at all times.

Maintain Awareness

- ▶ Slow down.
 - ▷ Don't rush when working around the vehicles.
 - ▷ Let the 1st AD know when more time is needed.
- ▶ Look around. Look for obstacles.
- ▶ Anticipate forces. Find the best footing.
- ▶ Identify rigid rails to use for stability.
- ▶ Listen to all announcements.

Take the following precautions to maintain awareness. Slow down.

Don't rush when working around the vehicles.

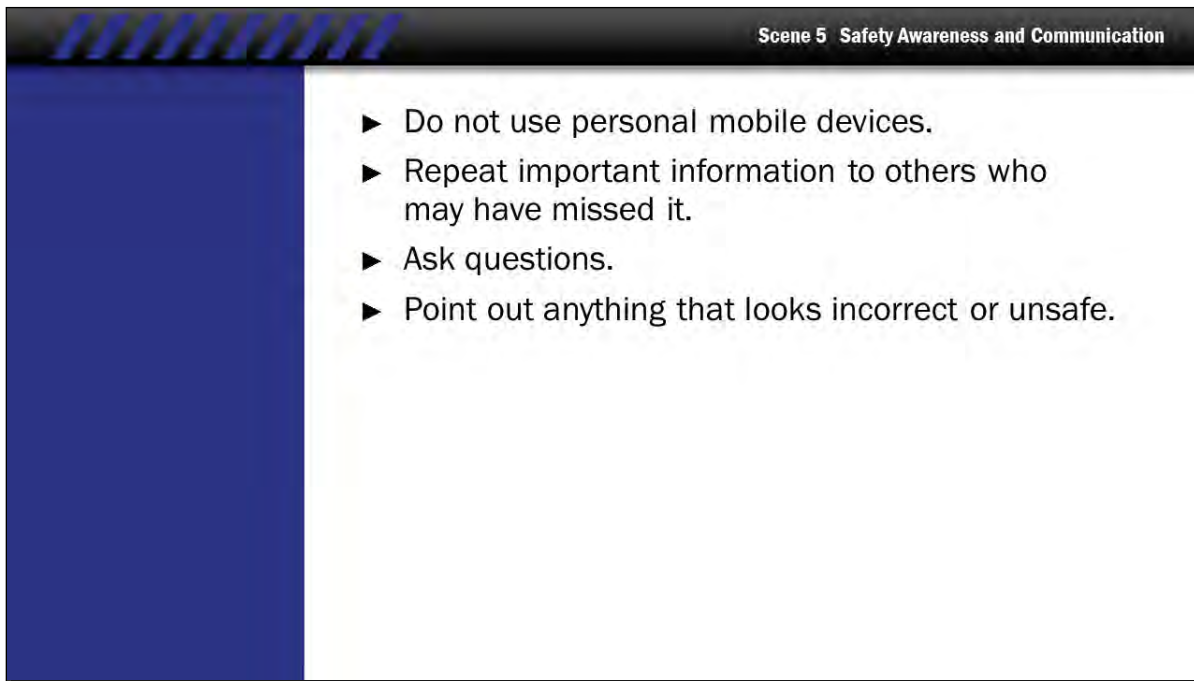
Let the 1st A.D. know when more time is needed. Watch for obstacles.

Anticipate the forces of the vehicle in motion and set yourself up with a safe place to ride and good footing.

Identify rigid rails to use for stability.

When announcements are made, stop your conversation, and listen and pause your work if necessary.

Slide 124 - Maintain Awareness 2



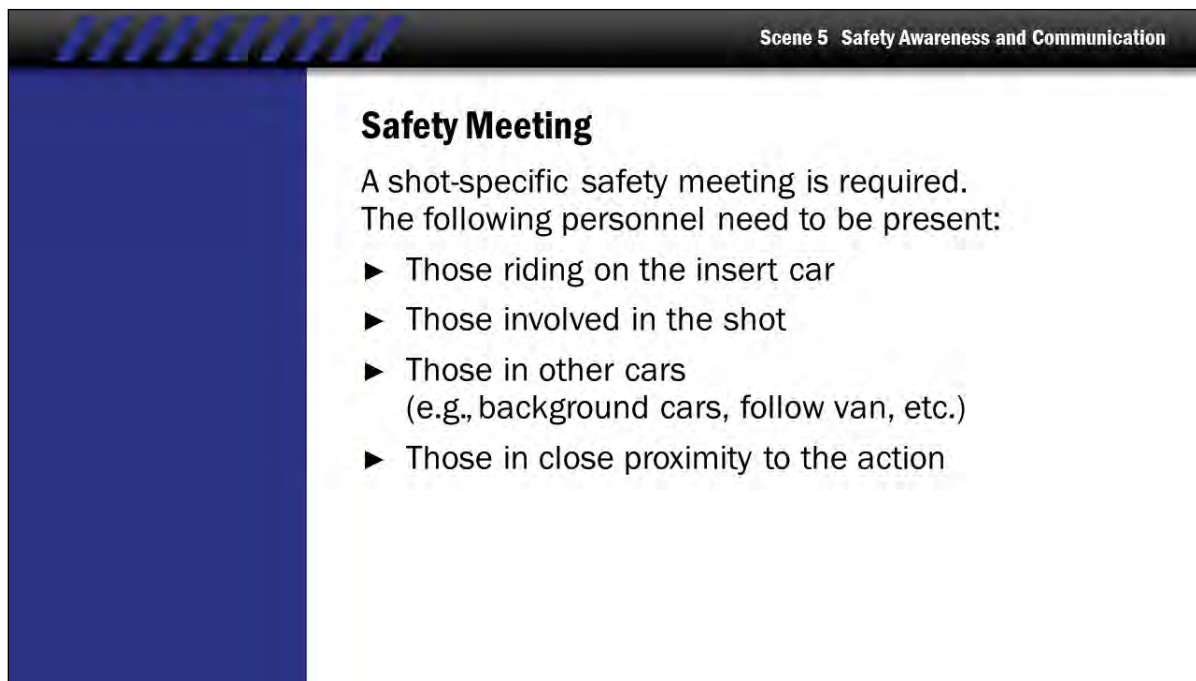
Scene 5 Safety Awareness and Communication

- ▶ Do not use personal mobile devices.
- ▶ Repeat important information to others who may have missed it.
- ▶ Ask questions.
- ▶ Point out anything that looks incorrect or unsafe.

Do not use personal mobile devices while on the vehicle.

Repeat important information to others who may have missed it, and ask questions and point out anything that looks incorrect or unsafe.

Slide 125 - Safety Meeting 1

The slide features a black header bar with a blue and white diagonal striped pattern on the left and the text "Scene 5 Safety Awareness and Communication" on the right. Below the header is a large blue vertical bar on the left side of the slide content area. The main content is on a white background and includes a bold title "Safety Meeting", a paragraph stating that a shot-specific safety meeting is required and listing the personnel needed, and a bulleted list of four categories of personnel.

Scene 5 Safety Awareness and Communication

Safety Meeting

A shot-specific safety meeting is required.
The following personnel need to be present:

- ▶ Those riding on the insert car
- ▶ Those involved in the shot
- ▶ Those in other cars
(e.g., background cars, follow van, etc.)
- ▶ Those in close proximity to the action

A shot-specific safety meeting is required.

This safety meeting should include all personnel riding on the insert car, involved in the shot, those in other cars (such as background cars, follow vans, etc.), and others who will be in close proximity to the action.

Slide 126 - Meetings Should Include 1-2

Scene 5 Safety Awareness and Communication

Meeting should include:

- 1 Plan of action, including walk-through or dry-run**
- 2 Discussion of the action and potential hazards:**
 - ▶ Duration
 - ▶ Speed
 - ▶ Movement of all vehicles involved
 - ▶ Stunts
 - ▶ Camera movement
 - ▶ Lighting gags
 - ▶ Special effects

The safety meeting should include (1), the plan of action.

For example, the plan of action may involve the following four steps: first, the line up, second, a half-speed rehearsal, third, the vehicles return to one, and fourth, a full-speed rehearsal.

The safety meeting should also include (2), a discussion of the action and potential hazards.

This could include the duration of the run (where it will start and end), the speed, movement of all vehicles involved, discussion of any stunts, any camera movement, lighting gags, and special effects.

Keep in mind that what you do may have unintentional impacts on other departments.

It could affect the driver's visibility, the vehicle's clearance from obstacles, and the handling of the vehicle.

Everyone on the car needs to know what to expect.

Slide 127 - Meetings Should Include 3-6

Scene 5 Safety Awareness and Communication

- 3 Identification of end point (don't travel beyond)**
- 4 Whether filming will take place while returning to the starting point**
- 5 Proper precautions, contingencies, and escape routes**
- 6 Authority to abort, including signals to be used**

(3), the safety meeting should also identify the end point. There may be a point past which it is unsafe to continue.

For example, the action must not go any further than a particular cross street.

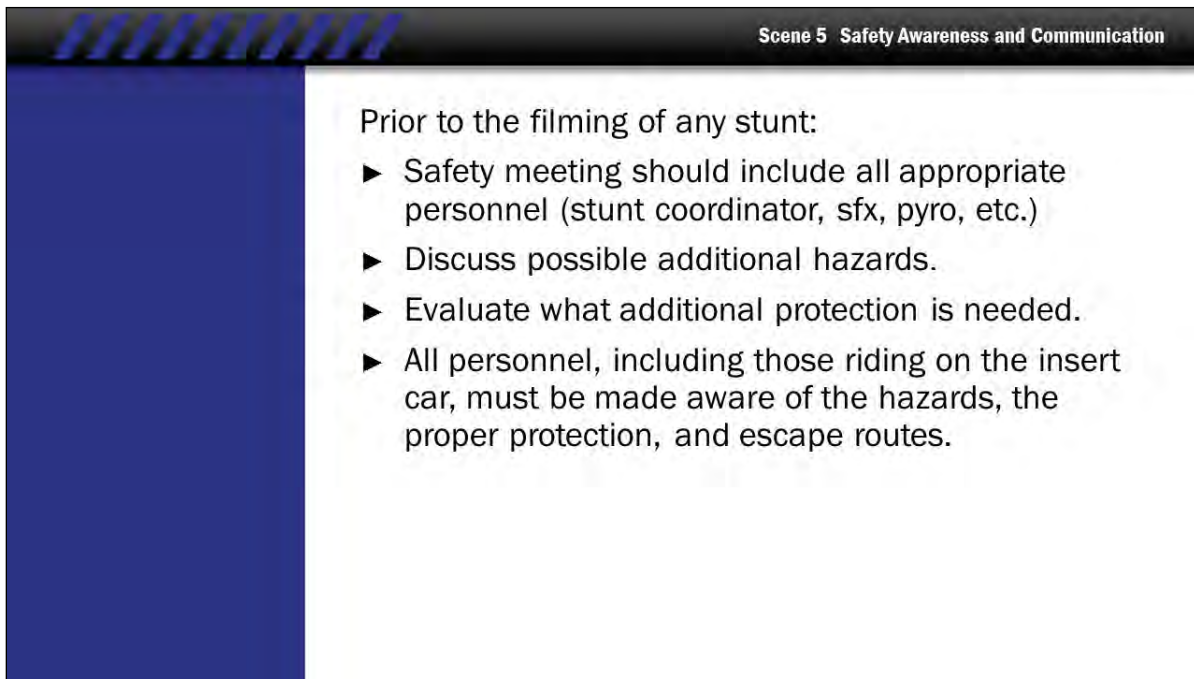
(4), it should be established whether filming will take place while returning to the starting point.

(5), precautions, contingencies, and escape routes should be explained.

For example, it might be established that the crane movement will not start until past a certain landmark in order to ensure clearance. The contingency plan might be that if there is a problem, all vehicles following the insert car should slow to a halt.

(6), it should be established who has the authority to abort, including the signals to be used.

Slide 128 - Safety Meeting 2

A presentation slide with a black header bar on the right containing the text "Scene 5 Safety Awareness and Communication". The main content area is white with a blue vertical bar on the left. The text on the slide reads: "Prior to the filming of any stunt:" followed by a bulleted list of four items: "Safety meeting should include all appropriate personnel (stunt coordinator, sfx, pyro, etc.)", "Discuss possible additional hazards.", "Evaluate what additional protection is needed.", and "All personnel, including those riding on the insert car, must be made aware of the hazards, the proper protection, and escape routes."/>

Scene 5 Safety Awareness and Communication

Prior to the filming of any stunt:

- ▶ Safety meeting should include all appropriate personnel (stunt coordinator, sfx, pyro, etc.)
- ▶ Discuss possible additional hazards.
- ▶ Evaluate what additional protection is needed.
- ▶ All personnel, including those riding on the insert car, must be made aware of the hazards, the proper protection, and escape routes.

Prior to the filming of any stunt, the safety meeting should include all appropriate personnel, including a stunt coordinator, special effects, pyrotechnician, and fire safety officer.

The meeting should address possible additional hazards, evaluate any additional protection needed, and establish escape routes to make everyone aware of the plan, including everyone riding on the insert car.

Slide 129 - Safety Meeting 3

Scene 5 Safety Awareness and Communication

Conduct half-speed rehearsals for sequences involving:

The slide features a dark blue header with a diagonal striped pattern on the left and the text 'Scene 5 Safety Awareness and Communication' on the right. Below the header is a large white rectangular area with a dark blue vertical bar on the left side. The text 'Conduct half-speed rehearsals for sequences involving:' is centered in the white area.

Before filming, a good practice is to conduct half-speed rehearsals for sequences involving stunts, filming vehicle to vehicle, swerving in and out of traffic, high-speed chases, and any special effects that could impact the crew or the handling of the vehicle.

Slide 130 - Safety Meeting 4

Scene 5 Safety Awareness and Communication

Changes must be communicated clearly.

When changes are made that affect the choreography of the insert car, another safety meeting must be held.

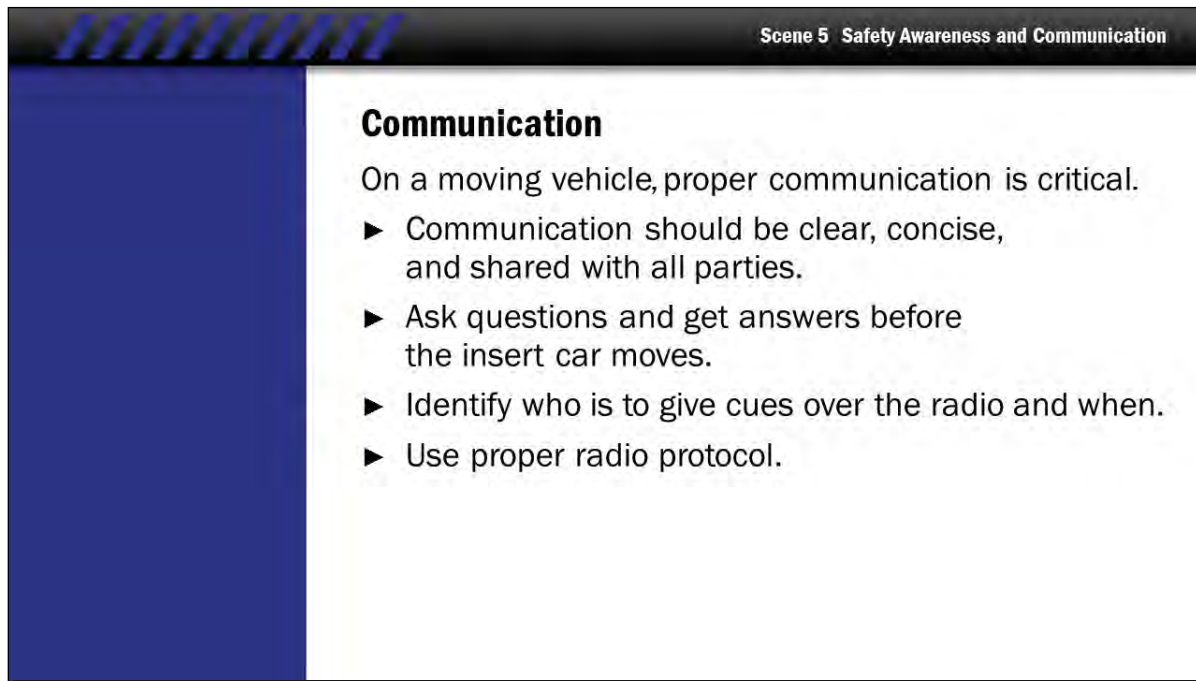
Changes may have consequences affecting other departments.

When changes are made that could impact the choreography of the action, another safety meeting must be held.

Changes may have consequences impacting other departments. All changes must be communicated clearly.

“On-the-fly” changes can introduce a high degree of risk into an otherwise well-planned shot.

Slide 131 - Communication

The slide features a dark blue header with a diagonal striped pattern on the left and the text "Scene 5 Safety Awareness and Communication" on the right. The main content area is white with a dark blue vertical bar on the left. The text is as follows:

Communication

On a moving vehicle, proper communication is critical.

- ▶ Communication should be clear, concise, and shared with all parties.
- ▶ Ask questions and get answers before the insert car moves.
- ▶ Identify who is to give cues over the radio and when.
- ▶ Use proper radio protocol.

On a moving vehicle, proper communication is critical.

Communication should be clear, concise, and shared with all parties.

Ask questions and get answers before the insert car moves.

Identify who is to give cues over the radio and when, and always use proper radio protocol.

Slide 132 - Signals Before Moving/After Stopping 1-2

Scene 5 Safety Awareness and Communication

Signals Before Moving and After Stopping

- 1**
Before vehicle moves, the 1st AD:
 - ▶ Makes a visual scan
 - ▶ Checks that everyone is settled in a safe and secure position
 - ▶ Confirms everyone is ready to go
 - ▶ Ensures others have stepped away from the vehicle
- 2**
1st AD announces the move and notifies the insert-car driver and patrol officers

Before the vehicle moves, the 1st A.D. should make a visual scan, check that everyone is settled in a safe and secure position, confirm everyone is ready to go, and ensure that others have stepped away from the vehicle.

Then the 1st A.D. announces the move and notifies the insert-car driver and the patrol officers performing ITC.

Slide 133 - Signals Before Moving/After Stopping 3

Scene 5 Safety Awareness and Communication

3 **Driver signals vehicle's intentions**

Car Horn Signals

- Two short honks:** Insert car is about to start moving
- One long honk:** Car has reached a complete stop
- Three short honks:** About to move in reverse

Next, the driver signals the vehicle's intention to move.

This may be via an onboard PA system or, more commonly, using car horn signals.

Two short honks indicate the insert car is about to start moving.

When the insert car comes to a stop, the driver gives one long honk to indicate the car has reached a complete stop and is no longer maneuvering. Some drivers will use three short honks to indicate that the insert car is about to start moving in reverse.

However, the use of this signal is not universal.

Some drivers use two short honks before they move either forward or backwards.

The signal system should be discussed during the safety meeting.

If you are not clear on the system, this is a good question to raise.

Slide 134 - Stop, Listen, Ask

Scene 5 Safety Awareness and Communication

**Stop.
Listen.
Ask.**

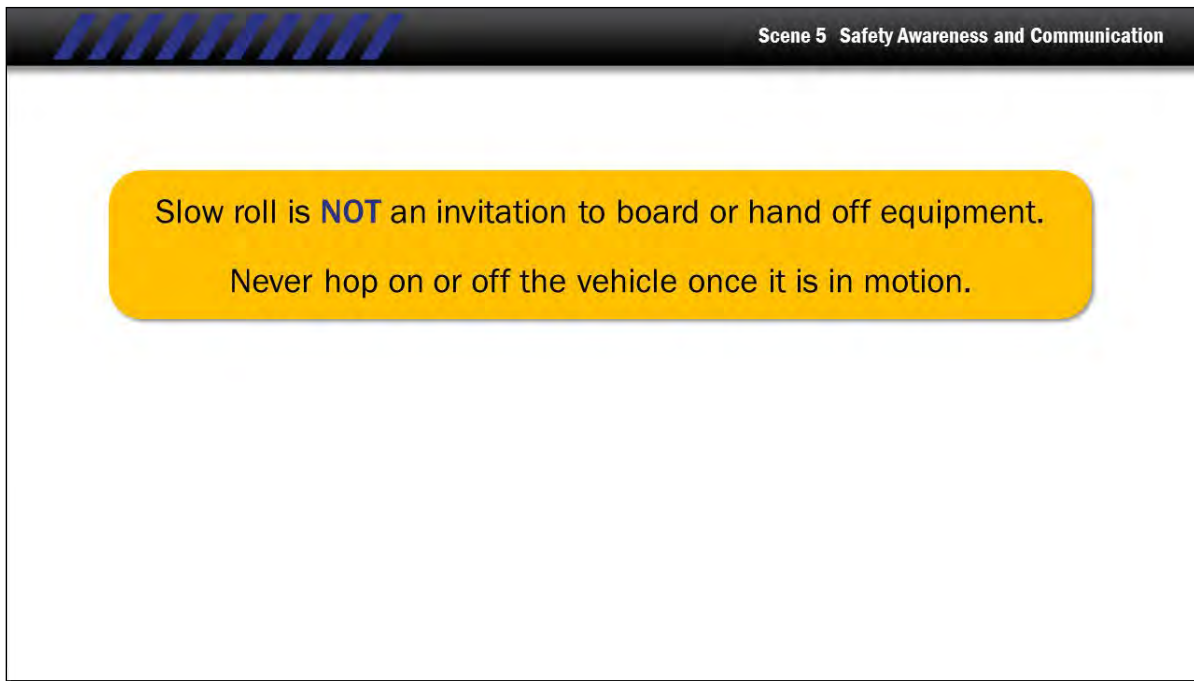
If two or three honks are heard:

- ▶ Immediately step away from the vehicle.
- ▶ Alert other crew if they are unaware.
- ▶ Inform the 1st AD if work has not been completed.
- ▶ Do not attempt to pass equipment onto the moving vehicle.

If two or three honks are heard, immediately step away from the vehicle, alert other crew if they are unaware.

If your work has not been completed, inform the 1st A.D. Never attempt to pass equipment onto a moving vehicle.

Slide 135 - Slow Roll

A presentation slide with a black header bar on the left containing blue diagonal stripes and the text "Scene 5 Safety Awareness and Communication" on the right. The main content is a yellow rounded rectangle with the text: "Slow roll is **NOT** an invitation to board or hand off equipment. Never hop on or off the vehicle once it is in motion." data-bbox="87 145 818 467"/>

Scene 5 Safety Awareness and Communication

Slow roll is **NOT** an invitation to board or hand off equipment.
Never hop on or off the vehicle once it is in motion.

Typically, insert-car drivers will allow the vehicle to slowly roll before picking up speed. This is not done to give more time for boarding or handing off equipment. Never hop on or off the vehicle once it is in motion.

Slide 136 - Hand Signals

///Scene 5 Safety Awareness and Communication

**Know the
signaling system
to be used.**

Hand Signals

Final confirmation signal (used by some drivers)

- ▶ Signal is given by a designated crew member on process trailer
- ▶ Signal is given when 1st AD gives the order to move out, before the car horn is sounded
- ▶ Hand signal is held out where it is clearly seen in driver's side mirror
- ▶ Typical hand signals are:
 - ▷ Closed fist = hold
 - ▷ Thumbs up = all clear

Discuss signaling methods during safety meeting.

A final confirmation signal is used by some insert car drivers.

The signal is given by the designated crew member on the process trailer, typically the key grip.

When the 1st A.D. gives the order to move out, before the car horn is sounded, the designated crew member holds a hand signal out where the driver can clearly see it in the side mirror.

A closed-fist hand signal means hold and don't move. A thumbs up means all clear.

The use of a final confirmation signal should be discussed so it is clear what is expected and what signals will be used.

Slide 137 - Conclusion 1



This concludes the Insert Car Safety course. Remember . . .

Slide 138 - Conclusion 2

A slide graphic with a black header containing the word 'Conclusion' in white. Below the header, the word 'Conclusion' is written in black. A yellow callout box with rounded corners contains the text 'When working on and around insert cars:' followed by two bullet points: '▶ Maintain heightened awareness' and '▶ Follow all safety rules and guidelines'.

When working on and around insert cars, remember to maintain a heightened awareness and follow all safety rules and guidelines. If you're not sure, ask.

Slide 139 - A Safe Attitude

Your safe attitude impacts how you act and react to workplace conditions and challenges.



REMEMBER, SAFETY STARTS WITH YOU!

Speak up about safety issues	Ask questions	Look out for your coworkers and for yourself
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Your safe attitude impacts how you act and react to workplace conditions and challenges.

Speak up about safety issues.

Ask questions.

Look out for your coworkers and for yourself.

Remember, safety starts with you.