



CLOSED ROAD OPERATIONAL SAFETY SEMINAR

Rally, Cross-Country and Hill Climb operational safety

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FRIDAY 7 FEBRUARY 2025

Agenda

1. Rally Operational Safety

- 01. Regulations update
- 02. Common safety issues
- 03. FIA Regional Tracking – Main requirements
- 04. Refuel Zone layout
- 05. Safety briefings
- 06. Safety Caravan Briefing
- 07. Spectator area
- 08. Road closures declaration on major navigation apps
- 09. Digital Safety Plan live creation

2. Cross-Country Operational Safety

- 01. Various safety concerns and guidance

3. FIA supporting material

4. Conclusion

1. Rally operational safety

01. Regulations update

2025 APPENDIX H TO ISC UPDATES

Article 5.2.2 relative to the Safety Dossier

5.2.2 The safety dossier specifically addresses issues in each of the following areas:

- safety of the public
- safety of the competing crews
- safety of the officials of the competition
- safety of the volunteers at the event



... / ...

- The exact location of any promotional arches over the stage road.

The same box numbering as the event road book should be used.

Safety provisions for arches over the road stages:

Any arche to be installed over the stage road should be:

- monitored by a marshal equipped with a communication mean to reach the Stage Commander and signal immediately any incident
- represented in its exact location during recess
- installed in a straight line.

02. Common safety issues

02. Common Safety Issues

Case	Problem	Solution
1. Case	Sold enough to avoid mechanical problems every year	
2. Case	Try to change, at least the direction of the stage this year	
3. Case	Even if difficult in your country, try to search for new	
4. Case	Try to improve test cases by separating the Police	
5. Case	The new early control is very good, the only thing for	
6. Case	We suggest to set 1.2 in a separate direction for 20	
7. Case	The stage is not representing the characteristic of	

[illegible]

TOP 2024 SAFETY ISSUES

Most common issues in 2024:



SPECTATORS:

- Communication to the spectators about rally safety is one of the key
- Spectator's areas and refuge zones creation
- Crowd control (linked to communication and spectator's area)

MARSHALING :

- Marshals located in unsafe position
- Behaviour and marshal activity
- Marshal training deployment

TOP 2024 SAFETY ISSUES

Most common issues in 2024:



IMPLEMENTATION:

- Taping and different zones implementation
- Correct chicane layout
- General stage set-up

DOCUMENTATION:

- Safety Plan details and content
- Safety Caravan schedule
- Rally program with spectator's information and FIA Safety Campaign

TOP 2024 SAFETY ISSUES

Most common issues in 2024:



SAFETY TEAM MANAGEMENT:

- Control and management of the stage by the stage commander
- Clearly defined roles of the various stakeholders of the Safety Caravan
- Pre event safety briefing schedule

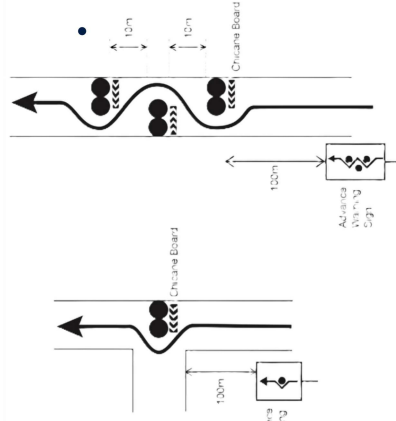
RADIO:

- Radio system quality and set-up (dedicated channel for safety)
- Quality of the signal over the whole event area
- Communication chart to be determined in advance (during briefing)

TOP 2024 SAFETY ISSUES

• Marshalling:

- To run a safe event and to show the good exemple, the marshal must be in a safe position
- Designated position in the Safety Plan is their safe reference
- Use video showing incidents for marshal training for educational purpose
- Display regularly the marshal along the stages matching with the tracking black holes
- Spare marshal team with material is an important an effective support in the caravan
- Stop people entering from Stop Control 30mins before the 1st car start
- Guide people only in allowed and dedicated areas
- Briefings to be scheduled and communicated ahead of the event



Chicane Entrance Board

• Stage implementation:

- Adjust with the experiences of previous year and between the 2 passes of the stages
- The Safety Plan drawing and implementation **must be strictly respected**
- Anti-cut device positions are very important (same as indicated during recce)
- Please ensure that the chicanes are all the same during your event and clearly marked during recce, see the proposed layout in the Rally Safety Guidelines
- A bad taping can create very dangerous situation and makes safety caravan work more difficult
- Implement the stage as soon as possible for the CSO, SD and stage commander to ensure that it's matching with the Safety Plan

TOP 2024 SAFETY ISSUES

• Safety car caravan:

- Every vehicle/team of the safety caravan MUST have a dedicated roles (eg; check taping, road closures, marshal positions, ...)
- Ensure that all Safety Cars are well equipped for their duties, **all** of them must have radio contact within the safety car caravan and with the Rally HQ
- Working as a chain is crucial, to not let people getting installed in bad and dangerous positions
- Everyone needs to understand that it's not cruising into the stage, it's an important and active role
- Spread the message of “-30min nobody walking on the stage” and apply it when it's time
- Inform and guide spectators moving through dedicated areas
- Ensure that all Run Off and Escape Roads are clear of anything, vehicle and people

• Spectator management:

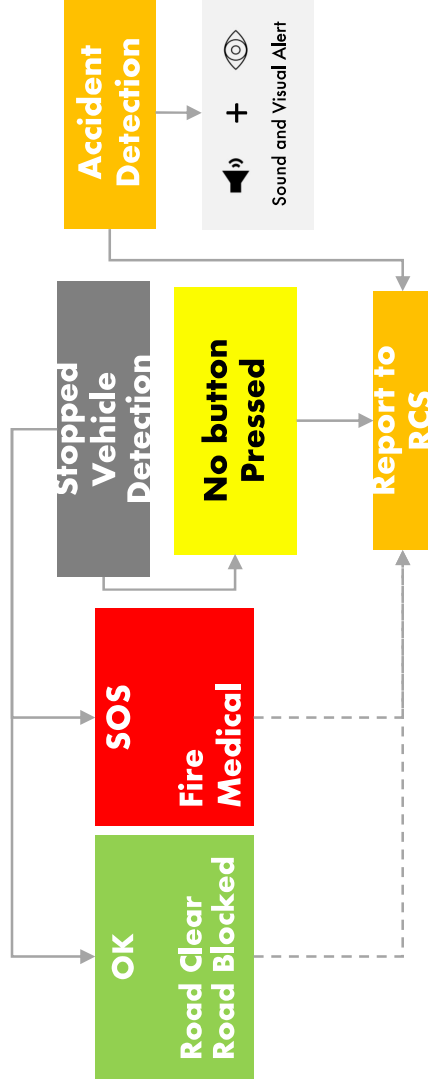
- Inform the spectators about the spectator's area and parking locations
- Avoid to put “No Go” signs everywhere, as they are not respected
- Deploy green and Go Area, every positions where you have non controlled spectators means that they can access so they will come, find a safe spot to set a small area
- Add refuge zones as soon you see that spectators join or can join
- Avoid red straight tape to signal No Go zone, use Zig Zag taping and add a Go or green tape behind if possible and safe
- Control the crowd move during the live stage, especially during break and between 2 passes



03. Regional Tracking - Main Requirements

Regional Tracking – Main requirements

- Sensors : 3 Axis accelerometer (± 16 g / 250Hz)
GNSS $\rightarrow$ Global Navigation Satellite System – Track rally cars accurately (3m $\leftrightarrow$ 5m $\leftrightarrow$ / Up to 10Hz)
- Device Voltage & Rally Car Voltage
- At least IP55 Rated (Dust Protected / Water jets Protected)
- No ON/OFF button i.e crew should not be able to disable tracking system
- Wireless Communications : To outside world (race control) and Car-To-Car
- Rally Control Software (RCS) depicting map with vehicle positioning w/ states (see table):



On Stage/Transport	State	Colour
Transport	Moving	White
Transport	Stopped	Grey
Stage	Moving	Black
Stage	Stopped, No button pressed	Yellow
Stage	OK	Green
Stage	SOS	Red



- Red Flag deployment managed by the Clerk of the Course
- Slow Zone management and monitoring

TRACKING TECHNICAL LIST 98

Regional Rally Sporting Regulations:

18. ADDITIONAL CAR REQUIREMENTS

18.2 TRACKING SYSTEM

For rallies counting towards the FIA European Rally Trophy, the use of a safety tracking system coming from the FIA Technical List nr. 98: Rally Car Tracking Systems is strongly recommended. The use of a tracking system coming from the FIA Technical List nr. 98 will be mandatory as per 2024.

18.2 TRACKING SYSTEM

All cars must be fitted with a safety tracking system provided by the rally organiser. It is recommended that the tracking system should come from the FIA Technical List No. 98: Rally Car Tracking Systems. The use of a tracking system coming from the FIA Technical List No. 98: Rally Car Tracking Systems will be mandatory as per 2024. The installation will be checked at scrutineering. Instructions regarding collection, return and fitment will be issued by each organiser. Any interference with the system(s) during the rally will result in the Competitor being reported to the stewards.



For FIA certification of tracking device request, please
contact rally.safety@fia.com

TL98 link:



FEDERATION INTERNATIONALE DE RALLYE

**TECHNICAL LIST 98
LIST OF TRACKING SYSTEMS COMPLIANT WITH THE FIA REGIONAL
RALLY TRACKING SYSTEM SPECIFICATIONS V1.1, 06.12.2022**

Updated on 02nd February 2025.

In accordance with the FIA Regional Rally Sporting Regulations, please find below the list of tracking devices compliant with the FIA Rally Car Tracking Specifications V1.1, 06.12.2022. **Please make sure you are using the very last version of the document by visiting this link.**

To be used during Rally Reconnaissance only (low specifications systems):

Supplier	Product	Illustration	Contact
RBI Sport Ltd.	Geotrac Rally System		RBI Sport Ltd. +350 20 277 993 info@rbi-sport.com
RBI Sport Ltd.	Geotrac Rally System ComBox		RBI Sport Ltd. +350 20 277 993 info@rbi-sport.com
Sportmaxx	FM22 Race		Wolfgang Schindler wolfgang@sportmaxx.com
Sportmaxx	Tracky app		Wolfgang Schindler wolfgang@sportmaxx.com
Status Awareness Systems	RallySafe		www.statusaware.com/contact

ASN's question: I would like to see about operation of Virtual Chicane, could you please explain?

Virtual Chicane

Use case:

A risk mitigation tool to be used to slow down the cars before an identified danger during the event creation
Where a standard straw bales chicane is not possible to be implemented
This is not intended to replace the standard hardware designed chicanes

Safety principle:

The crew must reach a designated speed (i.e. 50 kph) in a specified zone length (i.e. 150m) and reaccelerate

How to implement:

Work hand in hand with the Tracking Provider to select the zone, and declare the GPS coordinates ahead of the event
Clearly identify the zone in the road book and materialize it during recce

Risks:

Loss of signal: double the zone with a speed gun and judge of fact to manually record competitor speed
Wrong materialization: double check the location and speed parameter with your tracking provider



04.Refuel Zone layout

Refuel zone layout

One by One per lane

Clearly defined circulation lane

Firetruck & Firefighters ready on site and equipped with PPE

At least 10m away from every hazard

Only authorized persons on site

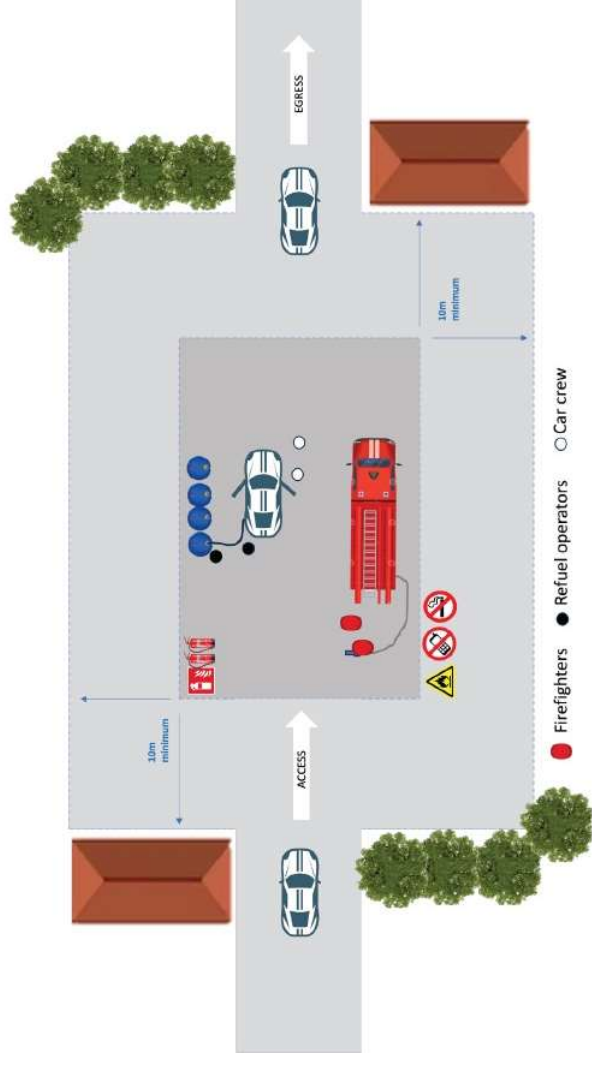
Extinguishers at disposals

Crews to follow the regulations in terms of safety gear and behaviors

If public petrol station is used: at least one lane must be dedicated to the competition cars

04. Refuel Zone

ASN's question: Do you have a 'perfect' example of how to properly prepare for refueling rally cars

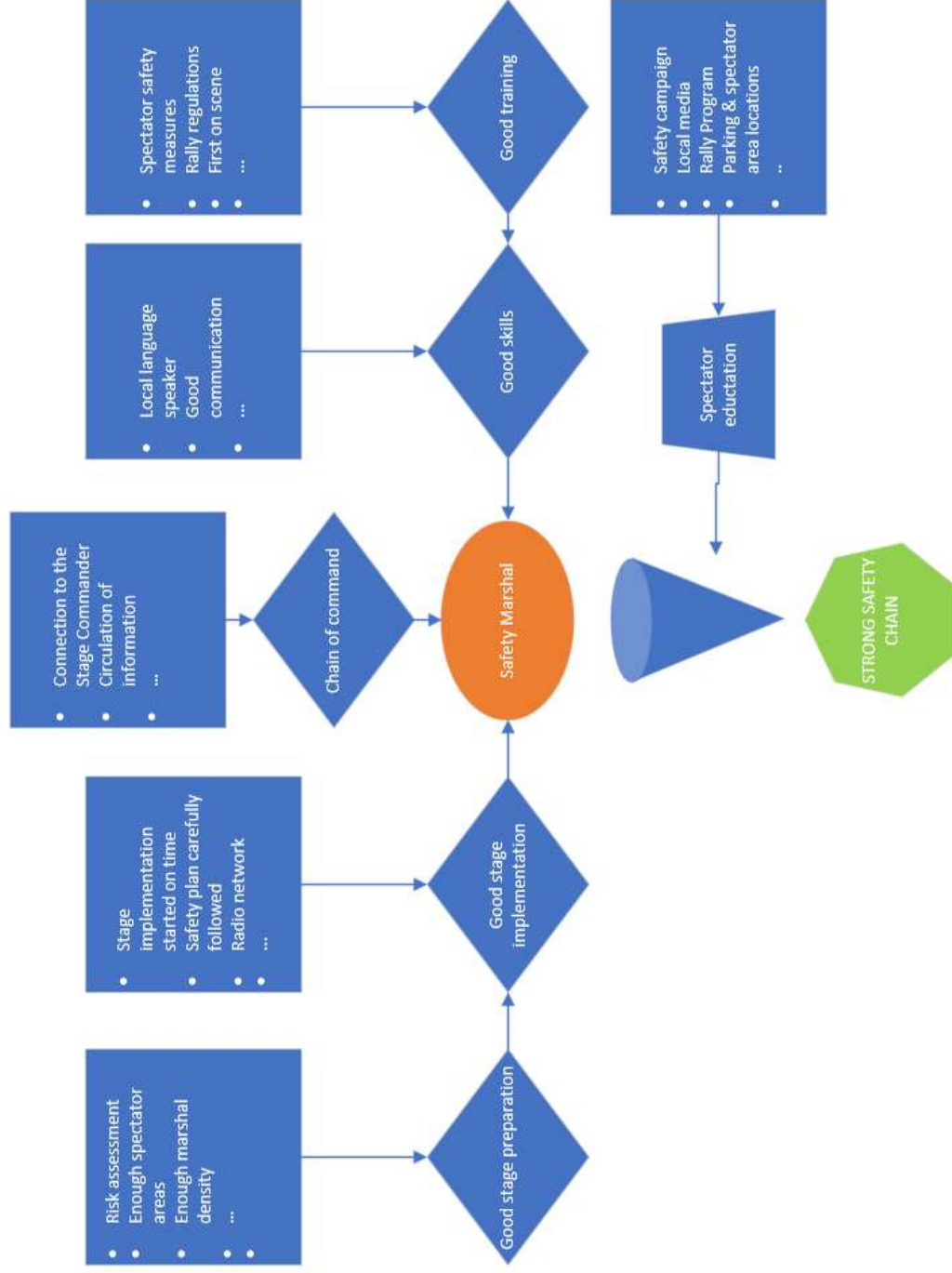


Standard Refuel Zone Safety Layout



Jérôme Roussel / Nicolas Klinger / Yann Dion
FRIDAY 7 FEBRUARY 2025

05. Safety briefings



Roles, duties and responsibilities

Schedule and prepare all the safety briefings, communicate the dates in advance

Give a clear role to each car / crew member



Volunteers briefing

Intended to: Stage Commander / Stage Marshal team / police / private security company

Content: Protect their own safety

Emergency process in case of accident

Use crash video to teach them the risks

Nothing and nobody in the runoff area

Incident management

Stage monitoring

Spectator management

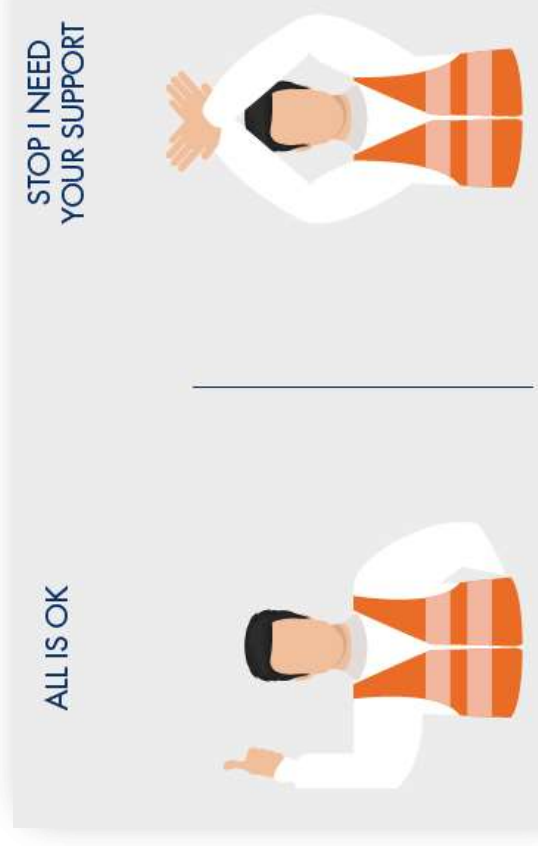
Access roads control

Sign language

Behave as an example

Red flag

Ensure that driver safety at start
(helmet, FHR, belt, overall closed...)



Media briefing

Intended to: All accredited press and media

Content: Ask the media to join a dedicated safety briefing:

- Mandatory to get accredited and collect the media tabard

- Media must respect the safety rules as anyone

- Behave as an example

- Follow the marshal instructions

- Clearly wear the media tabard

- Chose safe position for remote cameras

- Don't disturb the drivers



Competitors briefing

Intended to: All competitors

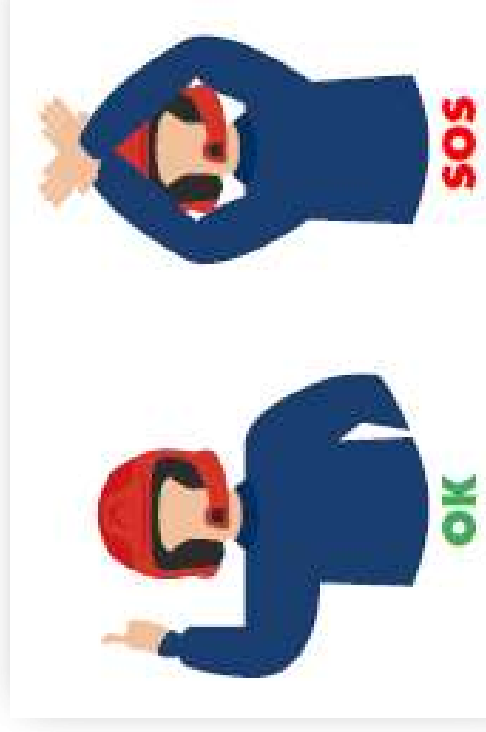
Content: Competitor safety equipment usage

Tracking unit usage

Red flag procedure

SOS / OK sign

Assistance to stopped crew



Safety caravan team briefing

Intended to: Safety Caravan crews

Content: Safety plan implementation check

Share the role attribution for each car:

Road closures checking

Marshal positioning

Spectator areas implementation control

Unsafe spectator positioning

Check red flags

Act as layers to solve issues:

Communicate via radio to track any issue evolution

Spare car material role



06. Safety Caravan Briefing

ROLE OF THE SAFETY CARAVAN

Ensure all safety measures are on place before the start of the first car

Settled as planned in the safety plan

Stage safely closed & controlled

Marshals at their dedicated locations

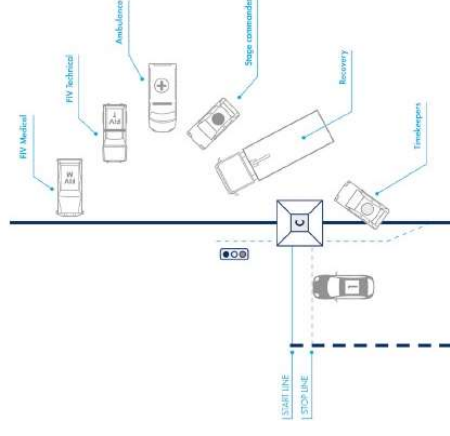
Radio points & red flags on place

Signage on place

Intervention vehicles on place

Start and finish/stop area controlled

Give the green light to rally control to start the stage



SAFETY CARAVAN TOOLS

- Safety Plan
- Safety Road Book (no pace notes)
- Digital SP app (if used)
- Course car / safety caravan schedule
- Suitable standard car (with spare wheel)

Safety check list

Contact list

Tracking device (for SD / 000 / 00 / 0)

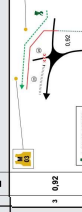
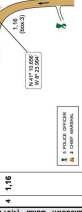
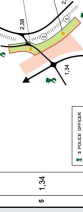
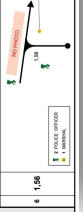
Radio / Phone

Sportivity app if used by the event

Spare material (tape/sticks/radio/flags etc...)

FIA CSO eLearning module (<https://elearning.fia.com> branch code: RallyS-SRG)



Direction / Information	Distance	Detector	Speakers	Safety
	3 0.02			
	4 1.16			
	5 1.34			
	6 1.06			

SAFETY CARAVAN TASKS

Work as a chain between cars

Check your timing and schedule and ensure you have sufficient time to cover your duties

Each car **must** have their attributions and tasks defined to ensure everything is safe

Do the sign language with marshal

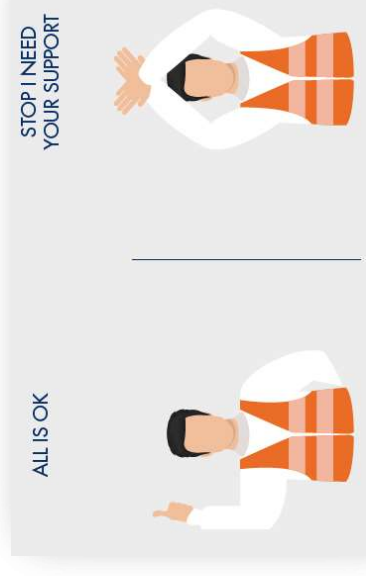
Chevrons on place at disturbing junctions

Anti-cut poles on place as planned

Chicanes on place

Hazard protections on place

Inform immediately of any issues, don't wait to reach the end of stages



SAFETY CARAVAN CARS DUTIES

SAF 2:

Starts are correctly implemented

Ensure all roads are taped and physically blocked

Escape roads clear of vehicles and peoples, even intervention ones

SAF 1:

Ensure every marshals are at their dedicated places

Check that the red flags are at positions (not waived but visible)

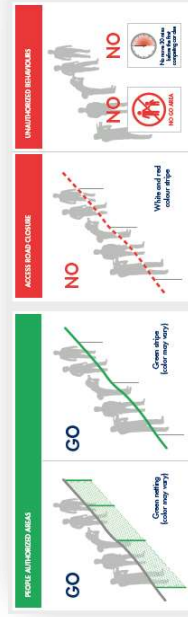
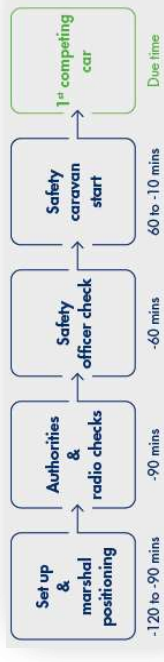
SPECTATOR SAFETY:

Control surroundings and people around stage

Remind -30min no more walking on stage rule

Escape road and run off area still clear

Spectators located in dedicated area



SAFETY CARAVAN CARS

000

Time card, doing all itinerary refuel included
Ensure that safety personnel are on place
Fix last minute issues
Moving people in refuge zones
Ensure that spectators/media are on place
Remove people from non-safe area
Followed by spare marshals car

FIA/ASN SD

Confirm that all is on place and safe to start

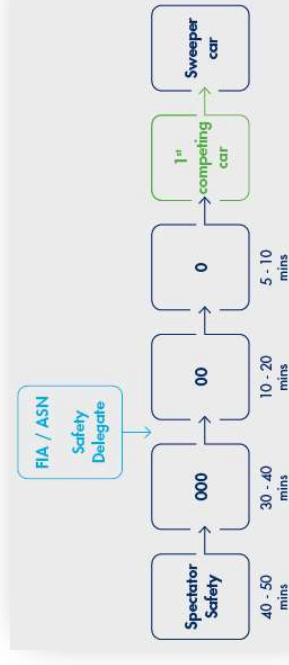
Inform the rally control that the stage is ready (if the stage is long 000 will cover the last kms)

00

Ensure that all the time control are in function
Valid that noting has moved and all safe
Time card, Safety Plan, No pace notes

0

Announce the start of the rally, driving 75% pace, pace note, rally car



Adjust timing in function of stage distance

For instance :

Stage <10km -5min

Stage >25km +5min

SPECTATORS SAFETY

Nobody in escape road

Nobody behind jumps at landing zone

Nobody outside corners

Nobody behind guardrails

Nobody under the road level

Higher than road level

Very far back from the road even on straight lines

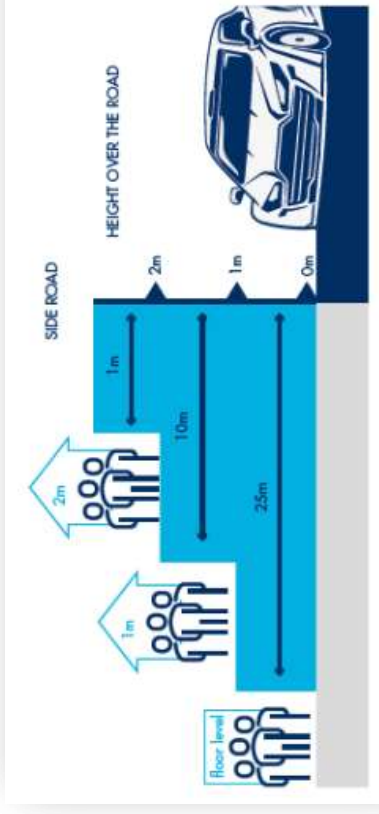
Lots of stone projections (flying stone clip)

Rally1 cars are really fast

Aerodynamics increase considerably their speed through the corners

Assess the stage like if you are in a rally car

If people don't respect marshals and recommendations, the stage can be cancelled



LINK: 3 TX: 17

STAGE: 19 | 12.4 KM 86.53 %



155 km/h

69 FIN

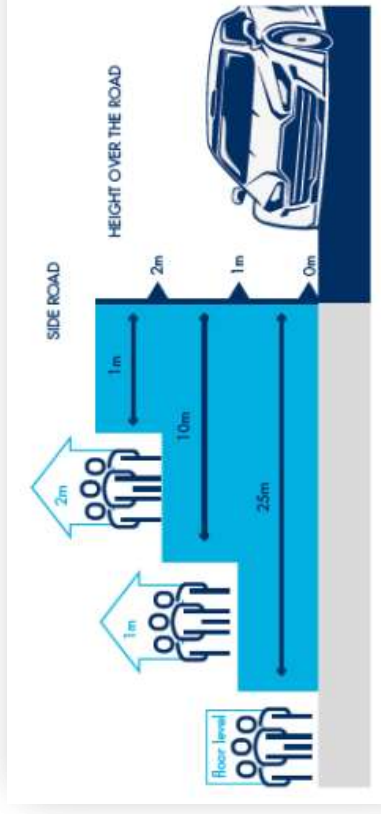
Kalle ROVANPERÄ

SPECTATORS SAFETY

Nobody in escape road
 Nobody behind jumps at landing zone
 Nobody outside corners
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 Nobody under the road level
 Higher than road level
 Very far back from the road even on straight lines
 Lots of stone projections (flying stone clip)
 Rally1 cars are really fast

Aerodynamics increase considerably their speed through the corners
 Assess the stage like if you are in a rally car

If people don't respect marshals and recommendations, the stage can be cancelled



07. Spectator areas

Safety concept = change the mindset

Plan your event in a way to handle it LIVE
The stage safety is dynamic

Educate the spectator they can only stand where this is allowed
NO TAPE = NO PUBLIC
-30min rule
Use Google Maps / Waze... to inform that the roads are closed

Prepare enough spectator areas
Proper "U" shape netting
Marshalled on each end for big zones

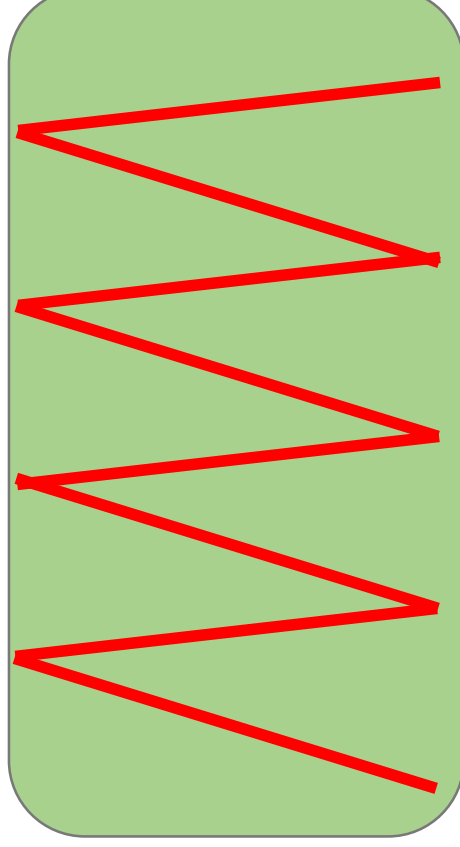
Do not leave a public access road near to the stage with no spectator area setup
People will come, you need marshals
They will not respect the "NO GO" signs
The live stage will be unsafe



NO-GO areas management

After noticing that NO-GO / Prohibited area signs were not followed by spectators in general; we now recommend:

Area coverage with signs and zig zag tape, with no risk to have people standing in the middle of the signs like it happens behind any taping
Everywhere you have people in NO-GO means that you have access, try to find a safe position in all of these area to move people in a safe position



All junctions on special stages need to be taped to secure the special stage access

That should be red/white tape placed approx. 3m from the stage edge



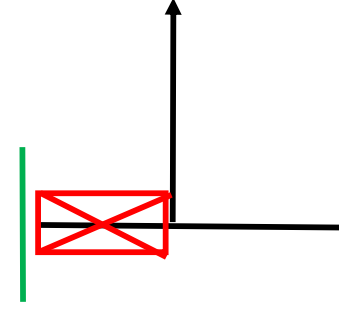
To correspond to the chevron boards that will also be in place on some junctions

This chevron should be placed each time that it can help the driver to see the stage road direction change

Each junction will require to be assessed for risk and possible spectator numbers / access point

If no spectators can access the junction and it is either at right-angles to the stage or behind the special stage direction, a single tape across the road would be sufficient

Anything else will require a box-junction (envelope) to be created behind the initial tape line



If there is spectator access and viewing from this escape road:

The organizer will need to create the red/white box junction (envelope)

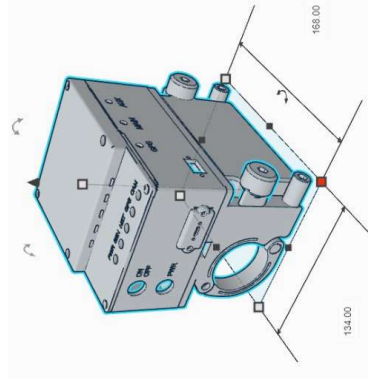
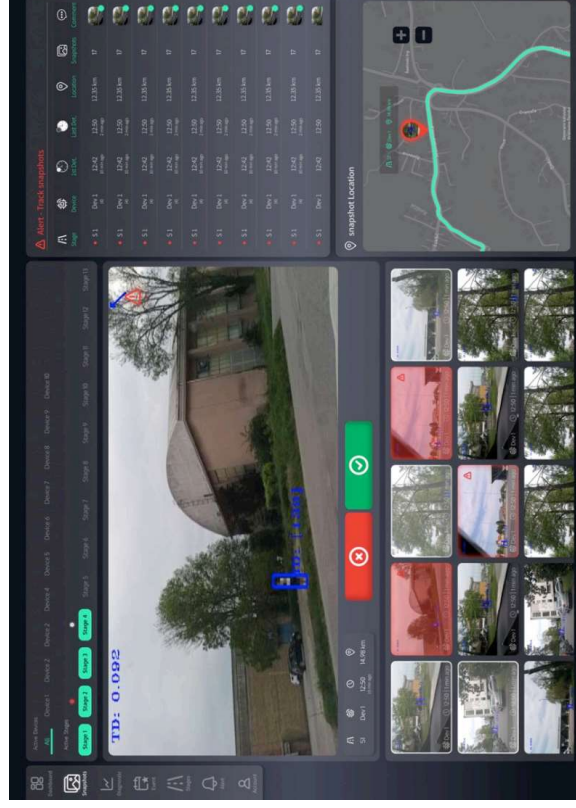
And then have a green tape zone for the spectators at a safe distance behind this

Artificial Intelligence Safety Camera (AISc)



PROJECT SUPPORTED BY  FIA FOUNDATION

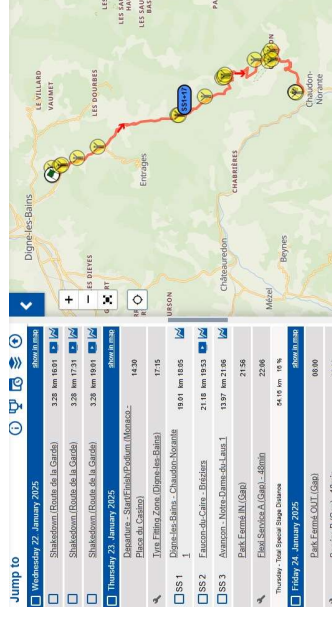
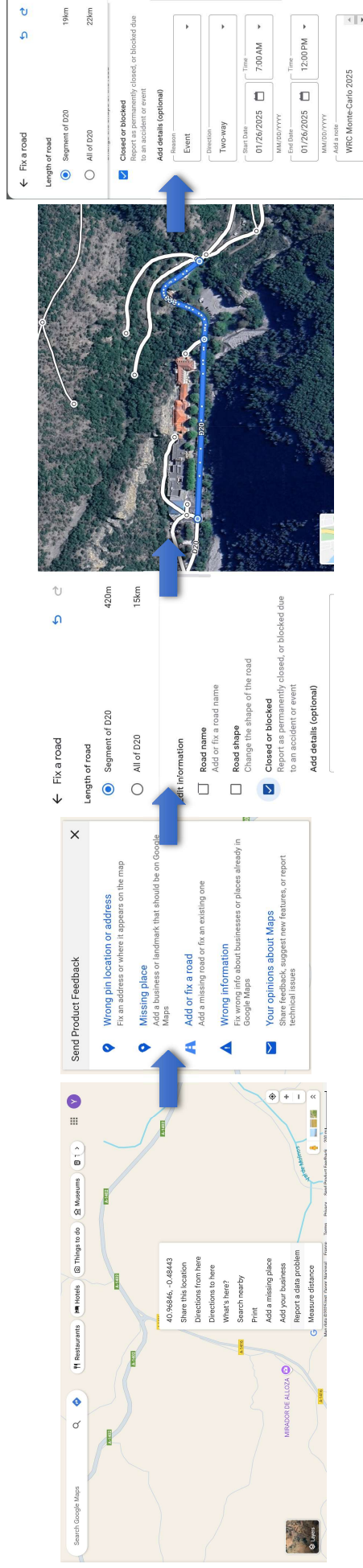
- Development phase successfully terminated
- System will be deployed in ERC this year
- Next step is to define a specifications set to allow development of multiple systems



08. Road closures declaration on major navigation apps

Google Maps

1. Right Click to "report a problem"
2. Click "Add or fix a road"
3. Select the stage by clicking on the road
4. Select "Closed or Blocked"
5. Add details (especially date and time of the road closing)

rallye-maps.com/Rallye-Monte-Carlo-2025

Waze | waze.com/editor

Main advantages over Google Maps are the push notifications for local Waze users and an event page detailing everything !

waze.com/events

Only Certified Waze Editors & Waze partners* can create road closure. Discussion with Waze are ongoing to give you a Waze partner status.

 **Recommendation** : Contact a local editor and send him all the required information to create your event with the road closures. They are truly reactive volunteers !

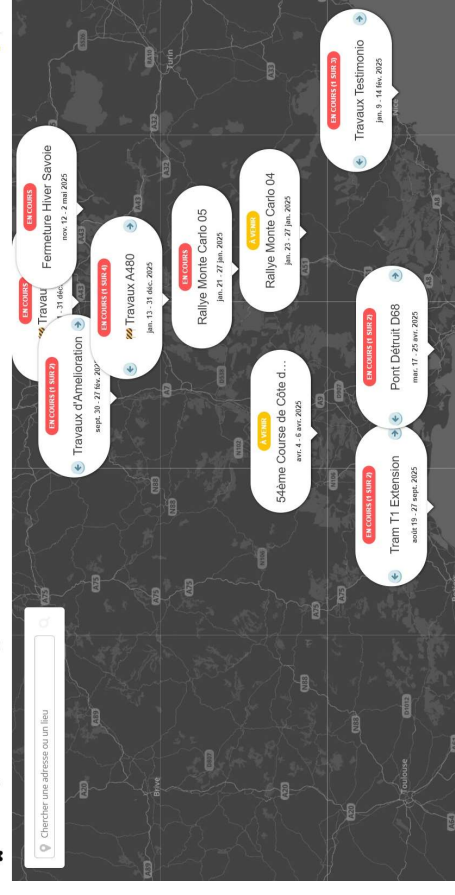
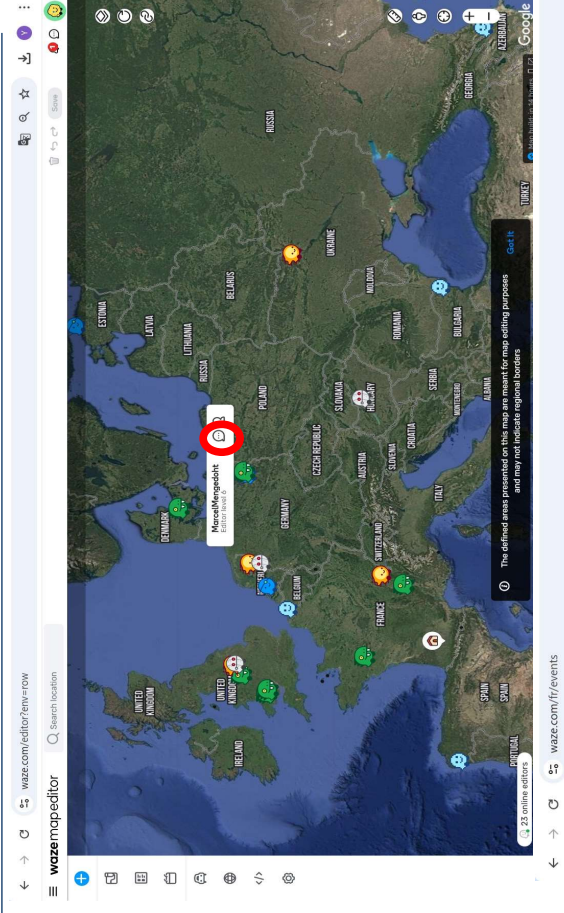
If you're interested into being editor yourself, here is a course that detail the road closure process.

[Waze Road Closure Course](#)



* Note that a process to be able to provide you with Waze Partner status is undergoing

08. Road closures declaration on major navigation apps



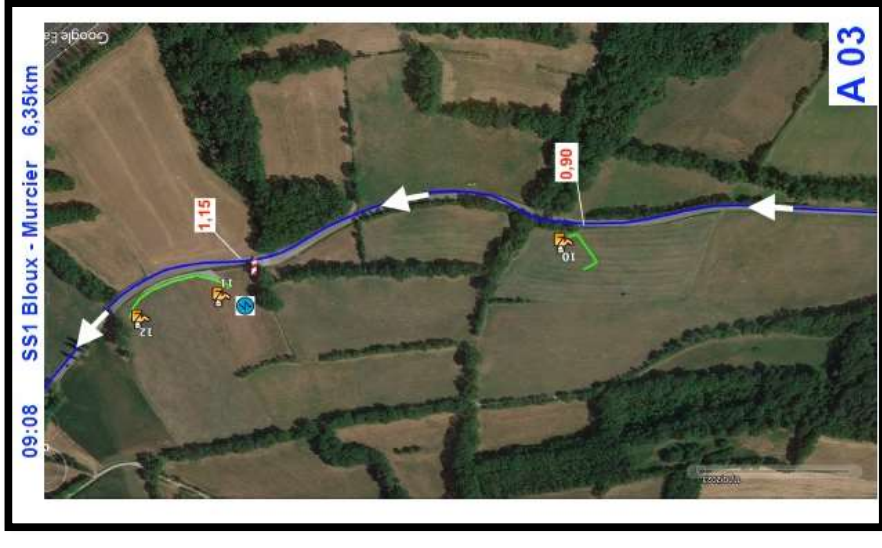
09. Digital Safety Plan live creation

Tools to create your digital safety plan

Professional digital safety plan solutions

or

Free tools: Google Earth; other satellite map editors



2. Cross-Country operational safety

RECURRING ISSUES

Safety Plan too concise to be an effective working tool

Disparate information between the Safety Plan and the Road Book (different distances, etc.)

Safety Plan maps that are too small and/or pixelated and therefore impossible to read

Spectator safety: No spectators zones on events usually hosting a large crowd

Selective Sections too compact, creating risks of cross-traffic and face-to-face collisions in the dust

Refuelling not fenced, without ground protection, firefighters, sun protection for drums, etc.

Stage preparation

Identify Key Areas

- Map all intersections
- Highlight nearby towns and cities

Establish Protective Measures

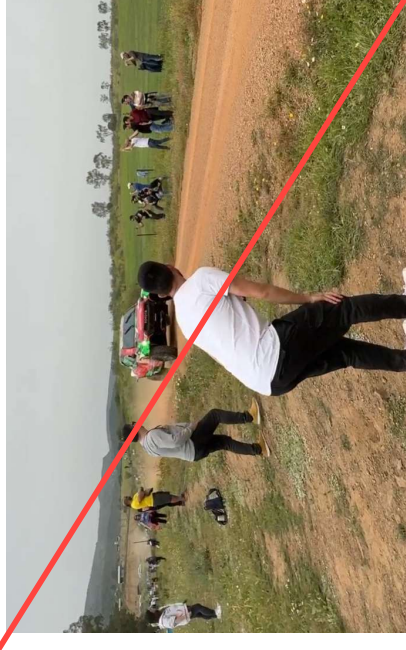
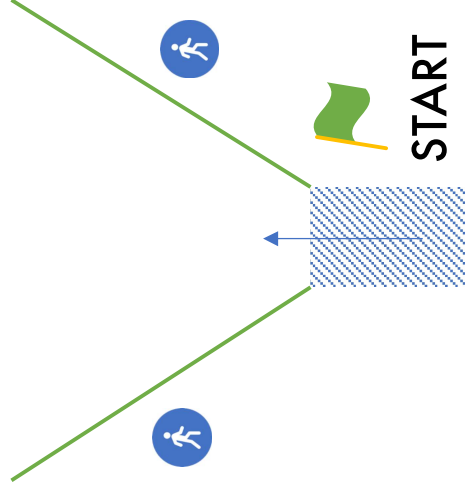
- Tape key areas
- First kilometer of the stage
- Intersections
- Final kilometers (when easily accessible by spectators)
- Create spectator zones near intersections and towns

Apply the No Tape, No Public Policy

- Every guidance given must come with control

Marshal Deployment

- Position marshals in spectator areas
- as per Appendix H, Art. 6.4 of the ISC



Stage selection

Route selection criteria

Consider avoiding routes near public roads or towns

To minimize risks of vehicle intrusion

To minimize crowding in densely populated areas

Prevent face-to-face collision risks by ensuring adequate separation of tracks

Avoid parallel tracks with close proximity

Use Waypoints strategically with stage management in mind and to avoid hazards

Spectator area

Prioritize management near the **first kilometer** and **road intersections**

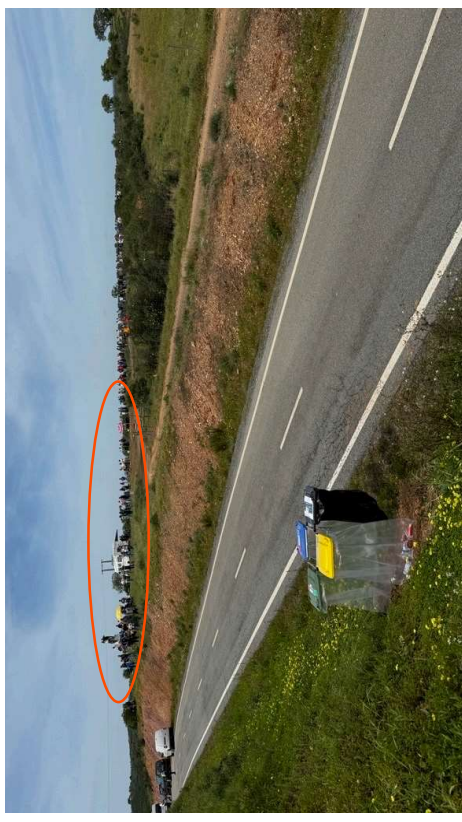
Focus on inhabited areas where spectators naturally gather

Designated spectator zones

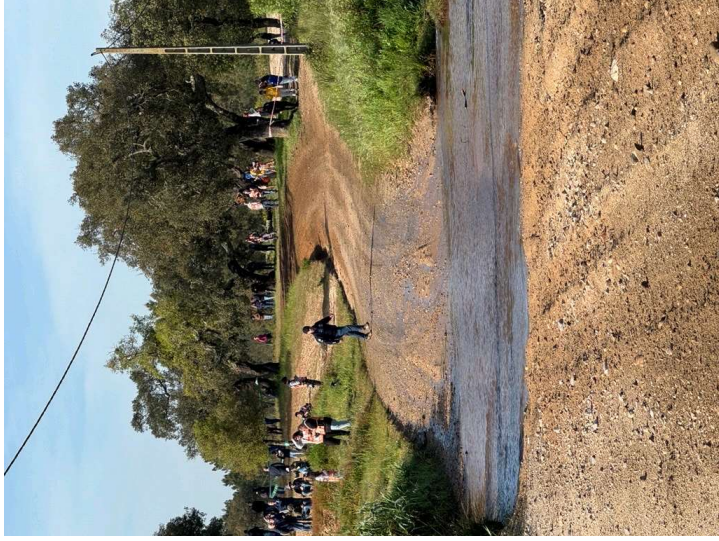
Ensure clear visibility and distance from the track

Use signage and tape to guide and protect

Inform, Designate, Control



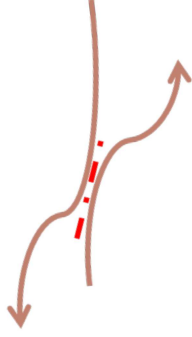
Other examples – To be discussed



Risk of face-to-face collision

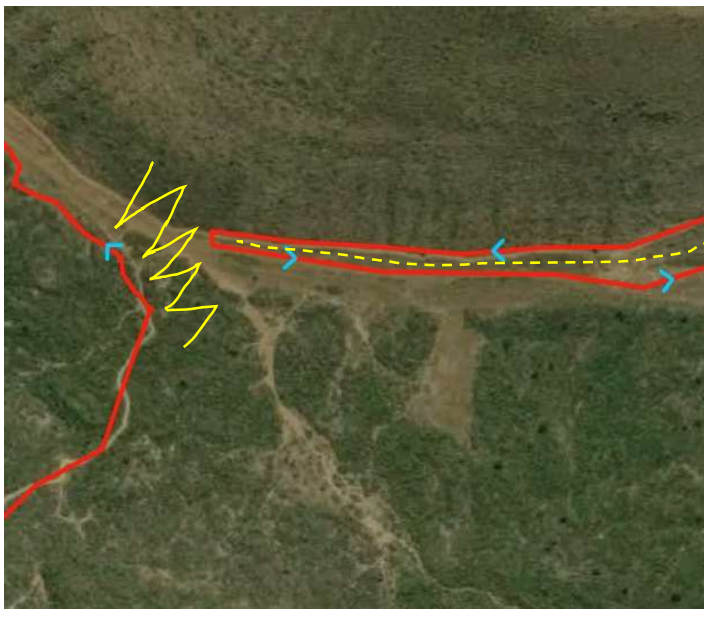
Mitigating the Most Dangerous Hazards

Deploy hard barriers in areas where tracks are parallel or close.



Ensure tracking system compliance with **Appendix IX of CCRSR, Art. 3.4.**

- 3 REQUIREMENTS FOR VEHICLE-TO-VEHICLE COMMUNICATION SYSTEM
 - 3.1 Must be integrated either in tracking or in the NAV-GPS device.
 - 3.2 Overtaking requests by vehicle-to-vehicle communication and detection if requesting vehicle is on the same track.
 - 3.3 Stopped vehicle in front alarm.
 - 3.4 Vehicle-to-vehicle collision alarm.
 - 3.5 Sound emission for alarms and speeding.



6.2 SAFETY PLAN AND ADMINISTRATIVE PROCEDURES

6.2.1 A safety plan should be established containing a description of the activities and the means to be deployed in each of the following fields:

- a) Safety of the public;
- b) Safety of the competing crews;
- c) Safety of the officials of the competition;
- d) Safety of servicing.

6.2.2 The safety plan should include:

- a) The location of Rally HQ (Rally Control).
- b) The names of the various people in charge:
 - Clerk of the Course
 - Deputy Clerk(s) of the Course
 - Chief Medical Officer
 - **The Rescue Chief**
 - Chief Safety Officer
- c) The addresses and telephone numbers of the various safety services in the areas where each Selective Section will be run:
 - Police
 - Hospitals
 - Emergency medical services
 - Breakdown and recovery services
 - Red Cross (or equivalent)
- d) The full itinerary with detailed road sections.
- e) The safety plan for each of the Selective Sections, which should detail:
 - The exact location of all emergency vehicles by means of an accurate map
 - Evacuation routes
 - Zones which are considered by the organisers as being open to the public

SAFETY PLAN

See art. 6 of Appendix H of ISC

The Safety Dossier shall include the safety implementation and stakeholders of the whole safety team and the event and detailed for every selective stage

Time table of safety implementation of the selective stage

Safety Plan with an overview map including all safety details and position where safety is required, refuelling, DZ, medical centre and or closest hospitals, intervention radius for vehicles or helicopters

Position, number and display of the safety vehicles and safety team

If you use the local police, recommend the minimum number of people required at every position.

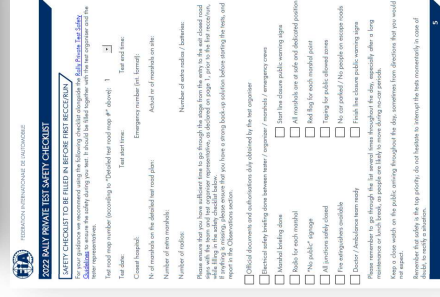
At junction or accesses, a minimum of safety description and implementation

As Baja selective stage are on tracks; every crossings, junctions or changes of directions must be details into and envelope's must cover escape roads to keep those free

Add and define as many spectator zones as possible to encourage the spectators to stay in a safe areas

Appoint a safety officer or a deputy to ensure that all safety stakeholders and material are in place

3. FLA supporting material



Safety Campaigns

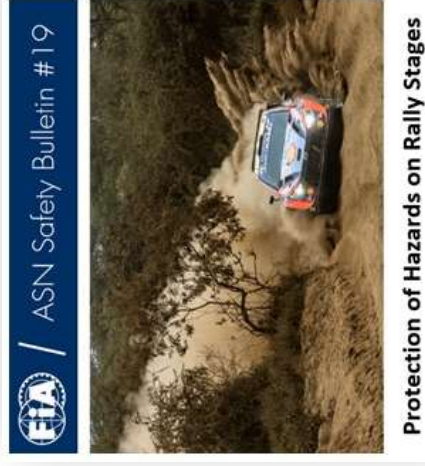


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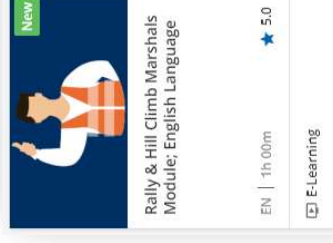
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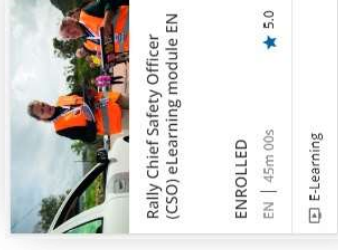


Regional ASN Rally Safety Delegates Trainings:
Africa & South America in 2025

FIA Rally & Hill Climb eLearning Module:



Rally Chief Safety Officer (CSO) eLearning module:



Operational Safety Task Force

Operational Safety Task Force is available to any ASN

Could be requested by an event organiser (via the ASN) or directly by an ASN

Free of charge, you will benefit from the support of our Safety Experts to improve the safety of your event

4. Conclusion



Conclusion

Prepare the stages to be safe when they are live

Expect the unexpected

Safety is not a matter of cost, it is a matter of preparation and anticipation

Feel free to contact us rally.safety@fia.com

Visit www.fia.com/rally-safety & www.fia.com/hill-climb-safety to download FIA assets



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FRIDAY 7 FEBRUARY 2025

THANK YOU FOR YOUR TIME