

P3 Report

Women Inclusive Design For Riot Control Vehicle

DE703 M.Des Project-3

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Approval Form

This is to certify that this Mobility and Vehicle Design Project "Women-Inclusive Design for Riot Control Vehicles" by Praveen Kumar is approved for partial fulfillment for the Master of Design degree in Mobility and Vehicle Design.

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Signature of the Chair Person:



Signature of the Internal Examiner:



Signature of the External Examiner:



Declaration Form

I, declare that this written report represents my ideas in my own words, and where others' ideas or words have been included I have adequately cited and referenced the original sources.

I also declare that I have adhered to all principles of academic honesty and integrity and have not falsified, misinterpreted or fabricated any idea, data, facts or source in my submission.

I understand that any violation of the above will be caused for disciplinary action by the Institute and can also evoke penal action from the source, from which proper permission has not been taken or improperly been cited.

Signature:

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Acknowledgement

I would like to use this opportunity to give thanks to those who helped me going through this Course project. I would like to extend my respect to all the people who helped me in accomplishing this task.

First, I would like to thank my Course Guide, Mr. Nishant Sharma for being extremely helpful and trusting me. His expert advise and helpful comments on my work has helped me to drive my work in a proper direction and reach my goal.

I also extend my gratitude towards all my batch-mates, juniors, who have always supported me and inspired me throughout this Project. I also want to offer my appreciation towards IIT Bombay for all the help and facilities they have provided.

Abstract

In riot control operations, ensuring female staff's safety and equality is crucial. Based on pertinent information and insights, this research analyses design factors for riot control vehicles that specifically respond to the demands of female workers.

These vehicles seek to improve the efficiency, comfort, and safety of female front-line workers by analyzing the difficulties experienced by women in riot control scenarios and implementing gender-sensitive characteristics. The importance of offering safe and comfortable seating, adaptable safety equipment, and enhanced visibility from inside the vehicle is highlighted in this paper. It emphasizes the significance of lightweight yet sturdy construction materials to facilitate ease of operation for female staff.

The findings of this report aim to inform the development of riot control vehicles that prioritize the well-being and effectiveness of women personnel, ultimately contributing to a more inclusive and effective response to civil unrest.

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Introduction

7

image1: <https://www.cfr.org/backgrounder/governance-india-womens-rights>

"In India, the right to peaceful protest is a cornerstone of democracy, enabling citizens to express their grievances and bring about social change. However, when protests escalate into violence, it becomes the government's responsibility to strike a delicate balance between upholding the right to protest and ensuring public order and citizen safety. Riot control vehicles are critical in effectively managing these challenging situations."^[1]

It is essential to adopt women-inclusive approaches that recognize the diverse participation of women in protests and address their specific needs. This report aims to exfoliate light on the significance of empowering women through riot control vehicles as part of a comprehensive strategy for riot operation. It emphasizes the importance of gender-sensitive systems considering women's unique gestures and challenges during civil unrest.

By enforcing technical training programs, furnishing acclimatized defensive gear and installations and encouraging other excellent representations of women within law enforcement agencies, we can produce a terrain that respects and protects the rights of all citizens, anyhow of gender. The report further underscores the potential of riot control vehicles designed to cater to the specific needs



image2: <http://tehelka.com/data-on-communal-violence-go-missing/demonstrators>

of women.

Such vehicles can foster an environment of trust where women feel safe to participate and contribute actively to protest management. By analyzing existing data, insights, and best practices, this report aims to comprehensively understand the importance of women-inclusive approaches in riot control vehicle strategies. Ultimately, by integrating these approaches into the design and deployment of riot control vehicles, the Indian government can effectively manage violent civil protests while upholding the values of democracy, human rights, and gender equality.

2. Research

2.1 Factors Responsible For Collaborative Violence literal factors-

Historical Factors-The history of partition and the two-nation proposition generated a deep sense of communalism and distrust among communities.

Political factors- The peak and rule policy rehearsed by the British and the posterior identity politics followed by the political parties have added to the peak.

Educational factors- maturity of Indians have failed to borrow a scientific and technological approach and hence are reticent to embrace liberal values.

Socio- profitable factors- The educational backwardness has redounded in poor representation of Muslims in public services. This relative sense of privation contains the seeds of communalism.

Cultural factors- Orthodox members of communities have vital rudiments of traditionalism and fundamentalism. Social media, detest juggernauts, and fake news are vital in spreading collaborative screams and pressures.

Lack of solid action- Lack of robust and decisive action by police and allegations of discriminative or belated action also causes.[2]

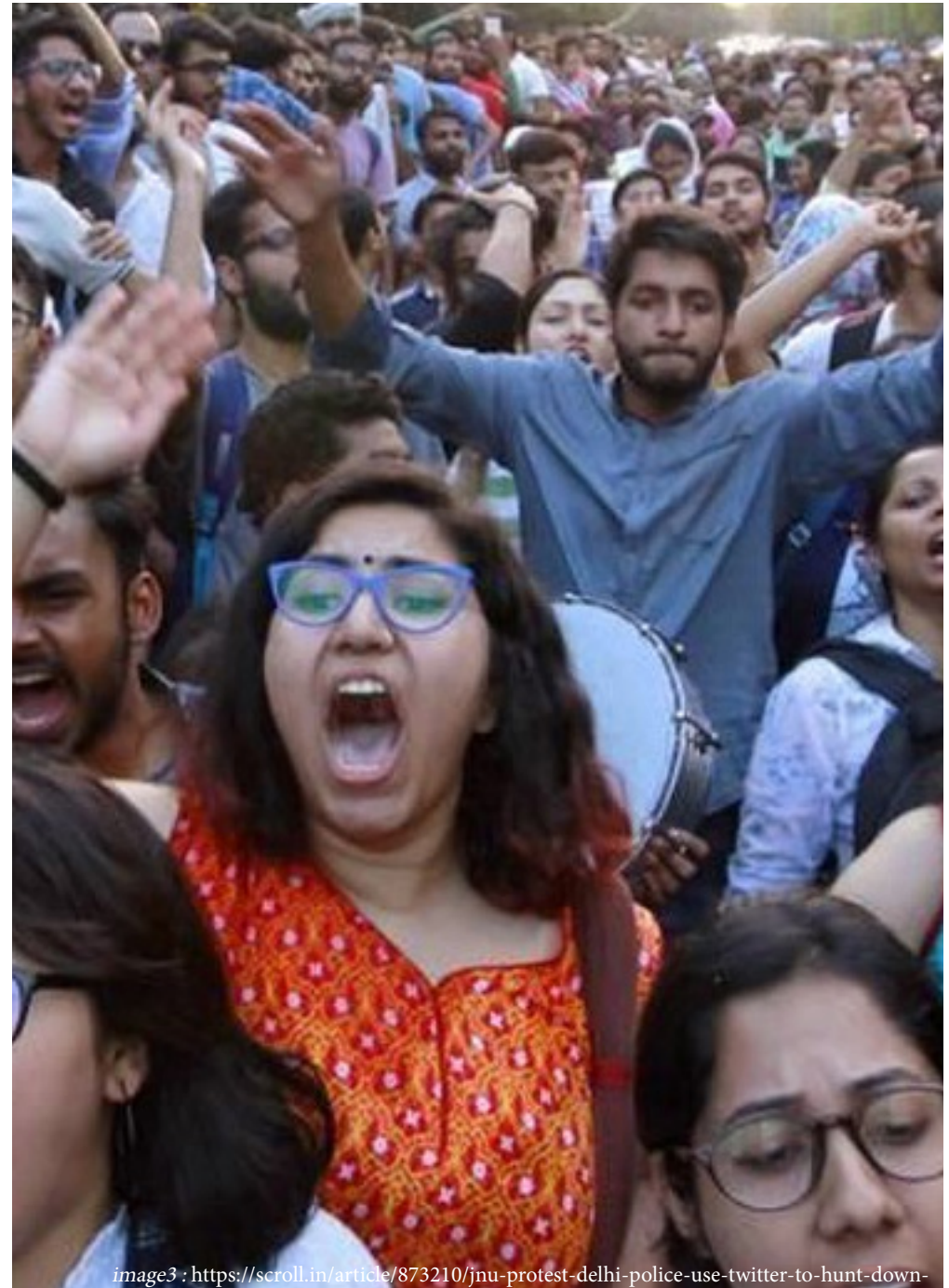


image3 : <https://scroll.in/article/873210/jnu-protest-delhi-police-use-twitter-to-hunt-down->

2.2 Consequences of Communal Violence

The best patients of communal violence are the harmless not unusual place folks that get stuck inextricably into situations past their control.

There is an avoidable lack of existence and critical public assets receives broken. It lends to hooliganism, and the state of affairs is frequently exploited through anti social factors through plundering and indulging in sports simplest for his or her private gains.

The anti countrywide factors get ok possibility to fan anti countrywide emotions and paintings on developing an surroundings to interrupt the cohesiveness of our society.

The surroundings of uncertainty and inner turmoil disuades the overseas traders to installation their organizations in India.

Lawlessness accruing out of communal disharmony is exploited through the divisive forces running withinside the us of a due to which inner safety dangers receives heightens.

The social cloth of the society receives irreparably broken and the situations of distrust function a catalyst for destiny conflicts on flimsy grounds.

Deployment of big scale safety forces dissipates the nation exchequer and can bring about occasional Human Rights abuses. The Human Development Index of the society is adversely suffering from those hampering regulations which might be laid at the simple proper to freedom of people.



images: <https://vocal.media/fvi/bbc-documentary-real-facts-about-gujarat-riots-2002demonstrators>

2.3 Woman Armed Forces In India

The main arm of the Indian Armed Forces, the Indian Army, is in charge of all combat actions on land. Its principal responsibility is to protect India from foreign threats and aggression while preserving security and peace within its boundaries. In calamity and other disruptions, it also runs charitable delivery activities. One of the three services under the Ministry of Defence is the Indian Army. Female officers comprise much to 3.80 percent of the whole fortified forces, according to the Ministry of Defence.

The Indian Navy is a well-rounded and unified force that operates across the air, land, and sea domains, ensuring the defense of our nation's interests. With its capabilities extending above, on, and below the ocean's surface, the Indian Navy demonstrates a comprehensive and versatile approach to maritime security. Among the three branches of the Indian Armed Forces, the Indian Navy leads the way in terms of gender diversity, with women comprising 6.5 percent of its personnel. This notable representation of women in the Navy underscores the organization's commitment to inclusivity and highlights the increasing participation of women in defense forces.

India's territorial waters, comprising its contiguous zone and exclusive economic zone, are under the authority of the Indian Coast Guard (ICG), a maritime law enforcement and search and rescue organization. It was originally founded on February 1st, 1977 under the Indian Parliament's Coast Guard Act, 1978.



The Ministry of Home Affairs (MHA) of the Government of India is in charge of the Central Reserve Police Force (CRPF), a federal police body in India. Among the Central Armed Police Forces, it is one. The major responsibility of the CRPF is to support state and union territory police forces in their efforts to uphold the rule of law and fight insurgency.

In India, the Ministry of Home Affairs is responsible for the Central Industrial Security Force (CISF), a federal police agency. It is a member of the CAPF (Central Armed Police Forces). In addition to approximately 356 industrial units (including 13 private sector units), government infrastructure projects, institutions, and establishments spread all over India, CISF also offers protection.

The RAF is a specialised division of the Central Reserve Police Force that handles riots, situations that could turn into riots, crowd control, rescue and relief efforts, and similar missions.





The organization in charge of defending India's borders with Pakistan and Bangladesh is the Border Security Force (BSF). One of India's seven Central Armed Police Forces (CAPF) was established on December 1, 1965, "for ensuring the security of India's borders," following the conclusion of the 1965 war.



A counterterrorism division of India under the Ministry of Home Affairs is the National Security Guard (NSG), also called the "Black Cats." It was established on October 16, 1984, as a result of Operation Blue Star, to combat terrorism and safeguard nations against domestic unrest.



2.4 Woman Police India

With the growing involvement of women in politics, protests, and crook activities, law enforcement officials have confronted demanding situations in coping with women's agitations. This is more often than not because of the sensitivity surrounding any incident concerning women, as even a minor perceived wrongdoing by the police can speedily amplify right into a full-size regulation and order issue. To deal with those demanding situations, there was steady growth within the recruitment of women employees within police pressure.

Data suggests a positive trend within the recruitment of women in police departments throughout the country. Over the years, there was a significant upward thrust within the variety of women becoming members of the police pressure, highlighting a planned attempt

to create a different gender-balanced and inclusive regulation enforcement system. These women employees undergo rigorous education to equip themselves with the essential competencies and know-how to deal with various situations, including women-centric agitations and crimes.

The growth within the recruitment of women within the police pressure now no longer handiest complements gender illustration. However, it additionally brings specific views and skills to the table. Women officials have validated their effectiveness in coping with touchy cases, especially those concerning women, as they can better empathize with and apprehend the desires and worries of women. Additionally, the presence of women employees in regulation enforcement corporations enables constructing acceptance as accurate with and rapport with the community, fostering an experience of protection amongst ladies and inspiring their energetic participation in subjects of regulation and order.

image5: <https://timesofindia.indiatimes.com/city/mumbai/8-hr-duty-for-women-cops->

2.5 “State- wise Strength of Women Police as a Percentage of the Total Police Force” [3]

State /UT	Total Police Force	Total Woman Police (numbers)	Total Women Police as % of police	Rank (1-35, highest-lowest)
Chandigarh	7,181	1,017	14.16	1
Tamil Nadu	1,11,448	13842	12.42	2
Andaman & Nicobar (A&N) Islands	3,947	445	11.27	3
Himachal Pradesh	14,024	1,552	11.07	4
Maharashtra	1,71,359	17,957	10.48	5
D & N Haveli	261	26	9.96	6
Daman & Diu	373	34	9.12	7
Odisha	51,396	4,381	8.52	8
Uttarakhand	18,187	1,528	8.4	9
Manipur	24,832	2,040	8.22	10
Sikkim	4,281	333	7.78	11
Delhi	75,704	5,413	7.15	12
Rajasthan	92,330	6,568	7.11	13
Haryana	41,112	2,734	6.65	14
Punjab	73,782	4,761	6.44	15
Kerala	47,782	3,067	6.42	16
Goa	5,924	366	6.18	17
Lakshadweep	264	16	6.06	18
Mizoram	9,895	568	5.74	19
Puducherry	3,143	165	5.25	20
Arunachal Pradesh	11,247	582	5.17	21
Jharkhand	56,439	2,906	5.15	22
Karnataka	72,011	3,682	5.11	23
Madhya Pradesh	86,946	4,190	4.82	24
West Bengal	79,476	3,791	4.77	25
Andhra Pradesh	1,06,635	4,622	4.33	26
Chhattisgarh	54,693	2,348	4.29	27
Uttar Pradesh	1,68,851	7,238	4.29	27
Gujrat	74,023	2,691	3.64	29
Bihar	68,819	2,341	3.4	30
Tripura	23,619	777	3.29	31
Jammu & Kashmir	72,196	2,252	3.12	32
Meghalaya	11,453	329	2.87	33
Nagaland	24,030	253	1.05	34
Assam	55,033	510	0.93	35
All India	17,22,786	1,05,325	6.11	

2.6 Year- wise Total Percentage of Women Police.

2014	2013	2012	2011	2010	2009	2008
1,05,325	97,518	84,479	71,756	66,153	56,667	57,466



image6: <https://www.thehansindia.com/posts/index/News-Analysis/2015-08-20/>

2.7 Attack on Women Personnels

“Womanforest range officer attacked in Telangana, TRS MLA’s brother arreste”[4]



Kagaznagar Forest Officer Chole Anitha and her staff were attacked with bamboo sticks by Zilla Parishad vice-chairperson Koneru Krishna and his supporters at Sarasala village in Kumram Bheem Asifabad district of Telangana

“ Chennai Woman Constable Molested by Anti-Nationals During Jallikattu Protests”[5]



In a chilling rerun of the molestation of women constables at the hand of Islamist mobs in Ambur 2015 and Azad

Maidan 2012, a woman constable was subjected to molestation and assault on 23 Jan by the anti-national mob who also set fire to Ice House police station in Chennai under the cover of Jallikattu protests.

“Bihar: Women attack police deputed for sand ghat demarcation in Gaya, get hands tied, booked”[6]

Police have said that these women were part of the group of nearly 100-150 anti-socials, who attacked a police party on Wednesday with sharp-edged weapons and batons in addition to pelting stones. As many as 10 police personnel sustained serious injuries apart from many others also having injuries in the attack

“Women take centre stage at farmers’ protest sites along Delhi’s borders”[7]



Thousands of women farmers held protest marches and delivered speeches at the Singhu, Tikri and Ghazipur protest sites at Delhi’s borders on International Women’s Day.

“Fatehpur: Stone pelting on police team for catching Ganja smuggler, four injured including SO and constable”[8]



Fatehpur, Jagran Correspondent. The police team that went to nab Ganja smuggler Rajeev alias Munna Singh, living on the roadside in Mirpur village, was attacked from his house. By raiding Rajeev's house on Sunday afternoon, the police caught him with five kilograms of ganja and made him sit in a jeep. Enraged by this, the villagers pelted stones. During this Rajeev ran away. When the police tried to explain, the villagers started a scuffle. Took off the nameplate on the uniform. Station in-charge Akhilesh Pratap Singh, sub-inspector Anees Kumar Singh, constable Shrikesh were injured in the mob attack. Woman constable Preeti Verma's head exploded in stone pelting.

“Independent woman journalist almost lynched by Shaheen Bagh mob”[9]



The protestors alleged Gunja was 'wearing a burqa and secretly filming them' sparking off their ire. Given the ferocity with which these loutish protestors have attacked, heckled, manhandled and outright barred media personnel representing outlets they consider biased towards them, going undercover seems to be a sensible option.

“34 arrested for Odisha violence, assaulting woman cop”[10]



At least 34 people have been arrested in connection with the violence and attack on a woman constable during a Congress rally in Bhubaneswar which also echoed in the Odisha Assembly on Friday paralysing proceedings.

“Goons shoot at lady police officer in Karnataka’s Kalaburagi”[11]



Two cops including a lady inspector, injured when goons opened fire on them in Karnataka’s Kalaburagi.

2.8 Existing Riot Control Vehicles

Vajra



Designed by DRDO, this riot control vehicle was built from a SWARAJ LCV. It is appropriate for raising issues with similar other LCVs. Controlling unruly mobs, civil disturbances, rioting, and removing fatalities are functional tasks for state police and paramilitary forces. This vehicle has unique features, including Multi Tube Shell Launchers for firing tear gas shells in the front and back, an emergency light bar with a PA system for communication, and external and internal lighting setup with AC/DC and wire mesh protection for the glasses. The truck can transport a commander and 14 armed police officers. It has improved safety and security features, a compact house-type version of three-side control, and is ideal for maneuverability in small lanes or congested locations.

Varun Water Canon



An efficient, non-lethal method for dispersing aggressive mobs is the Varun-Vehicle Mounted Water Cannon System. Two rotatable platform guns positioned on the vehicle's top can emit a continuous or pulsating water jet as part of the system. The cannon system also has a feature that allows irritant and indelible ink to be mixed together. The apparatus, which is built into TATA LPT 2518 and 2515, has a 12,000-liter water storage capacity.

Mahindra Rakshak



Based on the Mahindra Commander jeep's chassis, Mahindra Defence Systems produces the Mahindra Rakshak, an armored military light utility vehicle. The Indian army primarily utilizes it, while other nations and the police in many Indian States also use it.

Maruti Suzuki Gypsy



The vehicle was added to the Indian Army's fleet in 1985, the same year it was introduced in India. The legendary SUV received a new lease on life after the Indian Army obtained a dispensation from the Ministry of Defence to allow the corporation to create extra units for our nation's services, despite Maruti Suzuki ceasing production of the Gypsy for the general public in 2018. The SUV is utilised by the military services as a patrol vehicle because of its tough build, which enables it to handle difficult terrain. Forces can convert it into a gun carrier by choosing the open-top variant.

Combat Support Xenon



The Multi Shell Launcher is included with the Combat Support Xenon. Five people can ride in this car, in addition to the driver and co-driver. The vehicle has tight lock facilities, firing apertures, and a rack for batons and six guns.

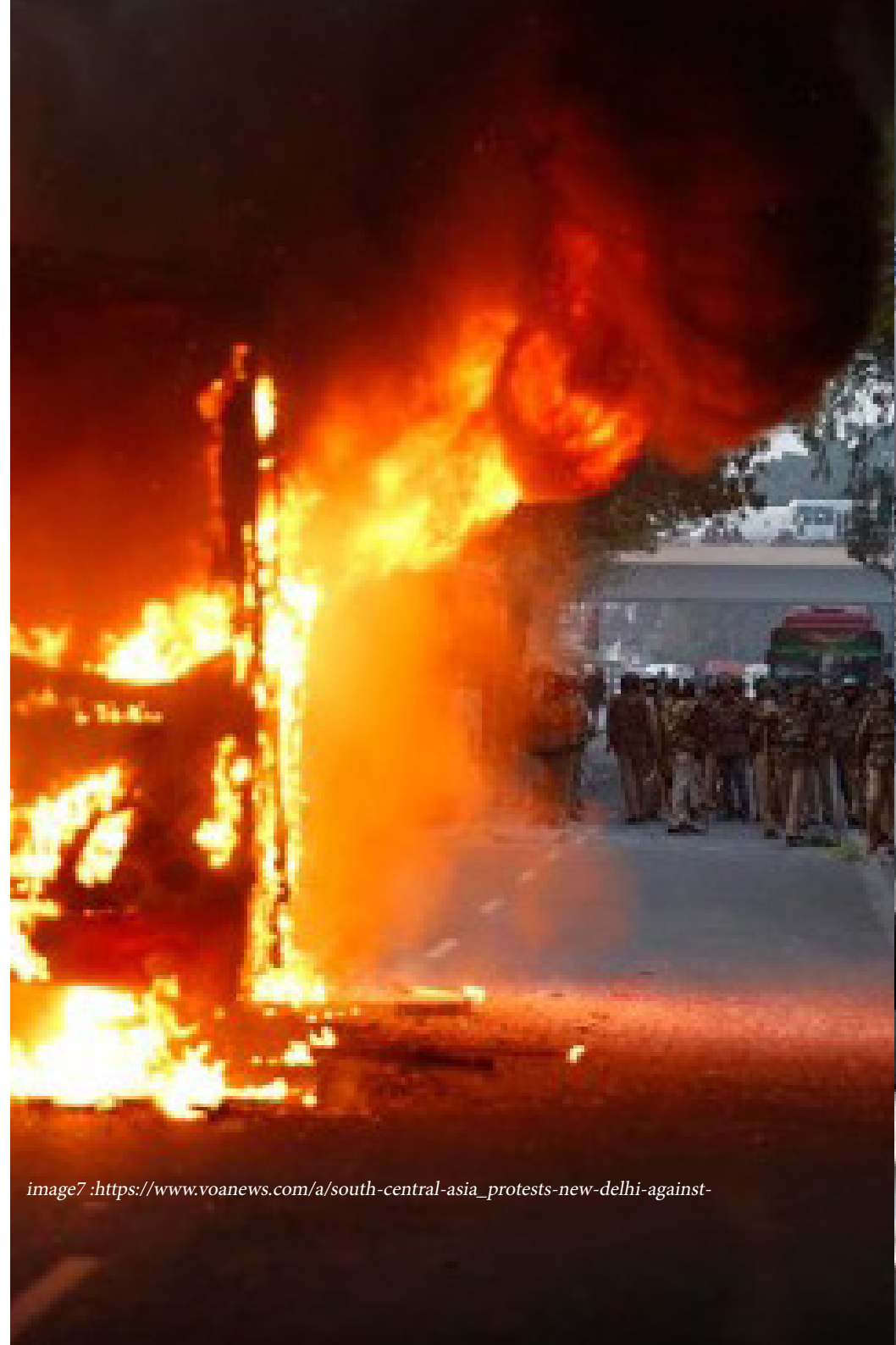


image7 :https://www.voanews.com/a/south-central-asia_protests-new-delhi-against-



image8: <https://www.tatamotors.com/product/defence-combat-support-platforms->

2.9 Issues With the current vehicle

- Riot intervention vehicle based on an SUV platform lacks the necessary armor protection and other operational problems, namely the operation of the electric MBLS generator from outside the vehicle rather than from inside it.
- Water cannons are used effectively until a continuous supply of water. The effects of water cannons have been observed to be fairly short-lived. It also has questionable water discharge capabilities on narrow side streets, and maneuvering large vehicles in smaller road areas is difficult.
- Many of the existing riot control vehicles have limited visibility, obstructing the line of sight of female personnel. This can affect your situational awareness and ability to react quickly to dynamic situations.
- During lengthy deployments, women troops may find it challenging to maintain their privacy and care for their personal hygiene needs without gender-specific facilities like changing spaces.

2.10 Riot Control Equipments used by Armed Forces

Pump action Gun



The 12 Bore Pump Action Gun was explicitly created as a security tool. It is a breach-loading single-barrel weapon that outperforms the 12 Bore DBBL. It has a tubular magazine parallel to and below the barrel and contains four numbers of 12 Bore Cartridges.

Tear Gas



The Riot Control CS Grenade is made primarily for outdoor use in crowd control scenarios. It has a high volume continuous burn that expels its payload through four gas ports on the top of the canister in about 20 to 40 seconds. This grenade can be utilised to elude crowd control or to mask tactical mobility. The amount of smoke and agent is substantial and overpowering. The active agent in this grenade, which can be launched, weighs around 2.7 oz and measures 6.0 in by 2.35 in.

Chilli Grenade



A non-lethal weapon known as a chilli grenade was created by Indian military researchers for the Indian Armed Forces at the Defence Research and Development Organisation. Similar to tear gas, the weapon.



Shield

It frequently occurs that an angry mob may throw things like bricks and stones against opposing forces. Shields act as a barrier to safeguard the armed troops in these situations.

Stun Grenade



The explosive device produces a bedazzling flash of light and a sonorous bang(160- 180 rattle) that temporarily disorients people in the vicinity. The main purpose of grenades is to blackjack the crowd.

Tear Gas Guns



A projectile that is fired from gas guns contains tear gas. Its arsenal consists of 37 and 38mm tear gas and baton bullets.

Gas Filter Mask



Gas filters play a vital role in safeguarding police officers on the ground by effectively shielding them from the harmful substances generated by tear gas and other crowd control gases, ensuring their safety and well-being amidst challenging situations.

Batons/Lathis



It is the most dependable and secure method of managing a large and hostile mob. Police and the military frequently coordinate their efforts to disperse huge crowds of people when there is public unrest.

Helmets



A riot protection helmet aims to protect the wearer's head, face, and eyes from projectiles like bricks and melee weapons that may be hurled during riot control. This particular type of helmet is designed for law enforcement and military use.

Anti Riot Body Armor

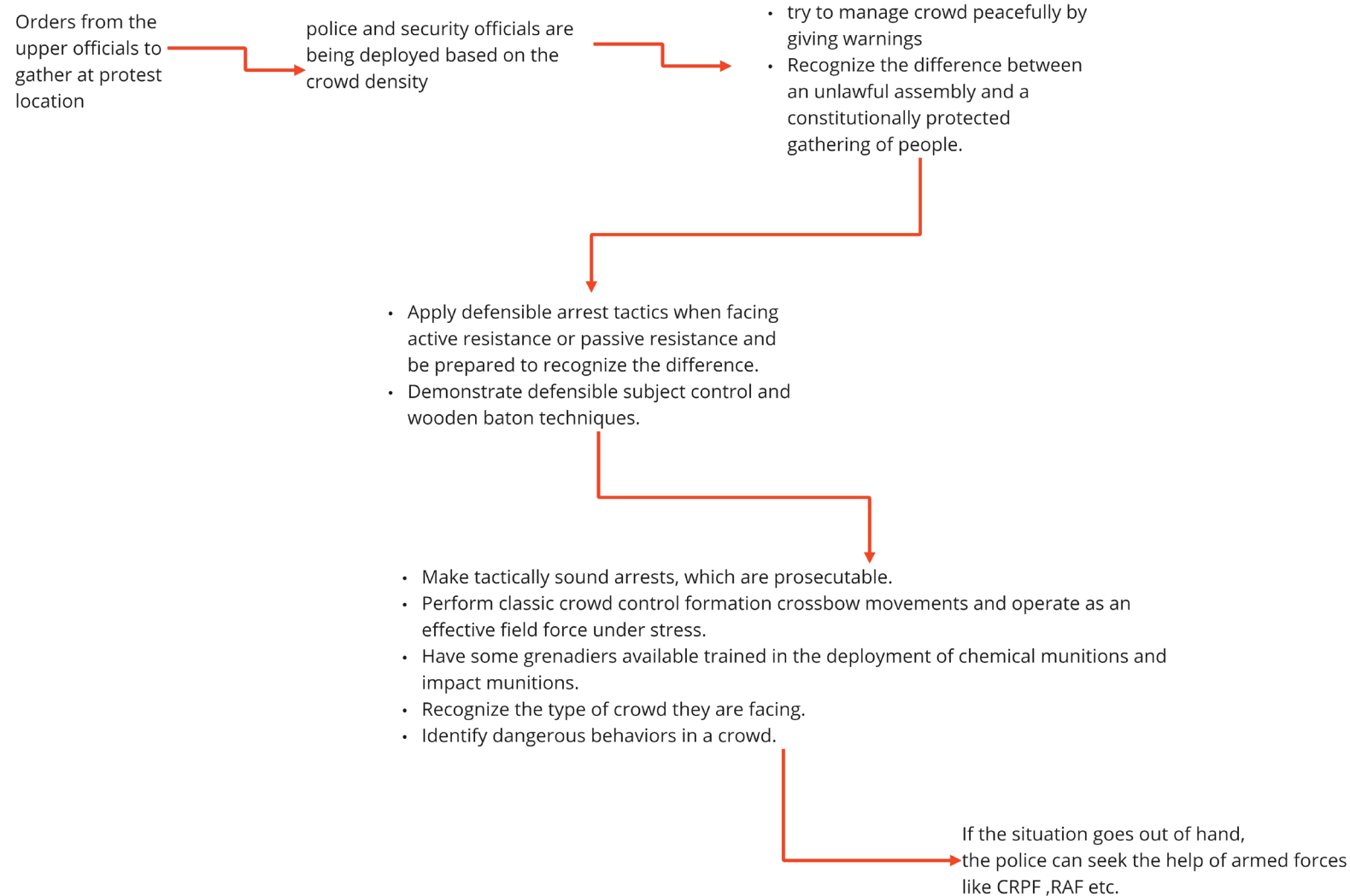


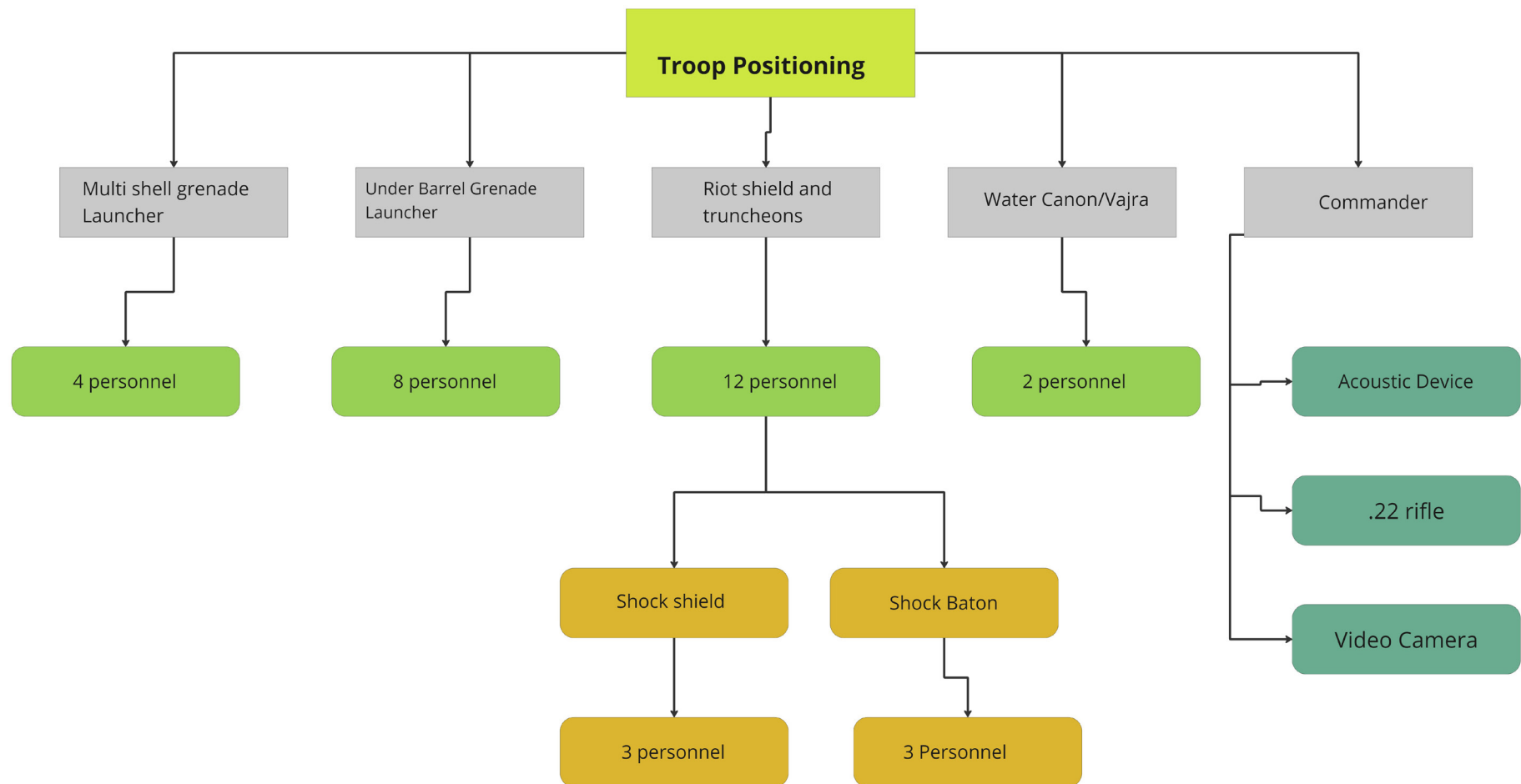
Police anti-rebellion frame armor offers important safety to regulation enforcement employees who manipulate operations at some point of rebellion - designed to resist diverse sorts of attacks; such frame armor gives resistance in opposition to projectiles, blunt pressure impacts, and edged weapons.



image8 : <https://www.huffpost.com/archive/in/entry/delhi-police-says-no-firing-3-jamia->

2.11 Operation





2.12 Crowd Control Options

“Response beyond 50 metres

At this range, it is advised to introduce Multi Shell Grenade Launchers and Under Barrel Grenade Launchers. Although riot control agents (RCAs) like tear gas shells are frequently deployed, there are still concerns about the staff's ability to saturate the area adequately.



Response between 15 and 50 metres

A significant range is between 15 and 50 meters. When they are within this distance, rioters can throw things like stones and firebombs at police officers or the targets of their choice. The objective is to disperse the mob at a distance of 50 meters or more to stop them from using their potential for violence.



Below 15 metres

The police would need to use lathi-charge or baton-charge between the ranges of 0 to 15 metres because less than that can result in significant harm to crucial organs.”[12]



2.13 Wedge formation

"The wedge formation is a helpful riot control technique for clearing the streets and dispersing unruly groups. This configuration helps disperse a mob and clear a route for law enforcement agents to pass through. The wedge formation can readily be converted into a triangle shape when a change in course or withdrawal is required, with the reserve forces placed at the base for increased strength and flexibility. Wedge formation is an effective tactic for controlling riots and upholding law and order. Its quick movement in crowded spaces and ability to make a visual effect operate as a deterrent, dispersing the crowd and promoting calm."[12]

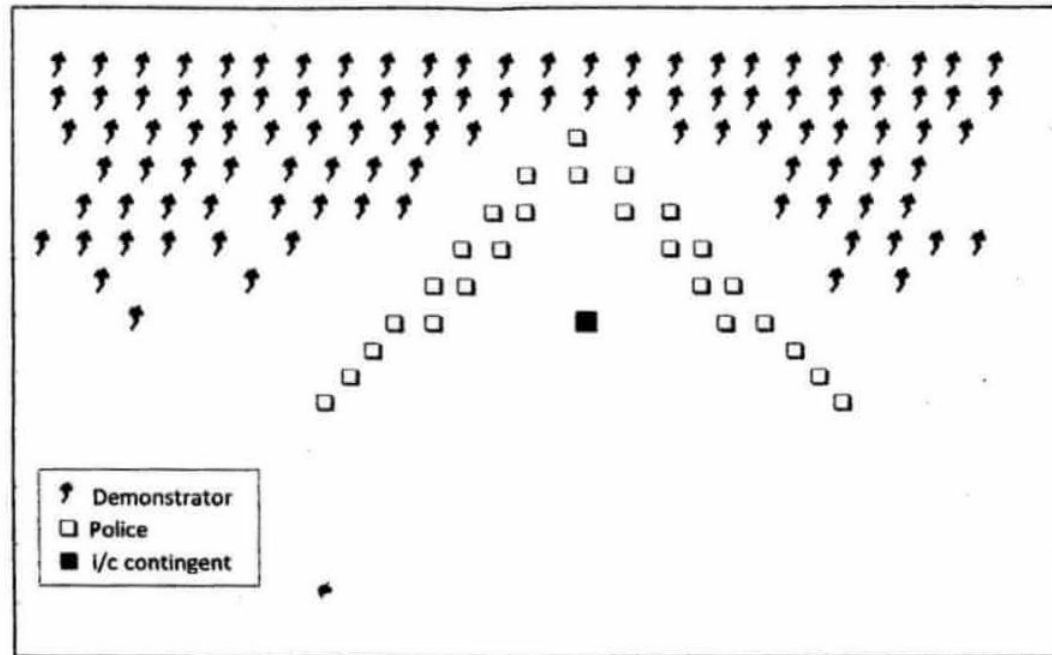




image9 : <https://economictimes>.

“Tactical Mobility - Light Armoured Vehicles

Need for light armored excessive safety automobiles. Such automobiles ready with multi-barrel tear fuel line launchers, communications, floodlights, and so forth can behave as pressure multipliers by venturing into the crowd. It additionally offers a choice for insurrection-controlling police to examine the intensity of the scenario and reply accordingly.

Considerations

Law enforcement organizations must give notice before using force, which is crucial. This procedure respects the values of openness and responsibility and makes all involved in a situation-aware of the possible outcomes. Police officers allow people to follow legal instructions and possibly defuse the situation before using force by issuing a clear warning. This strategy emphasizes the significance of protecting life and causing the least harm possible during law enforcement interventions, supports the preservation of human rights, and creates trust between the police and the community.”[12]

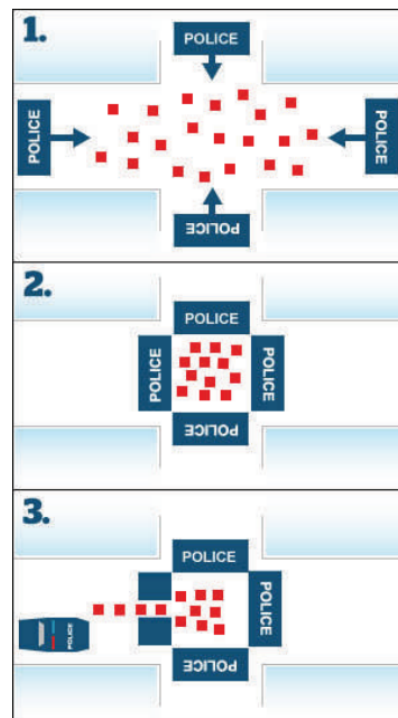
Lathi charges ought to be carried out to cause reparable harm and preserve the safety of those involved. Lathi charges have demonstrated a lower frequency of severe injuries when used properly, supporting applying proportional force and minimizing long-term physical harm. This strategy puts everyone's safety and human rights as a top priority while conducting crowd control activities.

Only in extreme circumstances, prioritizing protecting life and reducing the possibility of needless harm, allowed law enforcement personnel to use guns. Firearms are generally only used as a last resort when facing immediate threats that non-lethal measures cannot successfully neutralize. The use of firearms is subject to strict guidelines and norms, which strongly emphasize proportionality, need, and the defense of human rights. This strategy represents the dedication of law enforcement organizations to protect public safety while honoring the value of human life in every circumstance.



2.14 “Kettling”[12]

A police strategy for crowd control during protests is kettling, sometimes known as confinement or corralling. It entails the formation of sizable cordons of police officers, who move to enclose a group within a defined area. The police control the exits where protesters can leave, and they can pass through an uncontrolled opening in the cordons or contain them, prevent them from going, and then arrest them.



Stage 1: As the Police observe the transformation of crowd into violent crowd, they start surrounding the crowd from all the directions.

Stage 2: As the situation continues to get tense, they start tightening the presence around the crowd from all the directions.

Stage 3: Police control access to the location and decide how to allow people to leave - through a predetermined spot. They have a better control and surveillance on the crowd that is leaving.

2.15 Problems

Have to stay
thirsty for
hours when
protest goes
long

often deployed for
VIP security for long
period ,left with no
option but to sleep
on pavements or
around roadside

No partitioned
compartment
in vehicle for
criminal

incidents
happened when
female police
got attacked in
vehicle

Patrolling vehicle
are not equipped
enough to control
extreme situation

Generally
needs male
driver while
patrolling with
SUV

Many times female
complainant
resistant to share
details in presence
of male cops

can't carry
bigger
arms in
vehicle

No medical
kit during
menstruation

It's not easy
to patrol at
night in black
listed areas

2.16 Insights

No
dedicated
space for
equipments

Few vehicles
like MUV's are
not suitable
for all terrains

Loading and
unloading of
heavy
equipments

Vehicle has
limited
occupant
packaging

No
powered
tail gate

Not easy for
women personnel
in saree to
maneuver the
vehicle

Current
vehicle is not
design for
rescue like
operations

no
provision of
safety in
the vehicle

No dedicated
height to stand
while using
arms inside
vehicle

No stepper in
big vehicles to
Egress/Ingress

Insights

Sometimes
face difficulty
in sitting (
Body armor
on)

No
technologically
advance

no
dedicated
controls for
operations

not easy to
operate bigger
vehicle due to
dimensional
issues

Lack of crowd
control tools,
communication
devices, and
medical supplies.

Cornering is
one of the
difficult task in
big vehicles

vehicle not
designed to
navigate
through
difficult terrain

no separate
compartment or
area designated for
women and children
to provide a safe
space

no
changing
areas

high-quality
communication
equipment

Lack of
customization

Some vehicles
may be
prohibitively
expensive, which
could limit the
resources

Lack of
visibility

Lack of
adjustability

difficult to
operate
vehicle for
extended
period of time

2.17 Key Insights

Patrolling vehicle
are not equipped
enough to control
extreme situation

Women police officers may experience antagonism and violent threats from suspects and onlookers in some extreme circumstances.

Safety
concerns

Safety concerns: Riot Control situations may be risky for all police officers. However, women can also face extra protection concerns. For example, they will be extra liable to sexual harassment or attack via means of protestors, or they will be centered, mainly due to their gender. Riot control motors designed for women could include functions that boost their protection, including stable locking mechanisms.

No partitioned
compartment
in vehicle for
criminal

Unrestrained criminal suspects could endanger the safety of the police officer and any passengers in the car. A physical altercation or escape attempt by the suspect is more likely without a partitioned compartment.

No medical
kit during
menstruation

- Health Concerns : Without a medical kit, women police officers may not have access to the necessary supplies or medication to manage their menstrual cycle.
- Productivity Concerns : If a woman police officer is experiencing menstrual pain or discomfort, it can affect her productivity and ability to perform her duties effectively.
- Hygiene Concerns : Without access to a medical kit with supplies such as sanitary pads, hand sanitizer, or cleaning wipes, women police officers may face hygiene concerns during menstruation.

Lack of visibility

Women police officers may have a limited field of vision when operating large vehicles, which can make it difficult to see obstacles in their path.

Lack of adjustability

1. Vehicles that are not adjustable can cause discomfort for women police officers, especially those who are shorter or taller than average. This can lead to aches and pains, and even injuries over time.
2. Vehicles that cannot be adjusted properly can also make it more difficult for women police officers to maintain control while driving.

Cornering is one of the difficult task in big vehicles

Maneuverability: Big vehicles may be more challenging to maneuver, particularly in tight areas or while making sharp turns. Body positioning: Women police officers also want to adjust their frame positioning to deal with the steering and controls of big vehicles while cornering. This may be bodily stressful and cause discomfort.

Safety of women and children

Women and kids are often the maximum vulnerable groups during riots or other civil disturbances. A designated area in police vehicles can guard them against physical violence and abuse.

2.18 Positioning Graph

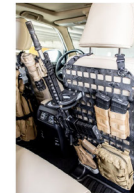
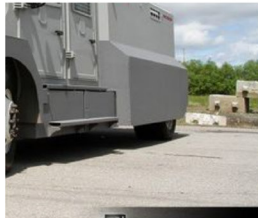
safety and security



Positioning Graph

Maneuverability

2.19 Benchmarks



2.20 Persona



Name -Amrita

Age -27

Amrita is a woman police officer who has been in service for the last five times. Amrita is devoted to serving and guarding her community and has always been interested in pursuing a police career. Still, as a woman, she has faced several challenges in crowd-controlling operations, including working with outfits and vehicles that aren't designed with her needs in mind. Amrita frequently finds her riot control vehicles uncomfortable and delicate to maneuver, particularly when wearing heavy defensive gear. She has also endured difficulties with the communication systems, which could be more intuitive and make coordinating with other officers during a riot. Amrita is agitated to hear that her department is considering the design of a new riot control vehicle for women police officers.

She hopes this new vehicle will address some of the issues she has faced in history and make it easier for her to perform her duties effectively and safely. Amrita is looking for a vehicle that's designed to meet the unique requirements of women police officers, including ergonomic seats and featherlight controls that will not decelerate her down, and effective communication and crowd monitoring systems. She wants a vehicle that will help her make trust and engage with the community and one with private space for a medical need. With the new women's riot control vehicle, Amrita sees an occasion to make a difference in her community and facilitate the safety and effectiveness of riot control operations. She hopes that the vehicle won't only meet her needs as a womanish officer but also be a testament to the progress that can be made when inclusive design is prioritized.

Design Brief

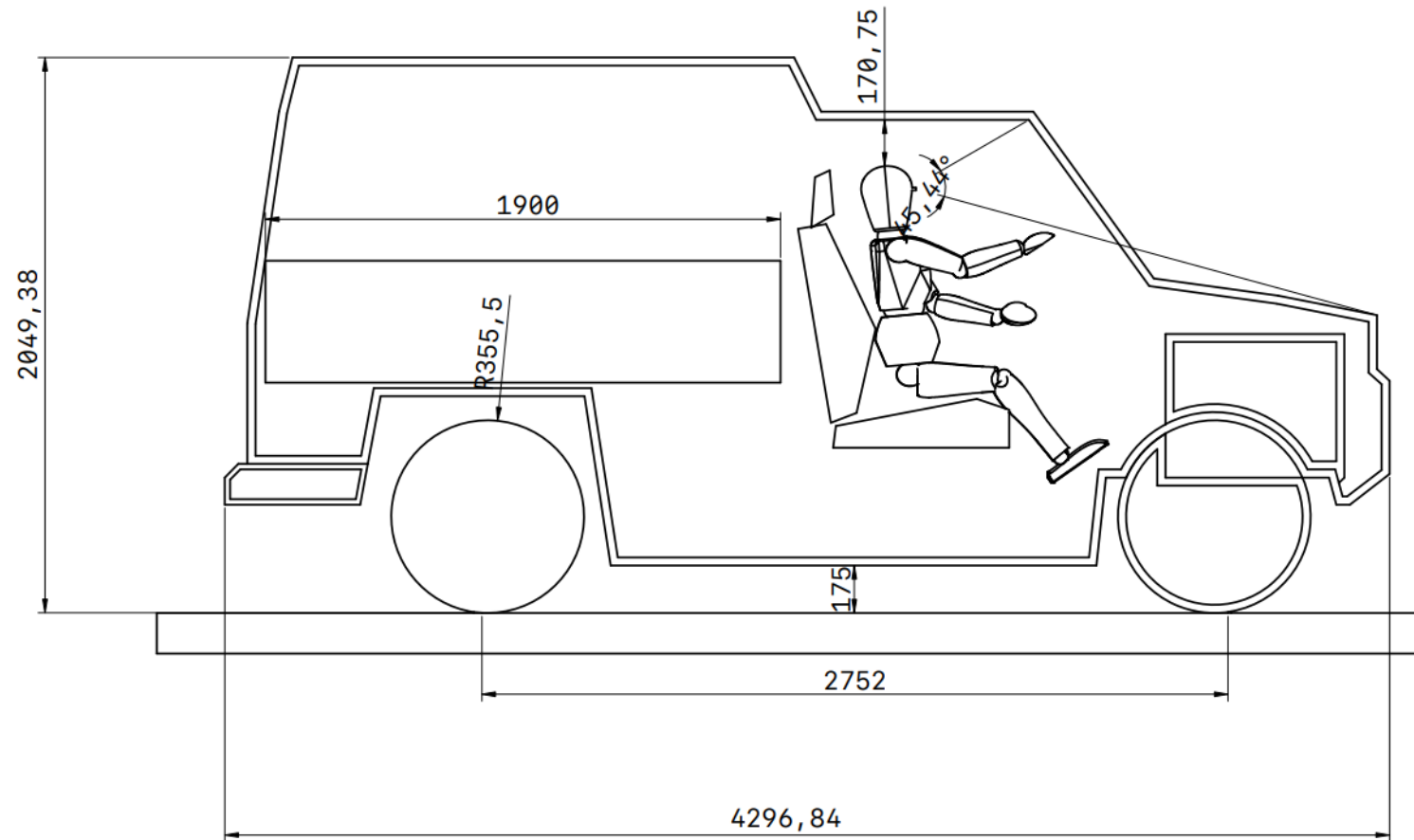
To design a Riot Control Vehicle that has an inclusive design for women police officers, which provides a safe and secure terrain for them to operate in during riot control operations.

The design of a Riot Control Vehicle for Women Police should prioritize safety, ergonomics, and gender-specific requirements while ensuring the vehicle is easy to maneuver and equipped with the necessary outfit for riot control operations. The vehicle's appearance should be neutral to promote calm and reduce pressures during demonstrations, while cost considerations shouldn't compromise the safety or effectiveness of the vehicle.

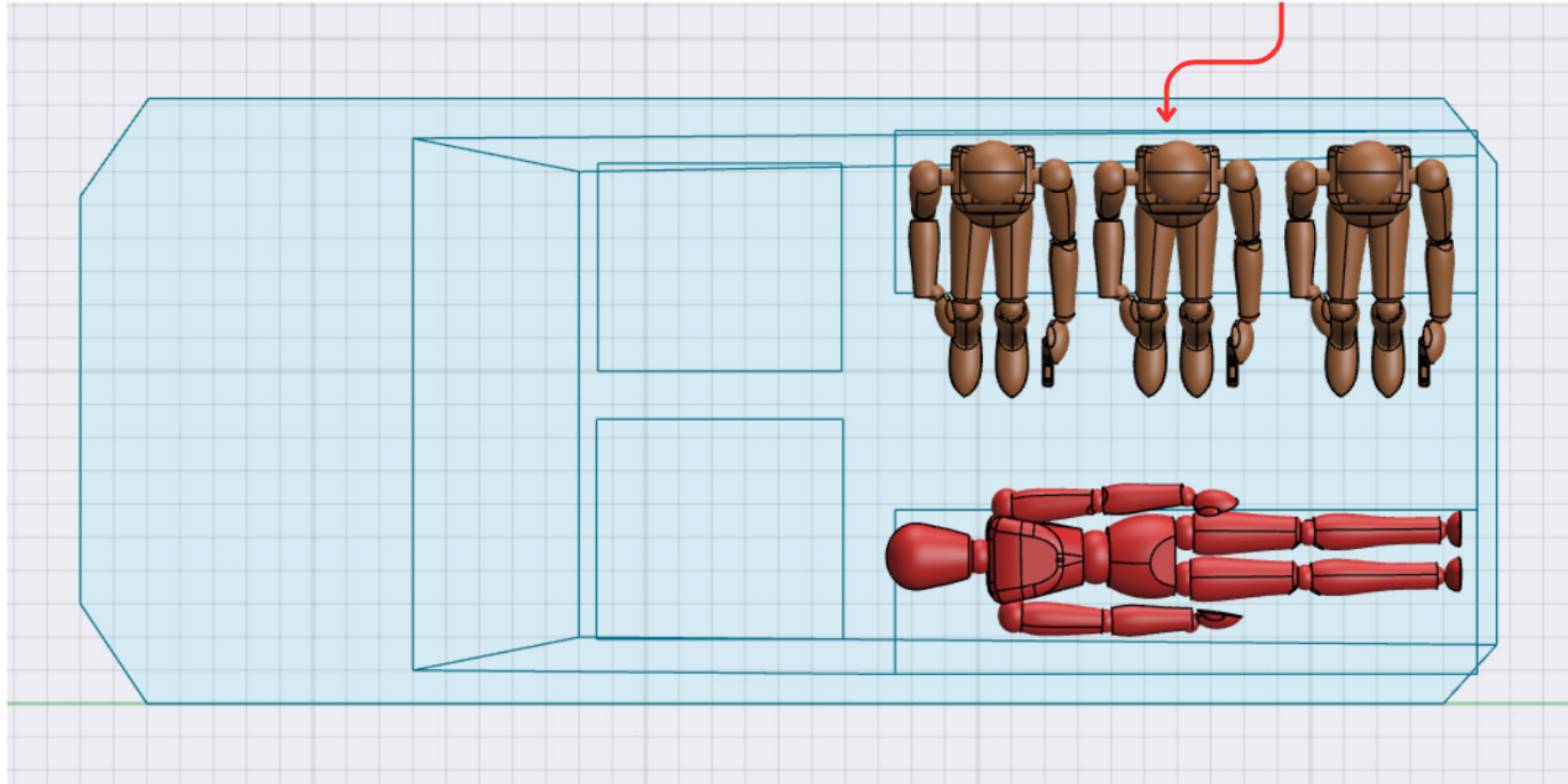
2.22 Design Features

- Secure Seating: The vehicle should have secure seating arrangements that protect female police officers from physical harm during riots.
- Adjustable Seating: The vehicle should have adjustable seating arrangements to accommodate female officers of different sizes.
- Lightweight Design: The vehicle should be lightweight to enable quick response times and maneuverability in tight spaces.
- Storage Space: The vehicle should have sufficient storage space for equipment, such as shields and batons.
- Non-Lethal Crowd Control Equipment: The vehicle should be equipped with non-lethal crowd control equipment, such as pepper spray and tasers.
- Communication System: The vehicle should have a communication system that allows officers to communicate effectively with each other and with their superiors.
- Neutral Appearance: The vehicle should have a neutral appearance to reduce tensions and promote a sense of calm during protests.
- Cost: The design of the vehicle should consider cost, but not at the expense of safety or effectiveness.

2.23 Technical Package



95th Percentile



3.1 Theme Board



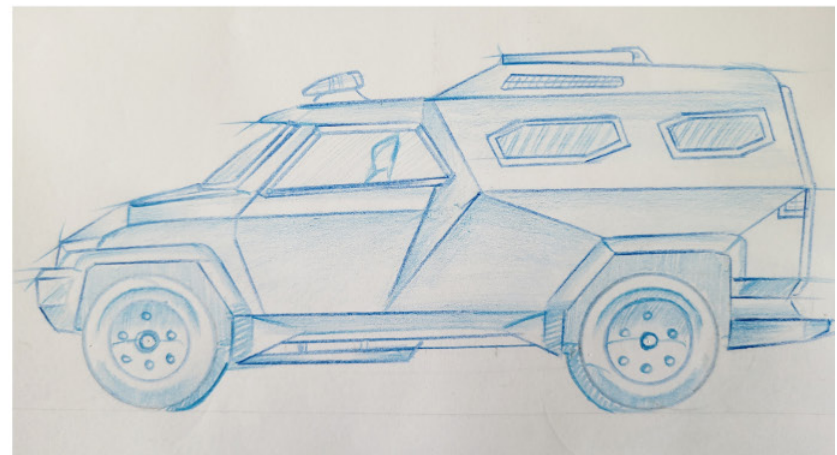
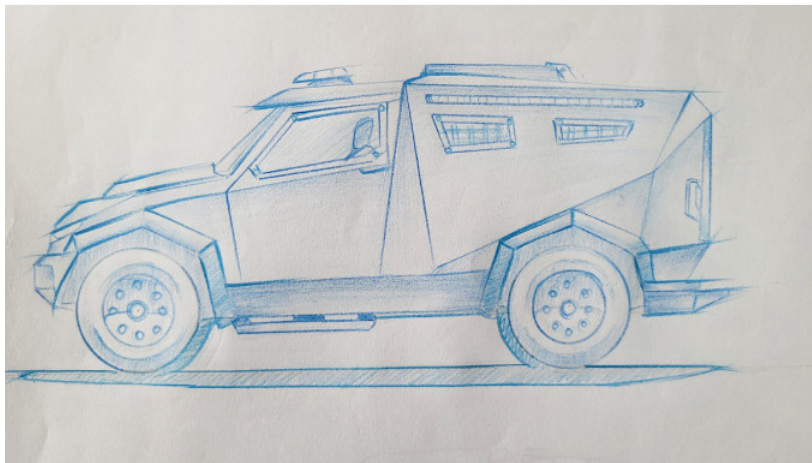
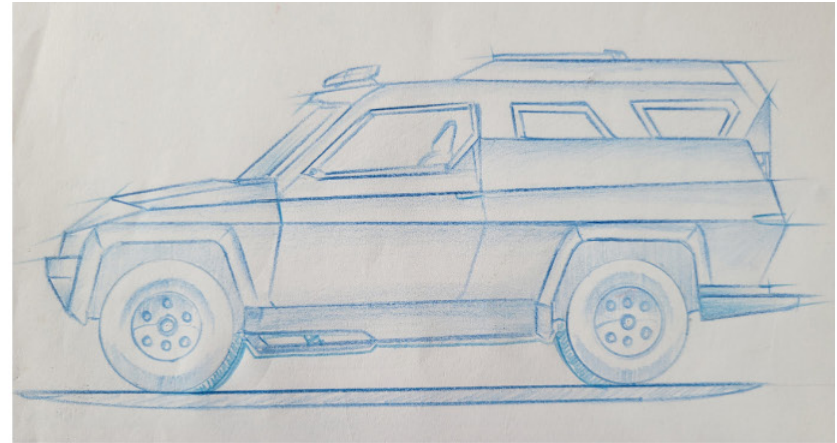
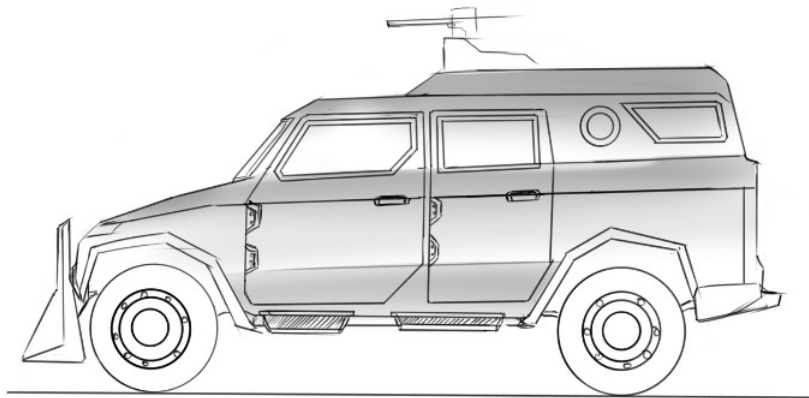
RELIABLE
CREDENCE

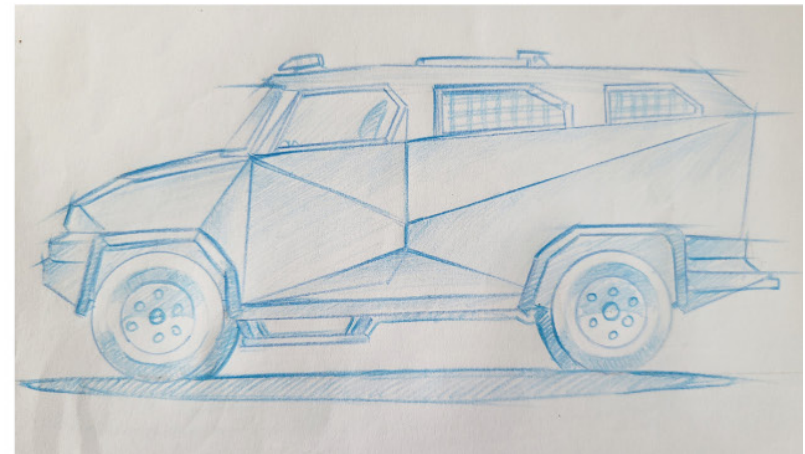
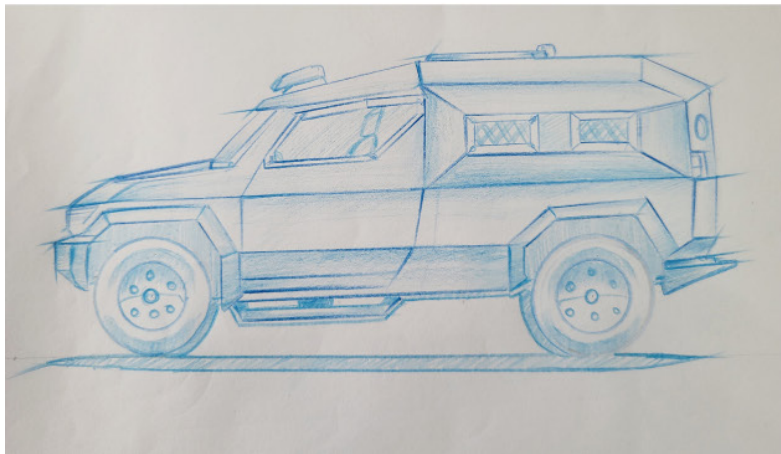
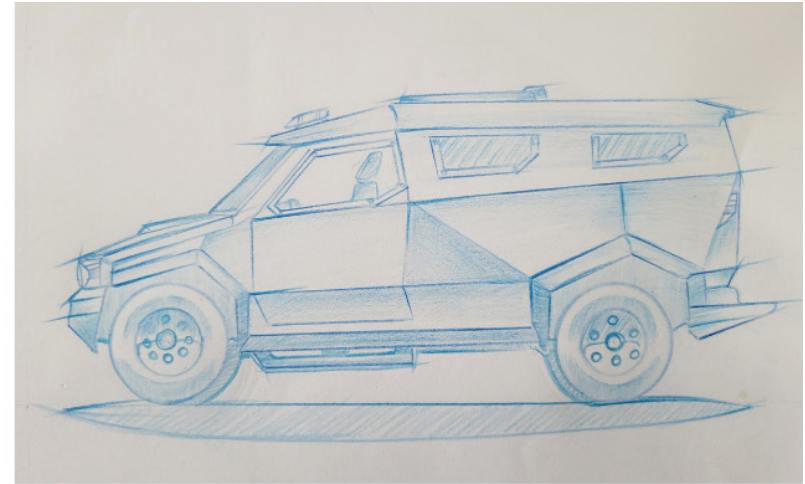
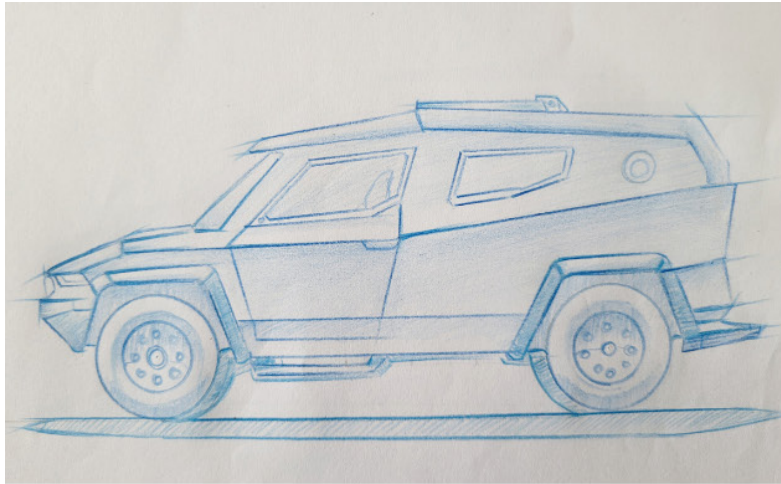


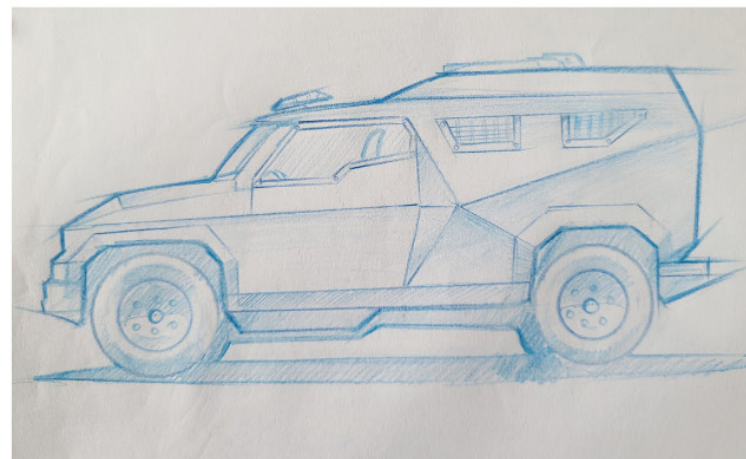
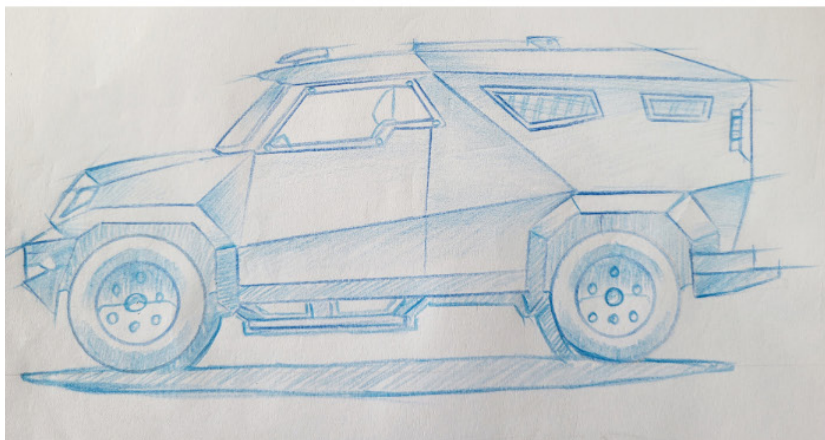
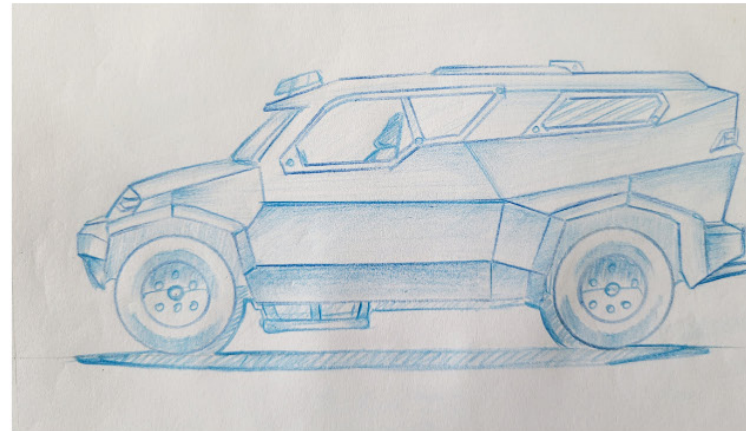
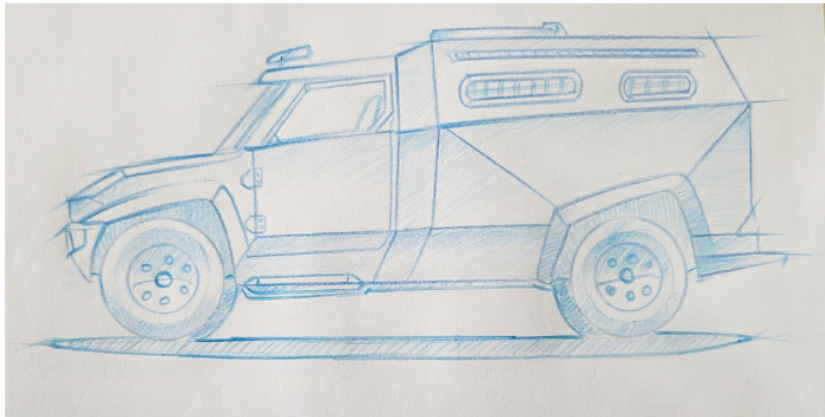
STURDY
INCLUSIVITY

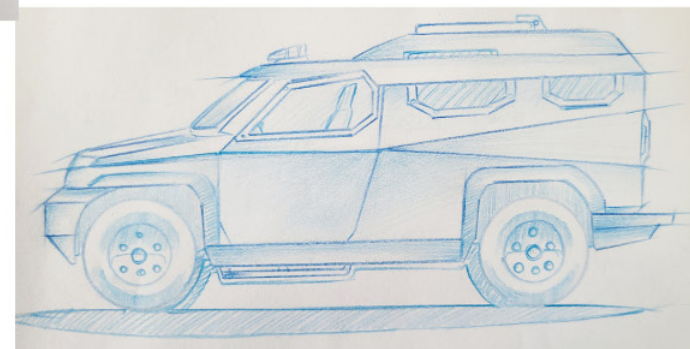
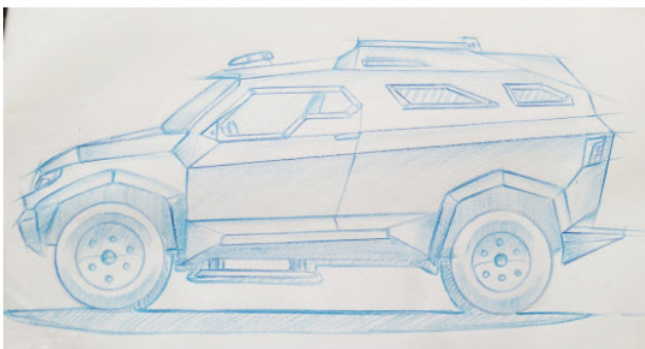
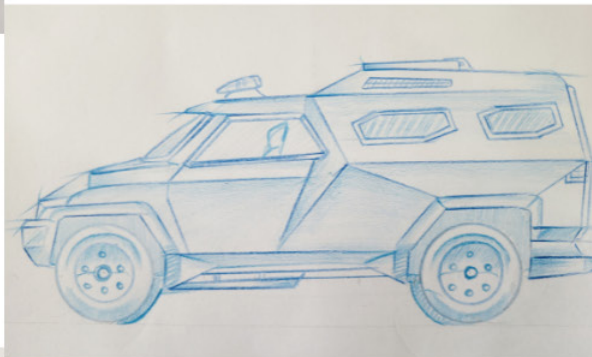
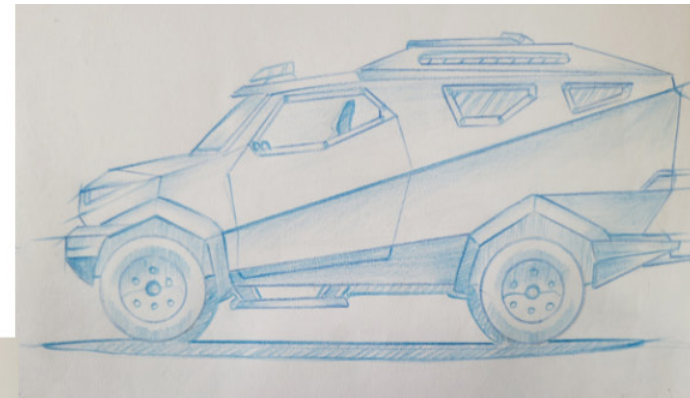
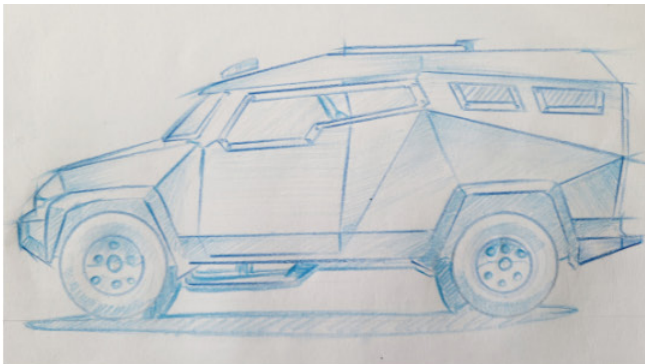


3.2 Exterior Ideations

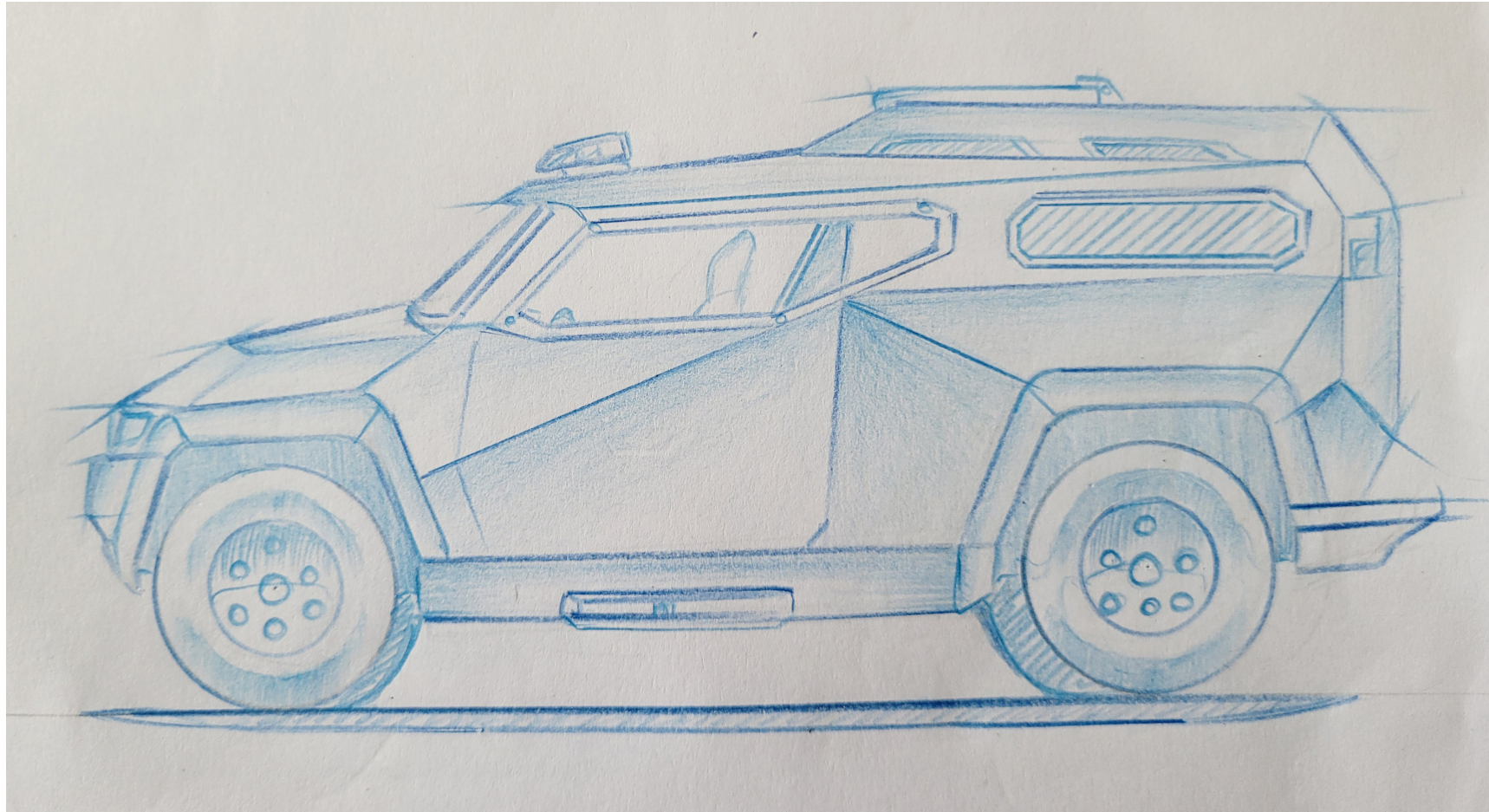




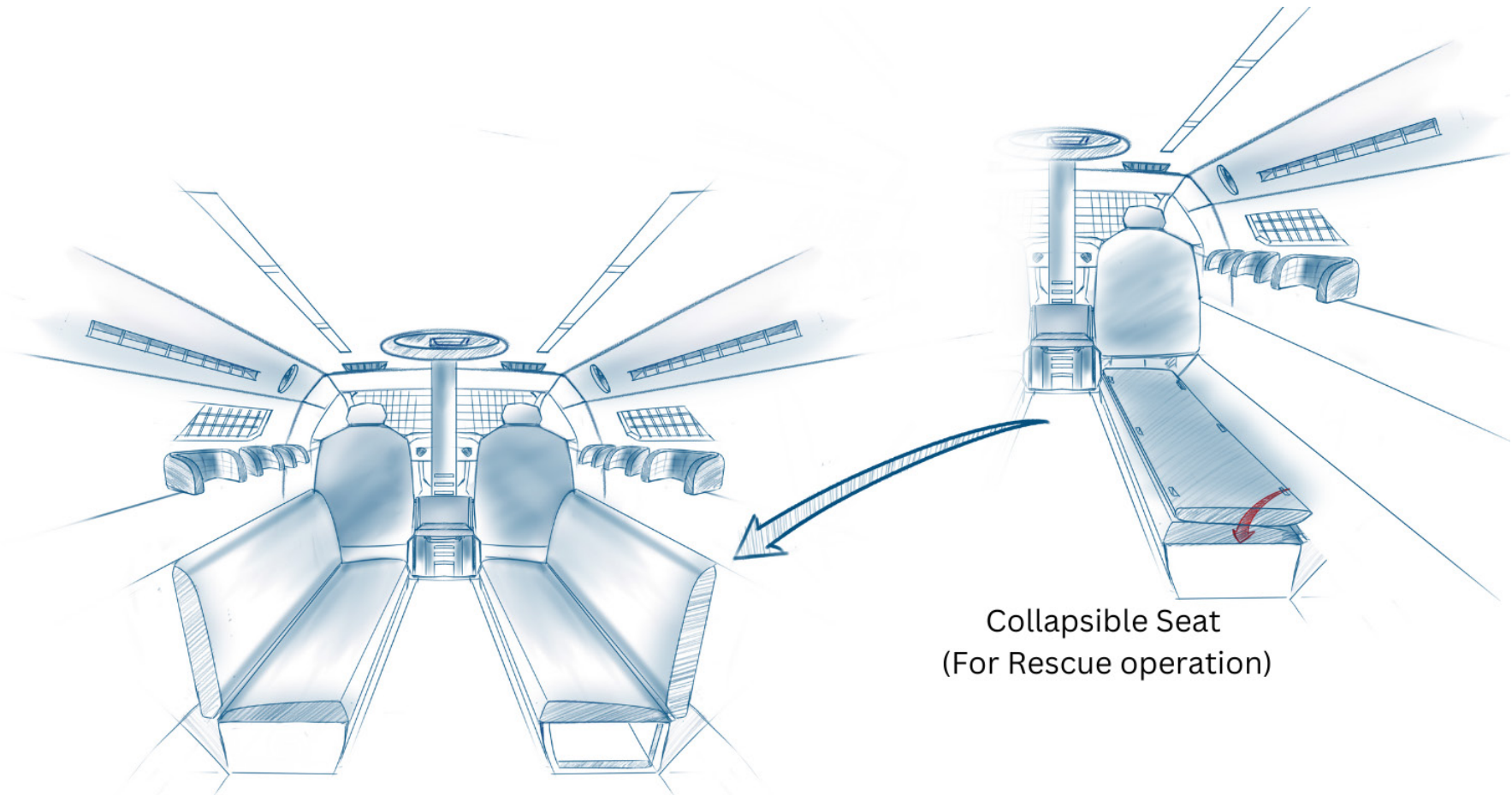


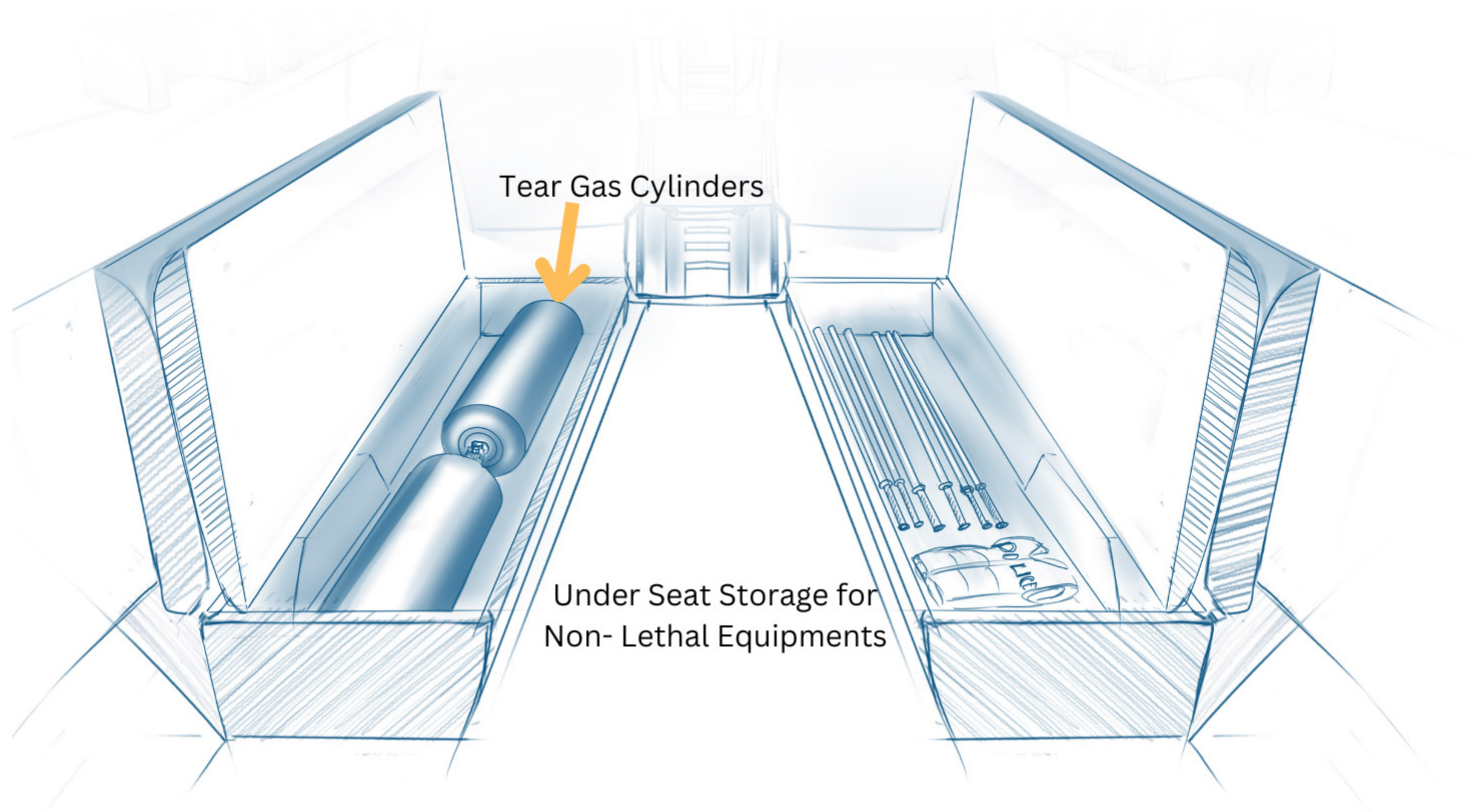


3.3 Final Concept

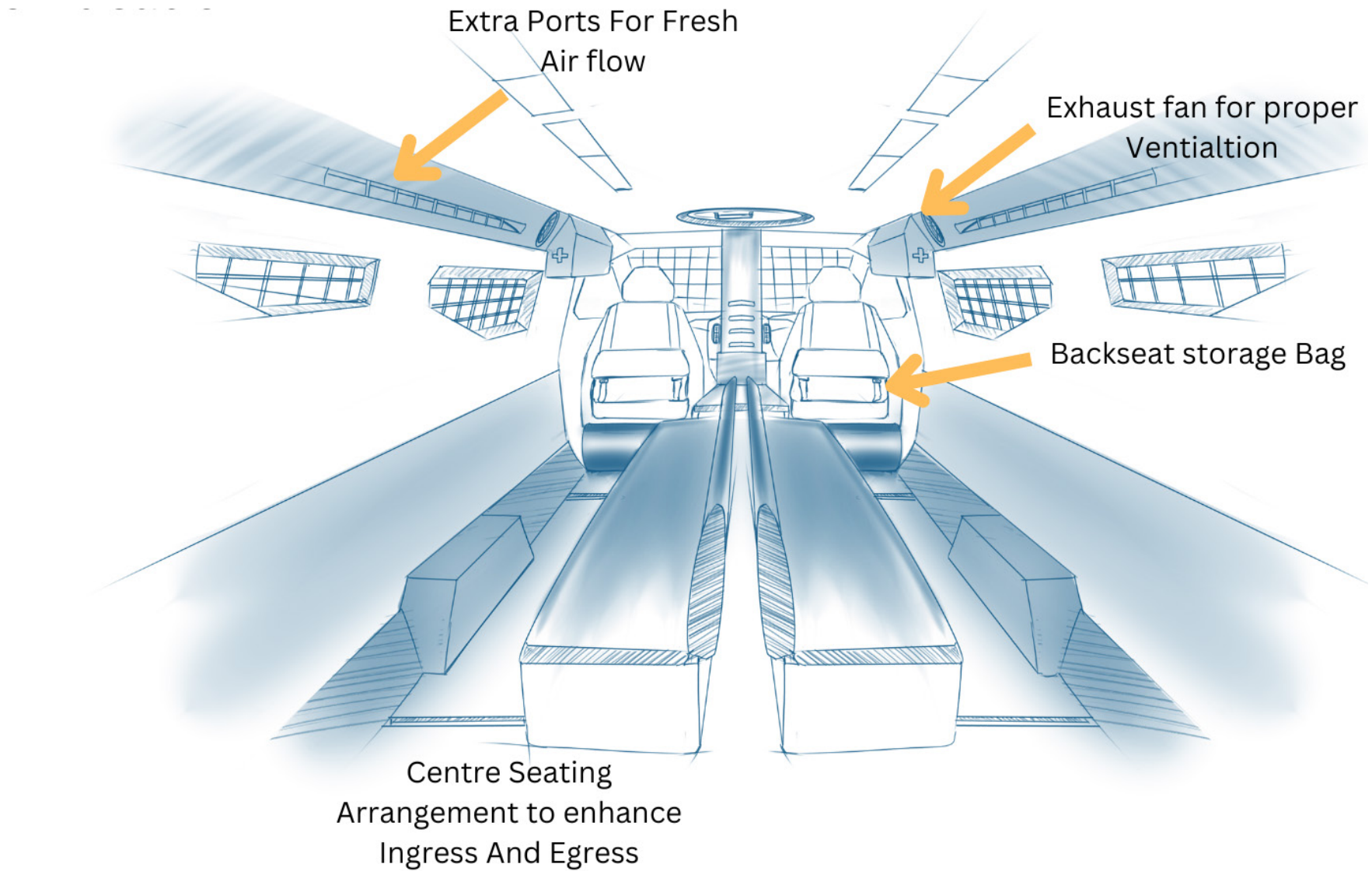


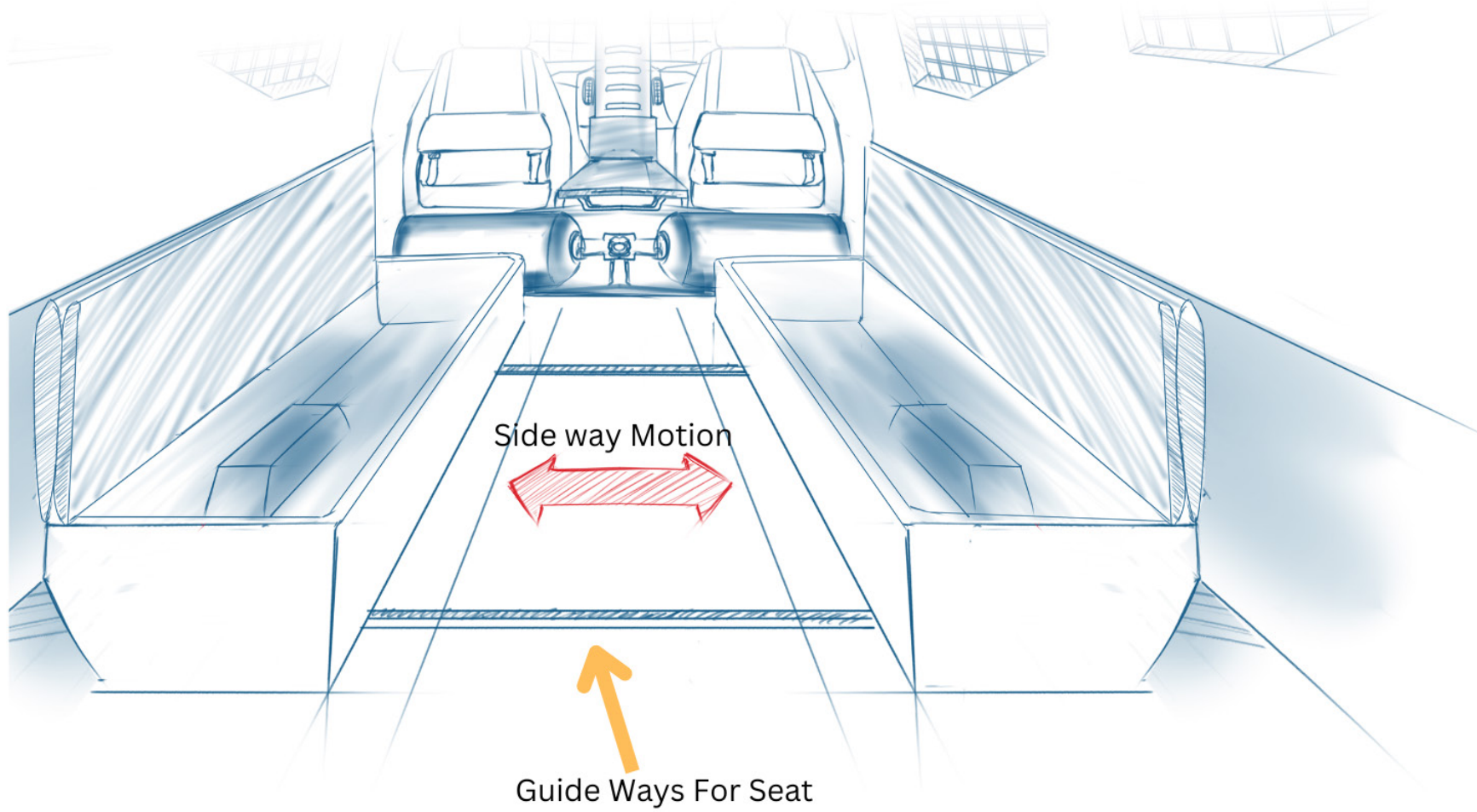
3.4 Interior Ideation 1



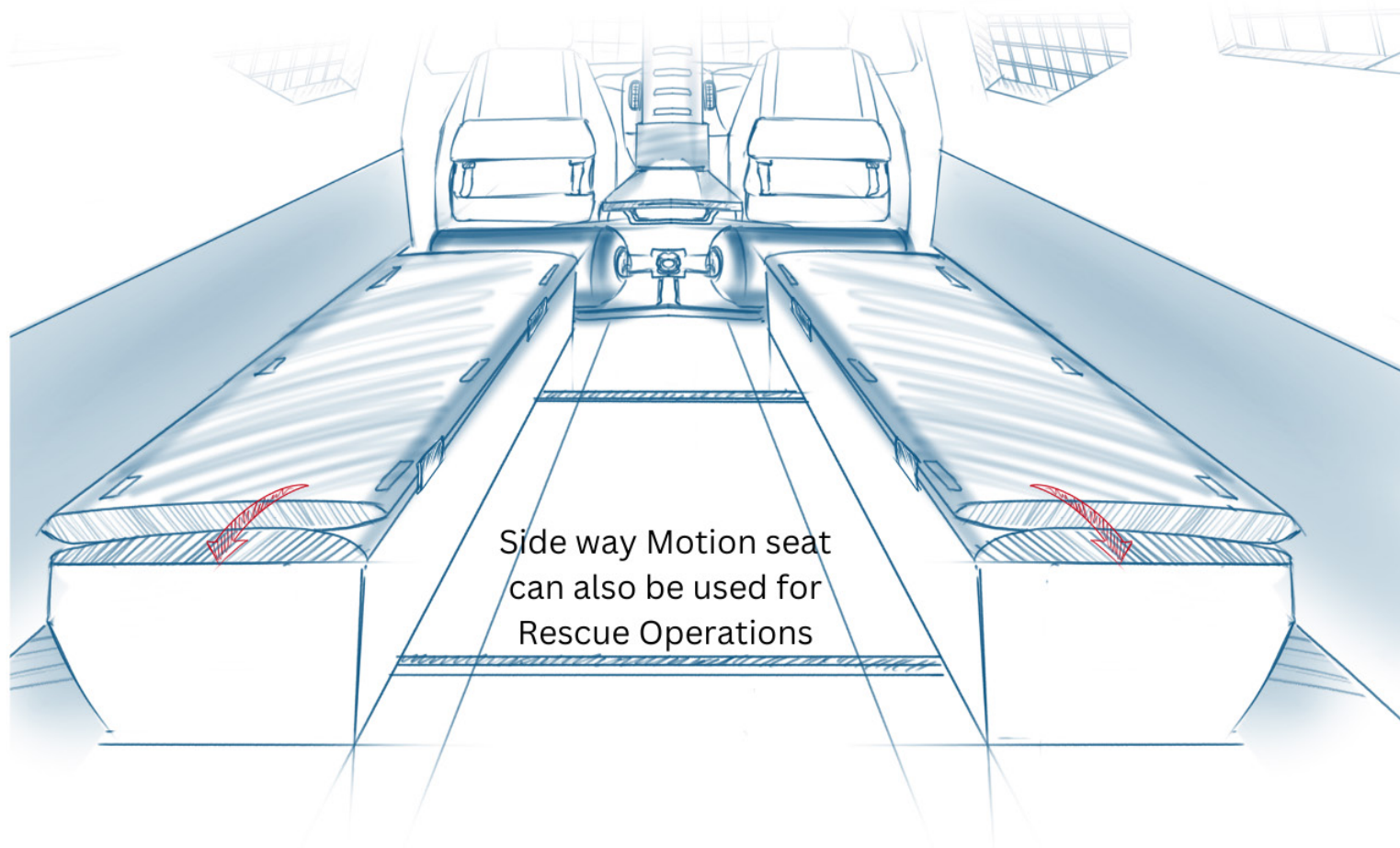


3.5 Interior Ideation 2

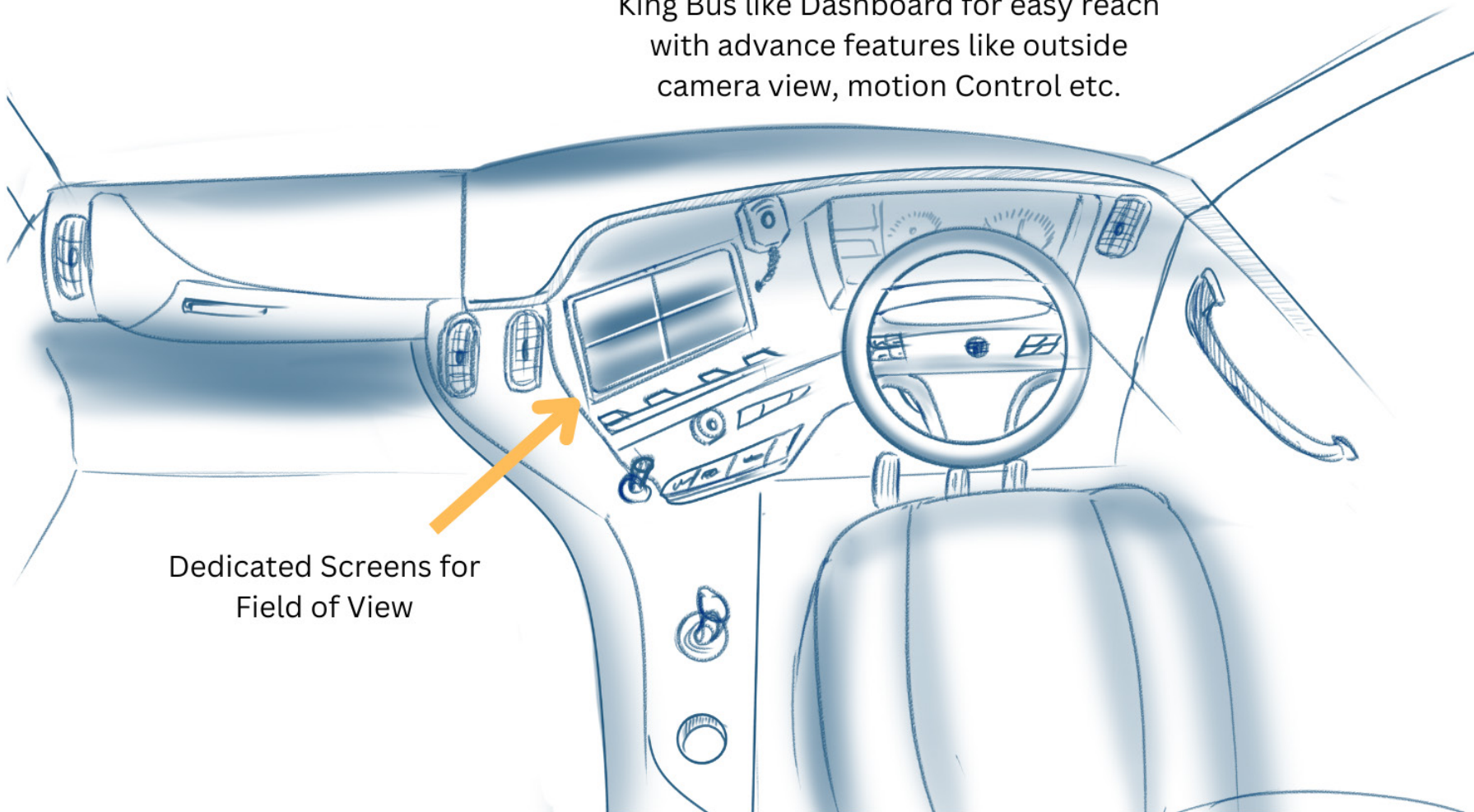




Can Accommodate two
Patients

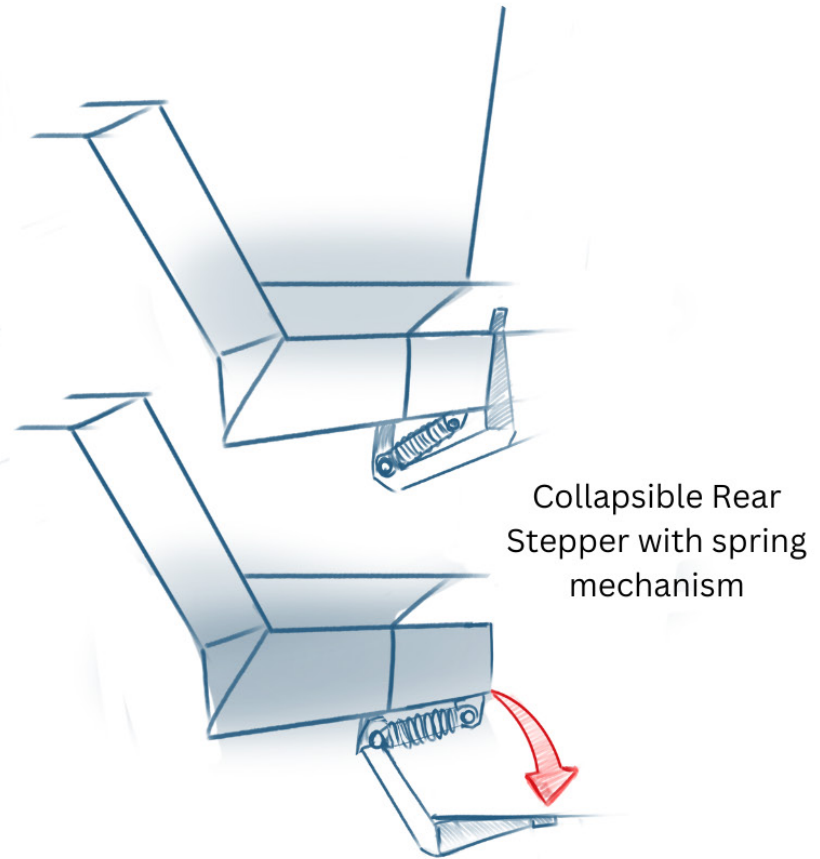
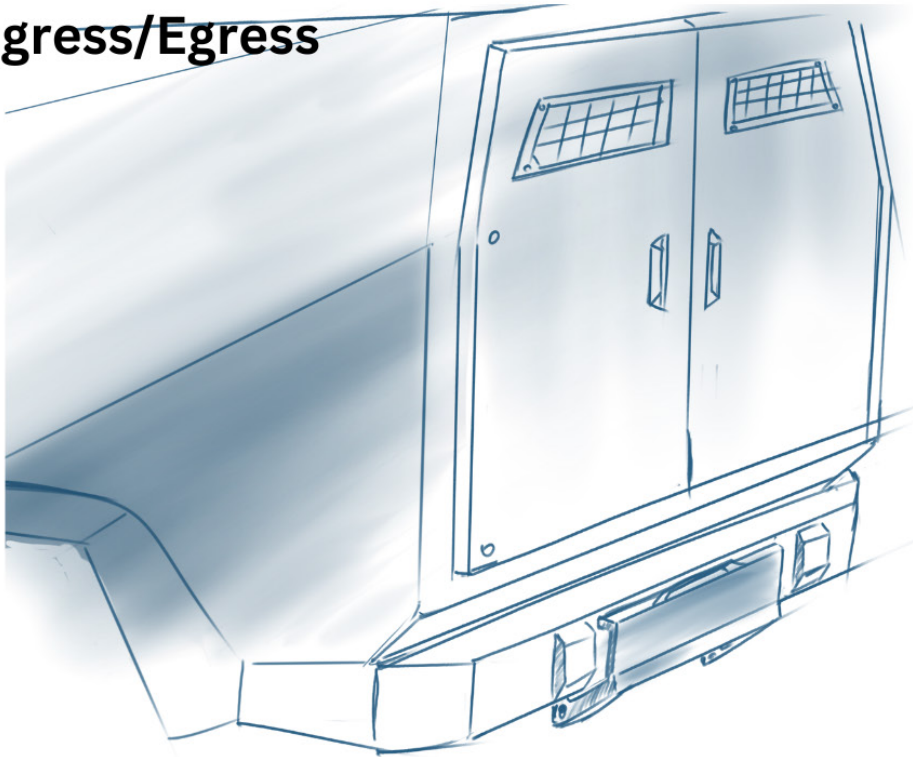


King Bus like Dashboard for easy reach
with advance features like outside
camera view, motion Control etc.

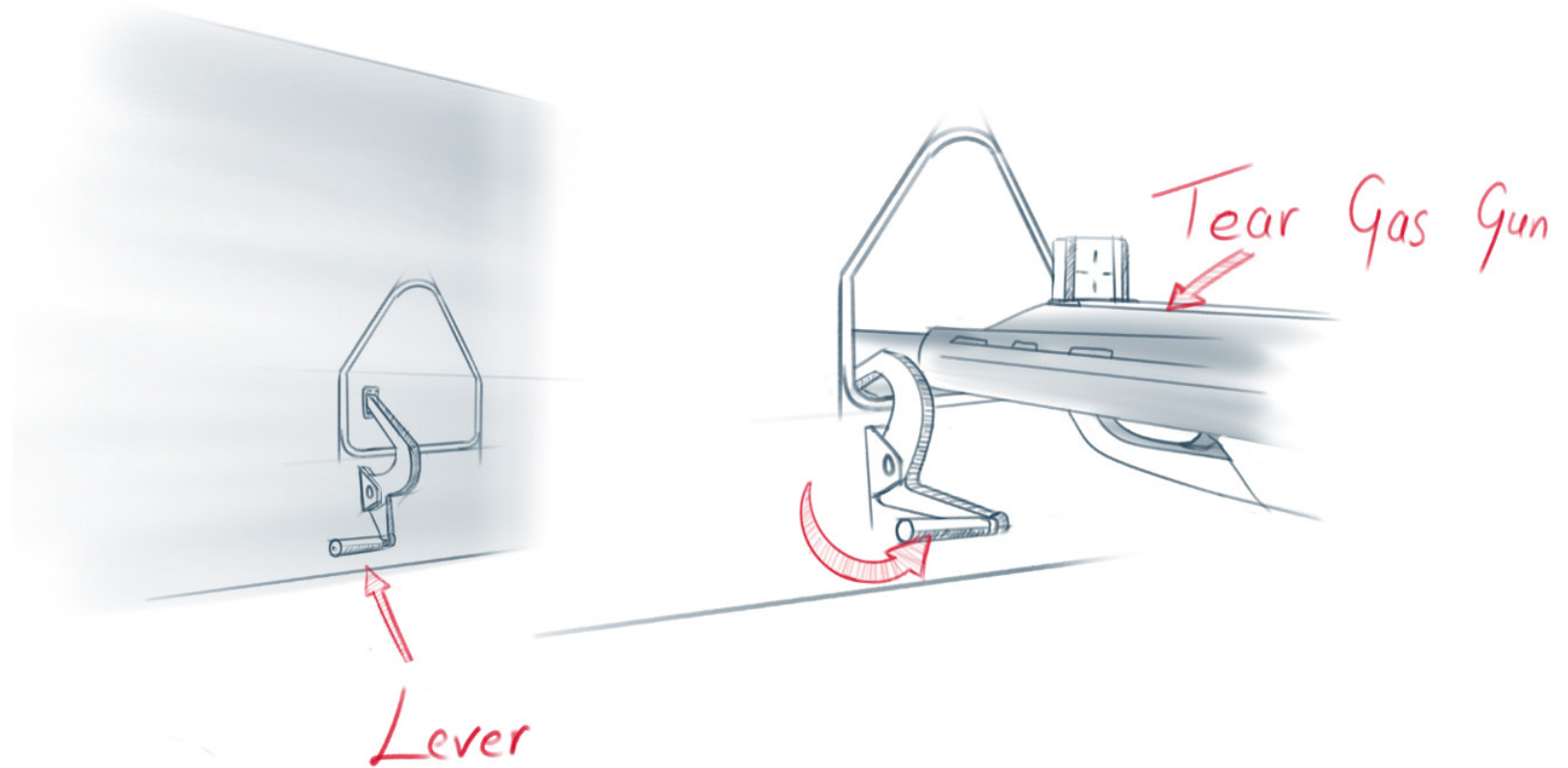


Dedicated Screens for
Field of View

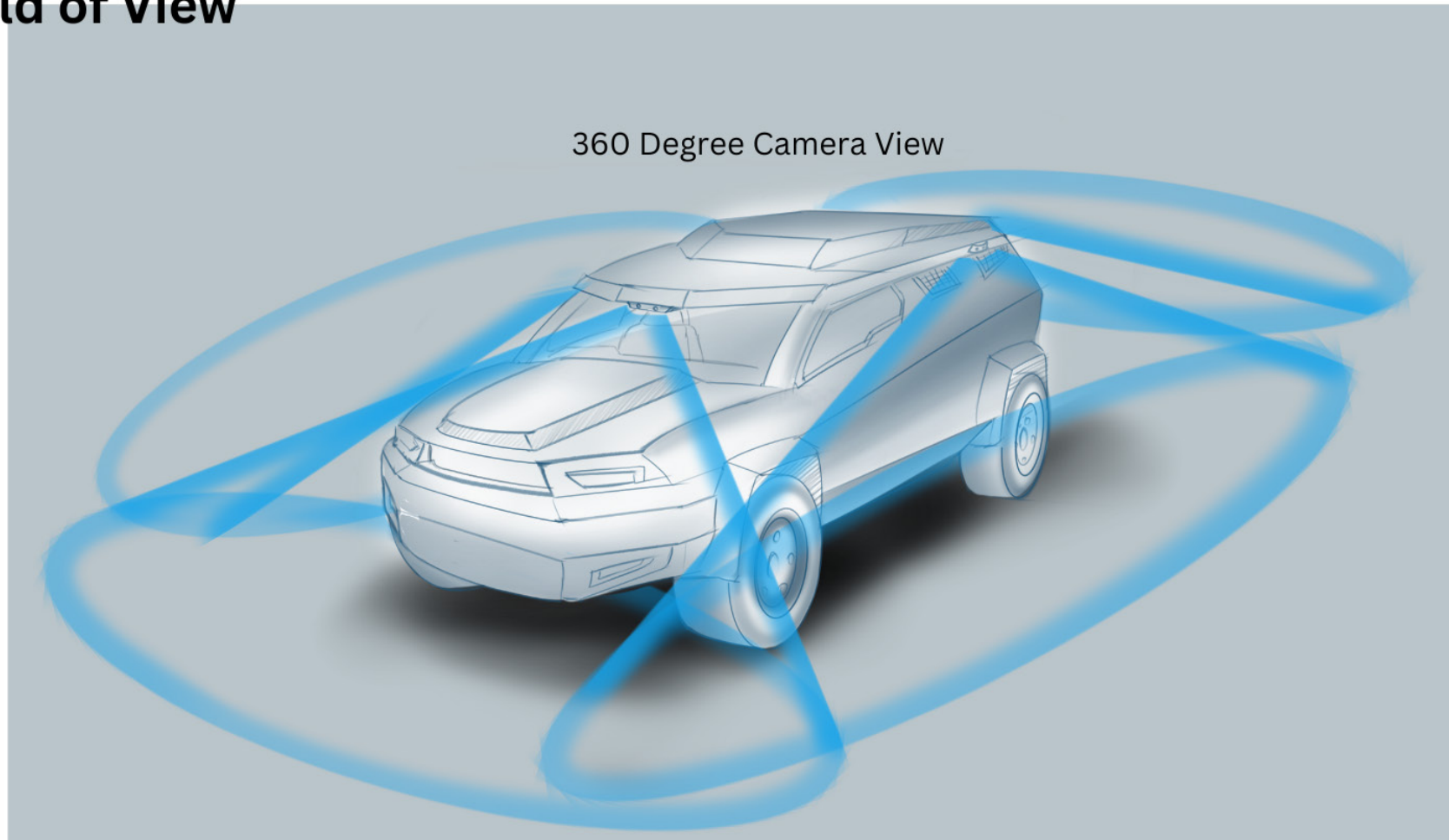
Ingress/Egress



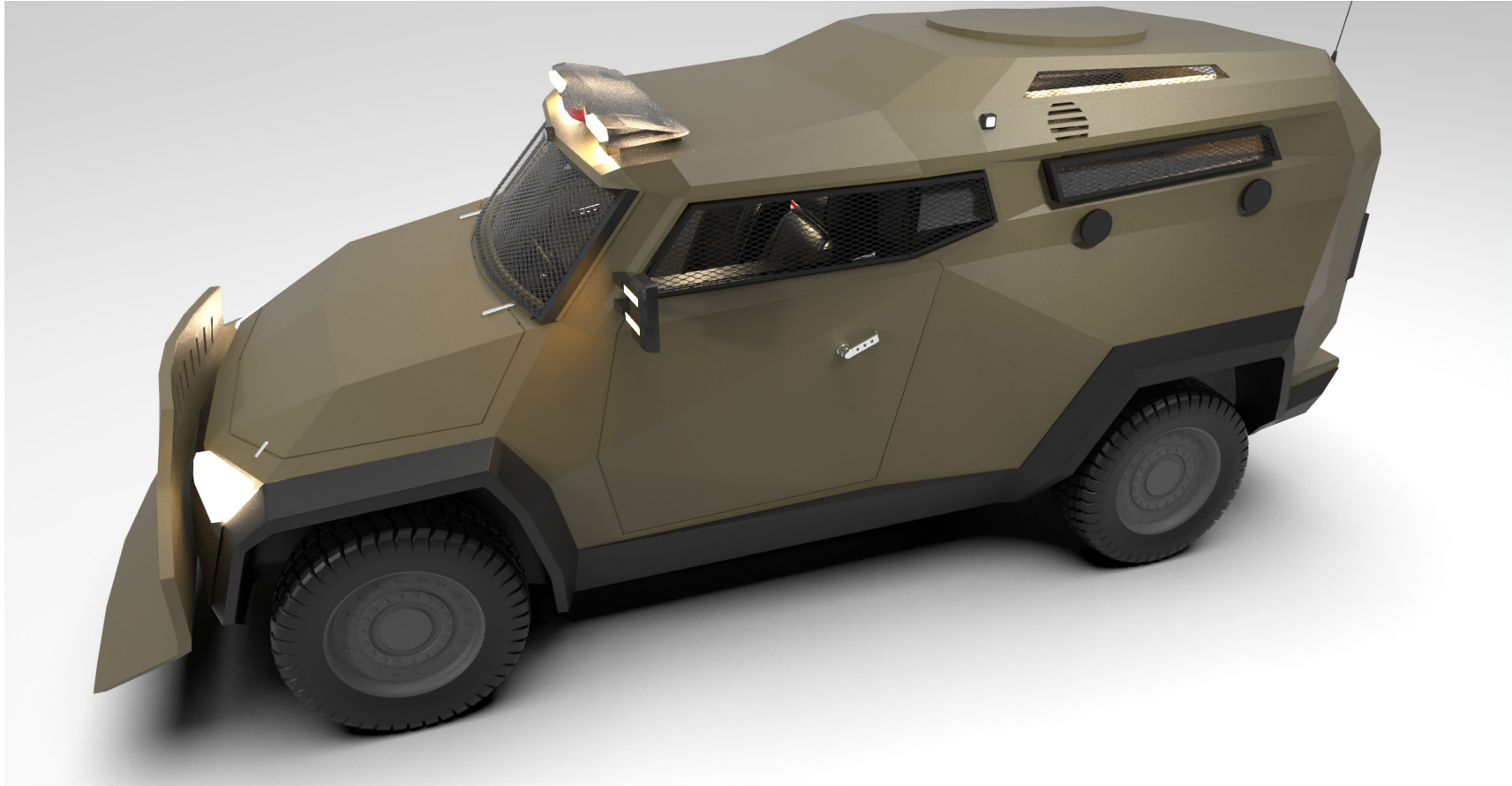
Gun point

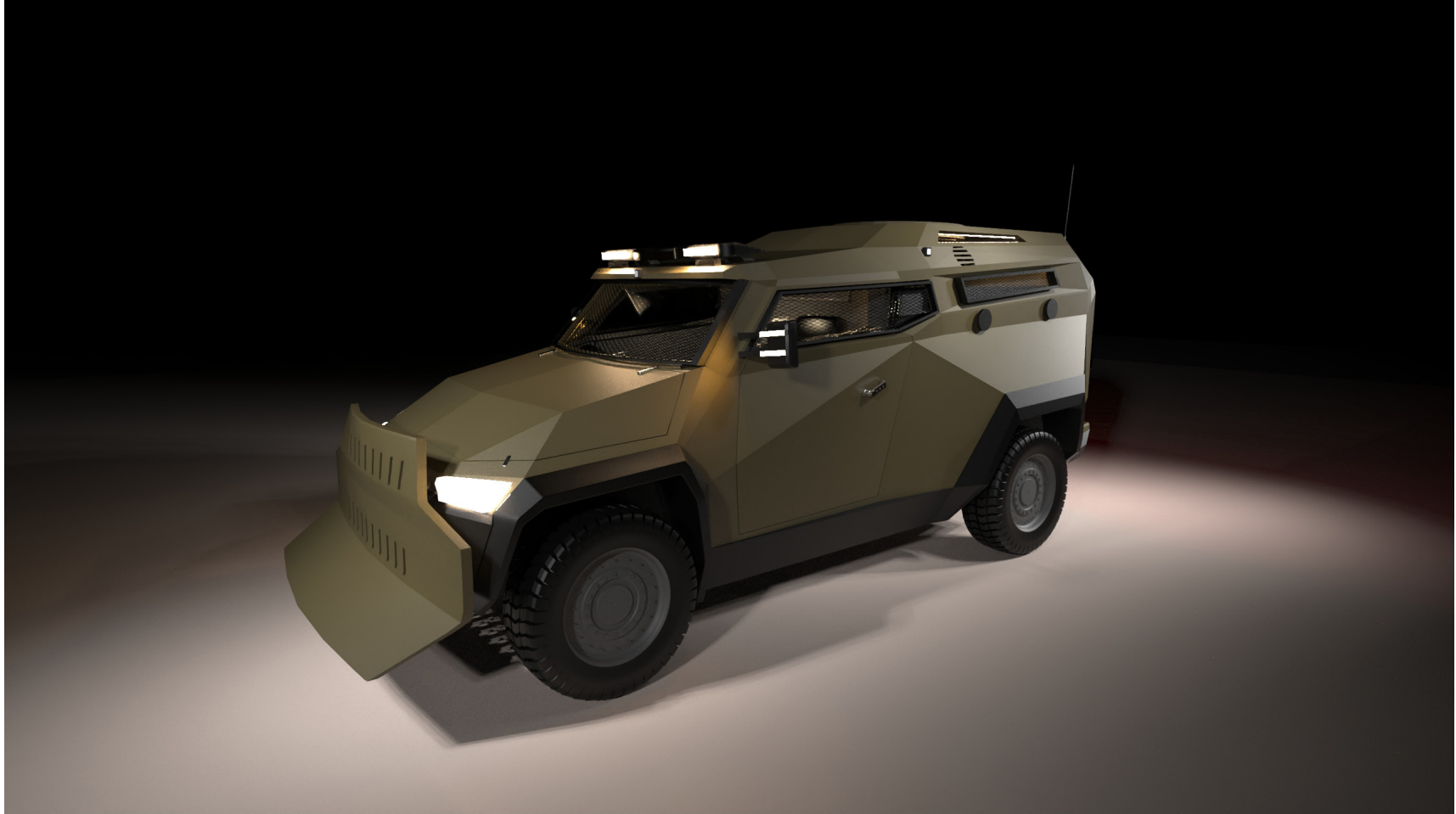


Field of View



3.6 Exterior Renders



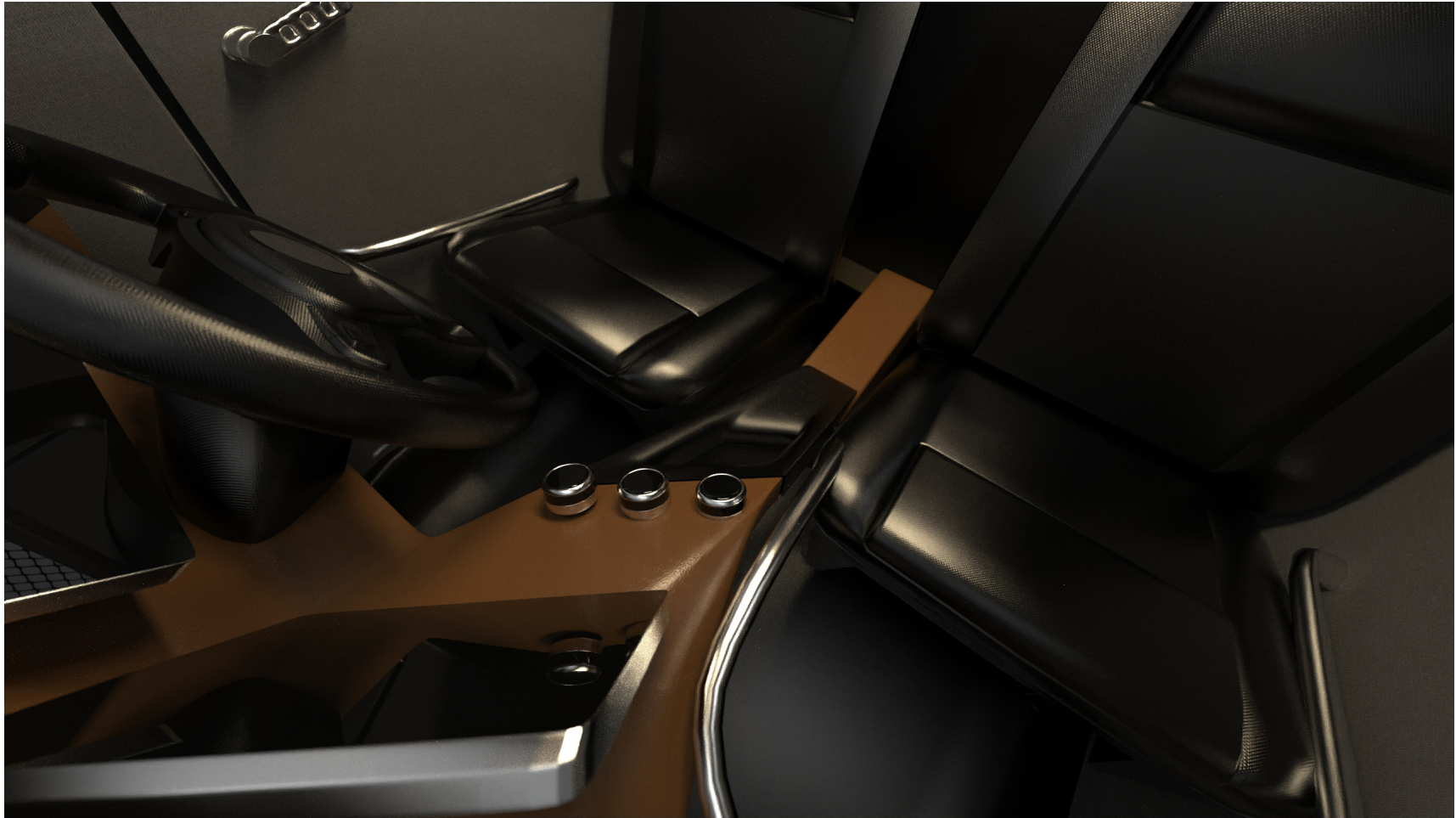


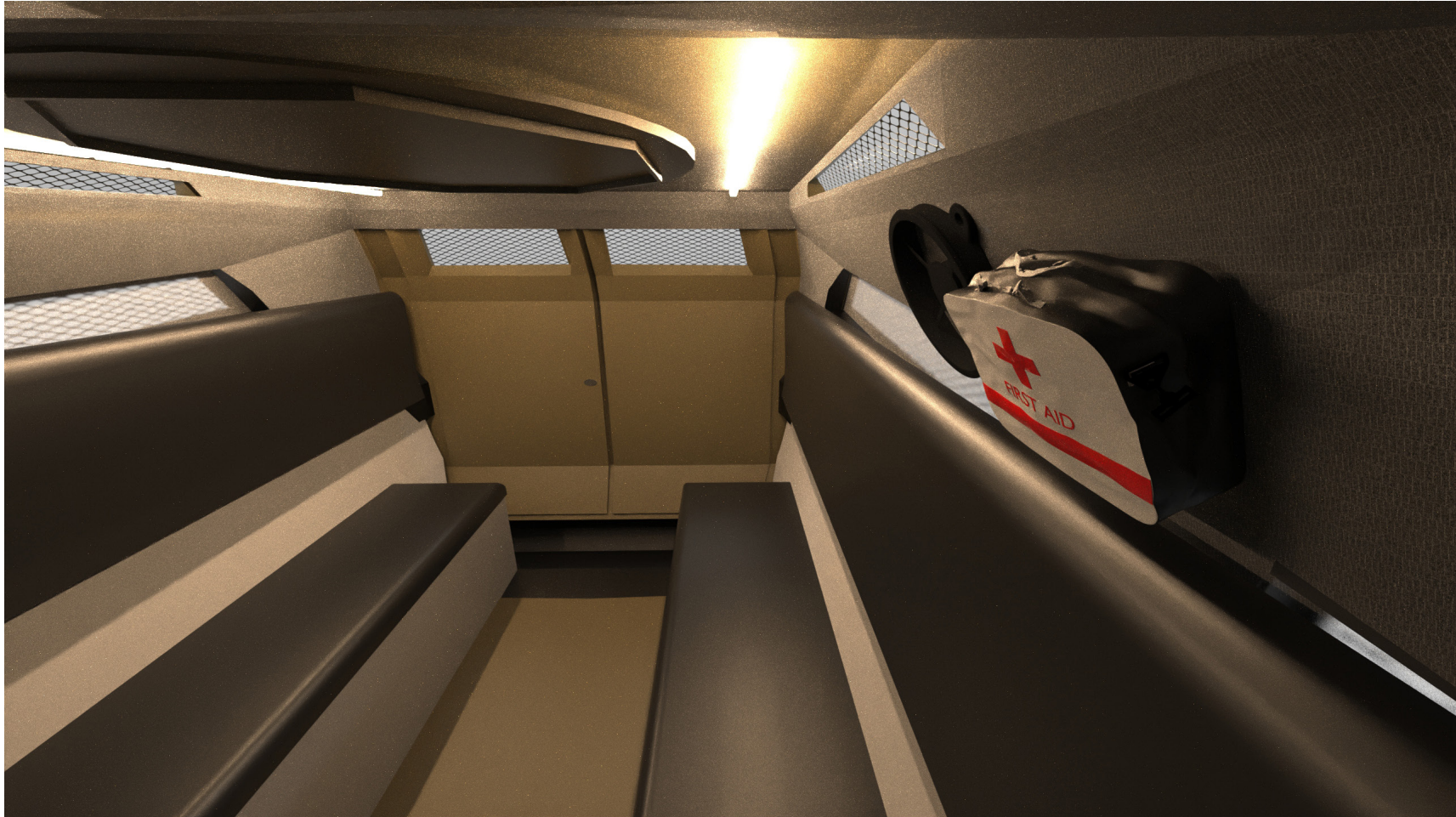


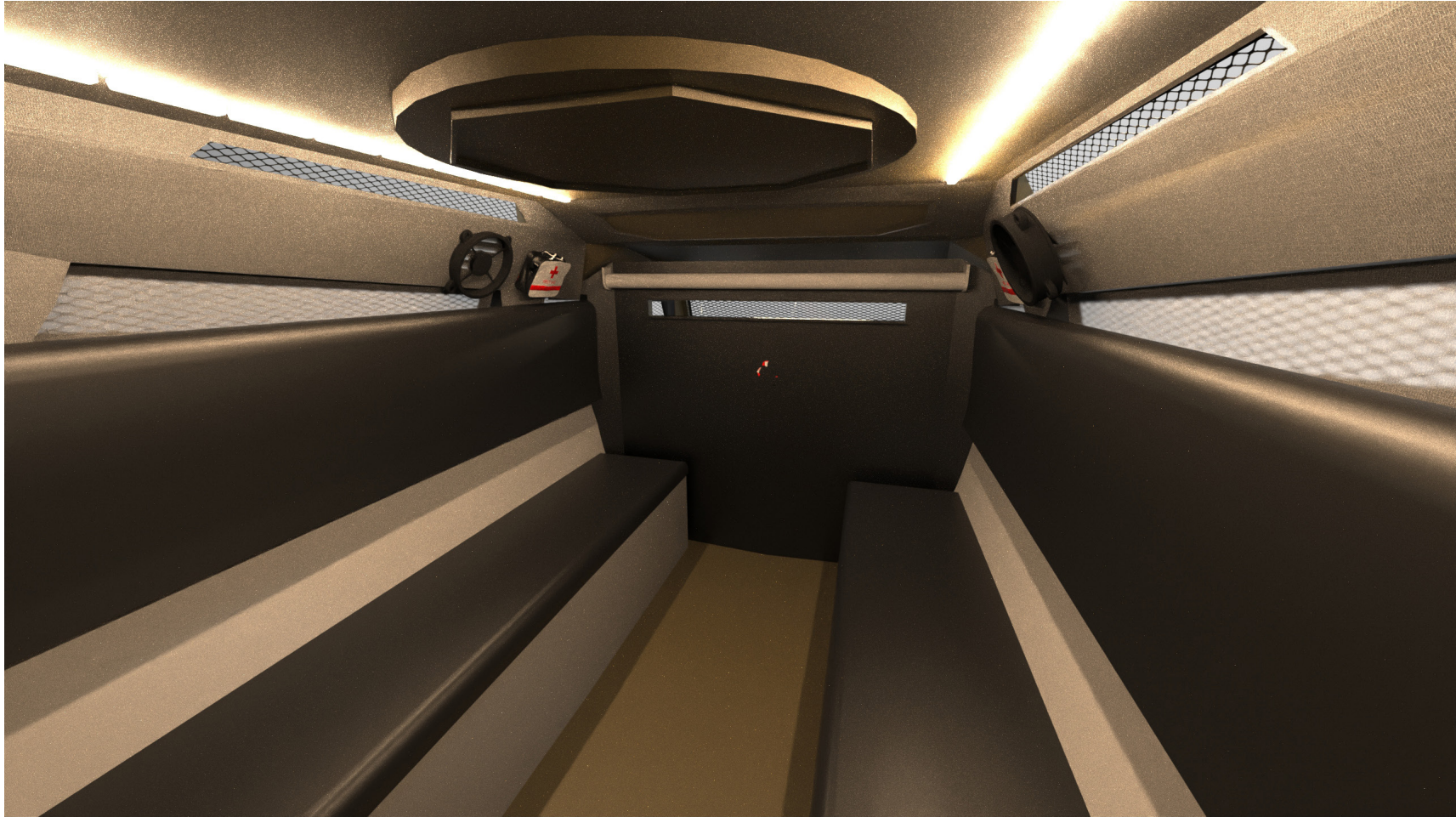
3.7 Interior Renders











3.7 Scenerio Renders



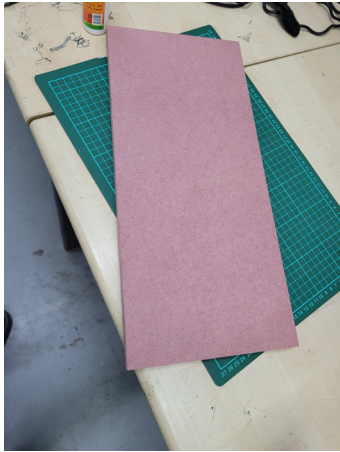




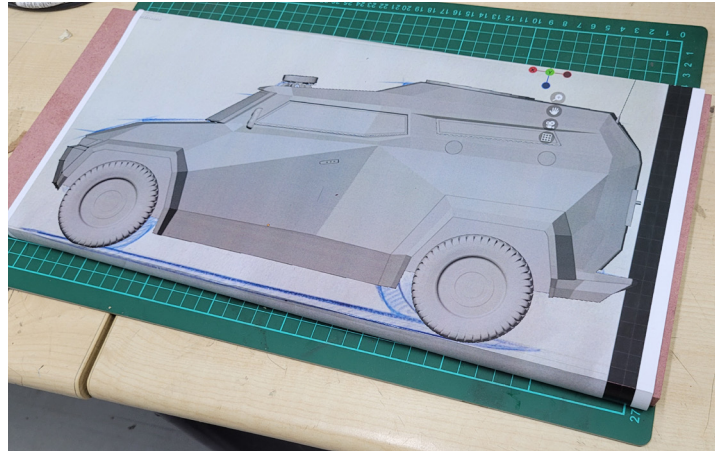
4.0 Physical Model

Stages

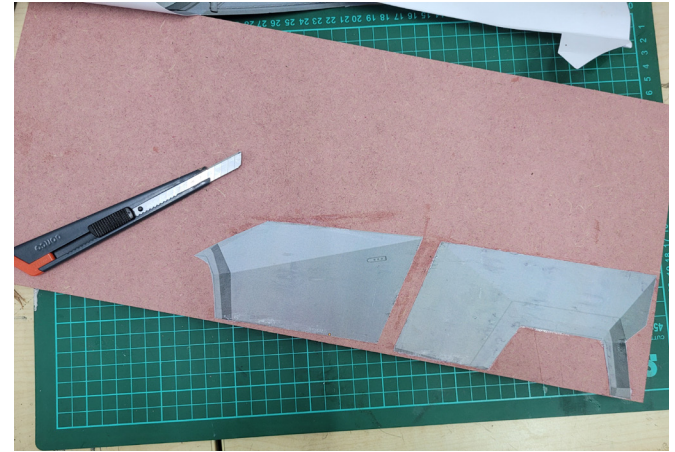
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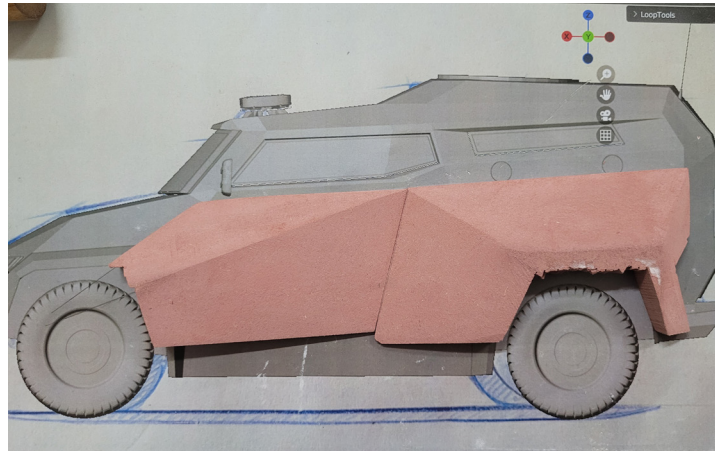
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4



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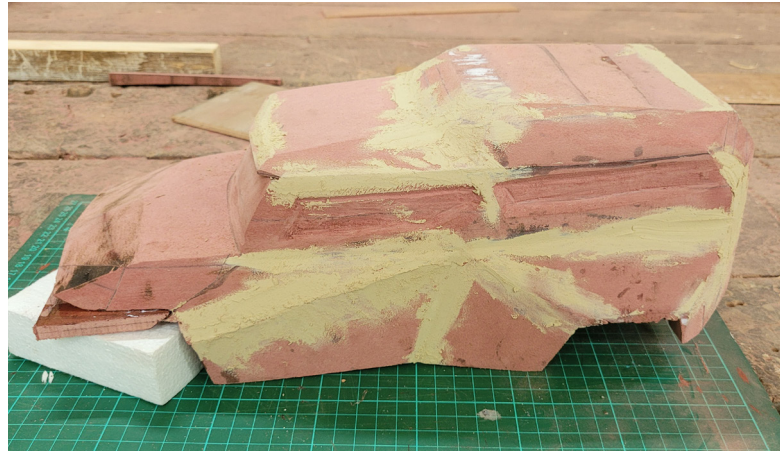
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8



9



10











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