



HINDUSTAN PETROLEUM CORPORATION

Journey Risk Management Division

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COMPREHENSIVE JOURNEY RISK MANAGEMENT ANALYSIS REPORT

ROUTE ANALYSIS DETAILS

Supply Location: MEERUT DEPOT [1146]

Destination: MOTI FILLING STATION [0041025372]

Total Distance: 131 km

Estimated Duration: 2 hours 27 mins

Analysis Date: July 02, 2025

Report Generated: 07:02 PM

EXECUTIVE SUMMARY

ROUTE OVERVIEW

PARAMETER	DETAILS
Origin	MEERUT DEPOT [1146]
Destination	MOTI FILLING STATION [0041025372]
Total Distance	131 km
Estimated Duration	2 hours 27 mins
Major Highways	NH-344, NH-709
Terrain	Rural Plains

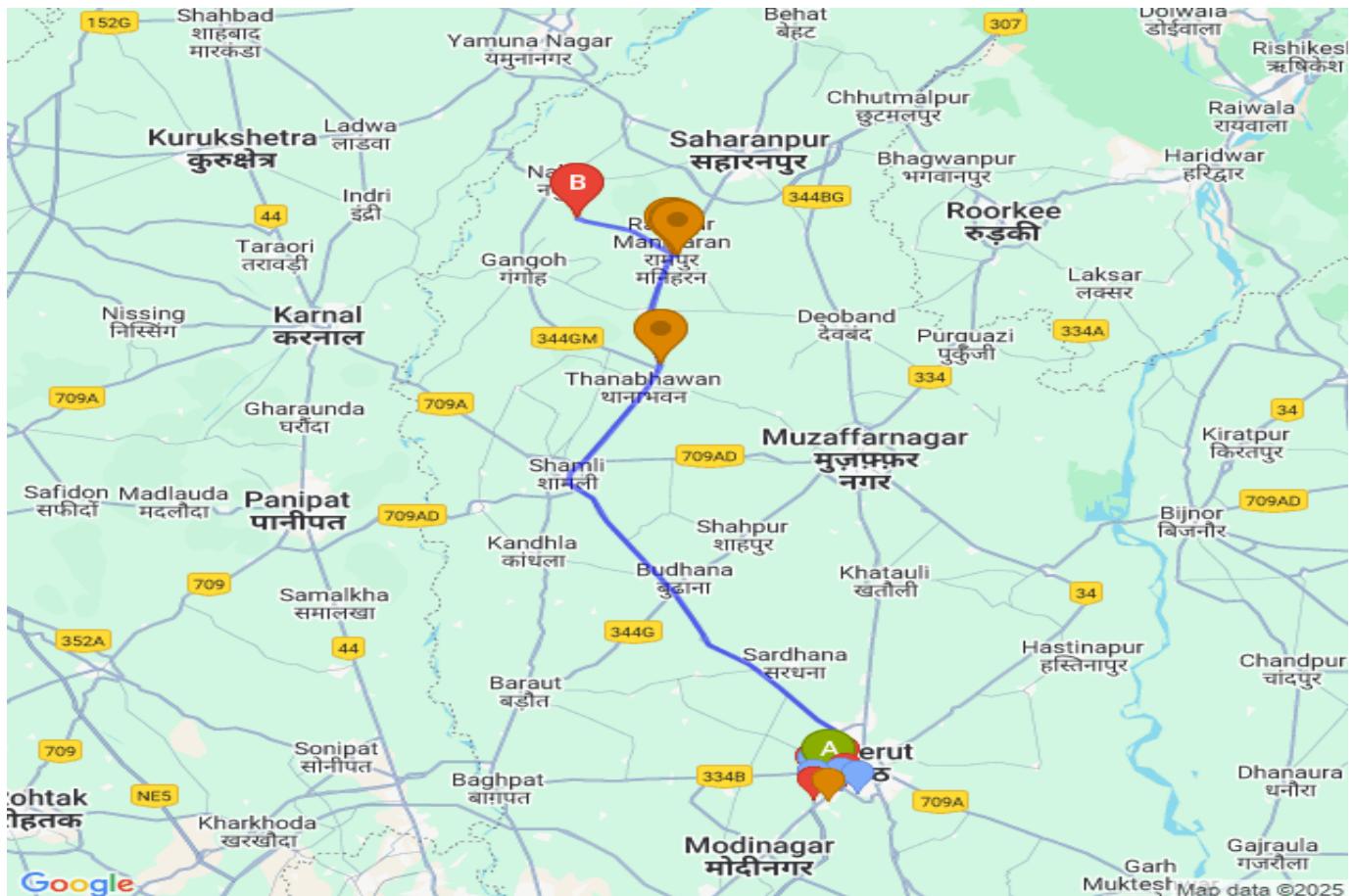
TOTAL WEIGHTED ROUTE SCORE – 3 [MILD RISK]

RISK FACTOR RATING OVERVIEW

RISK CRITERION	RISK SCORE	RISK CATEGORY
Road Conditions	4	High Risk
Accident-Prone Areas	4	High Risk
Sharp Turns	4	High Risk
Blind Spots	3.8	High Risk
Traffic Condition (Density & Two Way)	1	Low Risk
Seasonal Weather Conditions	3	Mild Risk
Emergency Handling Services	1	Low Risk
Network Dead / Low Zones	3.8	High Risk
Roadside Amenities	1	Low Risk
Security & Social Issues	1	Low Risk

APPROVED ROUTE MAP

Comprehensive route visualization showing start/end points, critical turns, emergency services, highway junctions, and potential hazards.



MAP LEGEND

- | | | | |
|-----------|----------------------|----------|-------------------|
| A | Route Start Point | B | Route End Point |
| T# | Critical Sharp Turns | H | Hospitals |
| P | Police Stations | F | Fire Stations |
| G | Gas Stations | S | Schools/Education |
| * | Highway Junctions | | |

KEY SAFETY MEASURES & REGULATORY COMPLIANCE

ASPECT	DETAILS/ RECOMMENDATION
Speed Limits	NH: 60 km/h; SH: 55 km/h; MDR: 55 km/h; Rural: 25–30 km/h; Accident-prone zone: 30
Night Driving	Prohibited: 2300hrs – 0500hrs
Rest Breaks	Mandatory 15-30 min every 3 hours
Vehicle Compliance	Check brakes, tires, lights, and emergency equipment
Permits & Documents	Carry valid transport permits, Hazardous vehicle license, MSDS sheets, TREM CARD
VTS	VTS & EMERGENCY LOCKING DEVICE shall be functional

Ensure all regulatory requirements are met before journey commencement. Route includes major highways: NH-344, NH-709. Rural terrain requires attention to livestock and agricultural vehicles. Speed limits may vary based on local regulations and road conditions.

HIGH-RISK ZONES & KEY RISK POINTS

Type	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates (view)	Risk Level	Speed Limit	Driver Action
Sharp Turn #1	96.4 km	14.4 km	29.799710, 77.462060 (view)	Critical	10 km/h	Stop, check visibility, proceed slowly
Sharp Turn #2	96.5 km	14.1 km	29.80005, 77.45864 (view)	Critical	10 km/h	Stop, check visibility, proceed slowly
Sharp Turn #3	96.5 km	14.1 km	29.80005, 77.45864 (view)	Critical	10 km/h	Stop, check visibility, proceed slowly
Sharp Turn #4	96.7 km	14.1 km	29.80176, 77.45924 (view)	Critical	10 km/h	Stop, check visibility, proceed slowly
Sharp Turn #5	96.7 km	14.1 km	29.801965, 77.458490 (view)	Critical	10 km/h	Stop, check visibility, proceed slowly
Sharp Turn #6	97.1 km	13.6 km	29.80464, 77.45467 (view)	Critical	10 km/h	Stop, check visibility, proceed slowly
Sharp Turn #7	78.1 km	28.1 km	29.62532, 77.43918 (view)	High	20 km/h	Slow down, cautious turning
Blind Spot #1	2.2 km	104.4 km	28.96025, 77.63995 (view)	Medium	30 km/h	Use the horn, stay alert
Blind Spot #2	106.1 km	0.5 km	29.86096, 77.33386 (view)	Medium	30 km/h	Use the horn, stay alert
Wildlife Sanctuary Zone	45.7 km	62.3 km	29.30456, 77.42177 (view)	Critical	Normal	Follow environmental guidelines
Communication Dead Zone #1	0.0 km	106.1 km	28.94966, 77.65908 (view)	High	--	Use alternative communications device.
Communication Dead Zone #2	5.3 km	100.8 km	28.99594, 77.64593 (view)	High	--	Use alternative communications device.

SEASONAL ROAD CONDITIONS & TRAFFIC PATTERNS

Season / Condition	Critical Stretches / Coordinates / Roads	Typical Challenges	Driver Caution
Summer (Apr–Jun)	NH-344 (29°47'23.3"N 77°15'49.2"E) (view)	High temperatures -> vehicle overheating, tire blowouts	Pre-check cooling systems and carry extra water.
Summer (Apr–Jun)	NH-709 (29°20'03.9"N 77°23'55.4"E) (view)	High temperatures -> vehicle overheating, tire blowouts	Pre-check cooling systems and carry extra water.
Summer (Apr–Jun)	Rural plains section (29°32'31.1"N 77°23'21.6"E) (view)	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Monsoon (Jul–Sep)	NH-344 (29°37'41.0"N 77°24'44.3"E) (view)	Waterlogging, reduced visibility, flooding	Slow down, use wipers, headlights on, plan for delays
Monsoon (Jul–Sep)	NH-709 (29°48'54.8"N 77°26'01.3"E) (view)	Waterlogging, reduced visibility, flooding	Slow down, use wipers, headlights on, plan for delays
Post-Monsoon / Autumn (Oct–Nov)	NH-344 (29°37'41.0"N 77°24'44.3"E) (view)	Wet roads, occasional fog, unpredictable weather	Carry rain gear, reduce speed, check tire tread depth
Post-Monsoon / Autumn (Oct–Nov)	NH-709 (29°20'03.9"N 77°23'55.4"E) (view)	Wet roads, occasional fog, unpredictable weather	Carry rain gear, reduce speed, check tire tread depth
Post-Monsoon / Autumn (Oct–Nov)	Rural plains section (29°32'31.1"N 77°23'21.6"E) (view)	Wet roads, localized flooding after rains, cooler temperatures	Check weather forecasts, avoid flooded areas, carry emergency supplies
Winter (Dec–Feb)	NH-344 (29°37'41.0"N 77°24'44.3"E) (view)	Icy roads, fog, reduced visibility, cold temperatures	Use winter tires, carry chains, reduce speed, check vehicle maintenance
Winter (Dec–Feb)	NH-709 (29°20'03.9"N 77°23'55.4"E) (view)	Icy roads, fog, reduced visibility, cold temperatures	Use winter tires, carry chains, reduce speed, check vehicle maintenance
Winter (Dec–Feb)	Rural plains section (29°32'31.1"N 77°23'21.6"E) (view)	Frost, black ice, limited visibility due to fog	Reduce speed, use headlights, carry emergency supplies
Schools	Dewan Public School International... (28.9, 77.7) (view)	Children crossing, school vehicles, increased pedestrian activity	Slow down, watch for pedestrian crossings, school timings: 7-9 AM, 2-4 PM
Schools	Bhai Joga Singh Public School (28.9, 77.7) (view)	Children crossing, school vehicles, increased pedestrian activity	Slow down, watch for pedestrian crossings, school timings: 7-9 AM, 2-4 PM
Schools	METRO PUBLIC SCHOOL (28.9, 77.7) (view)	Children crossing, school vehicles, increased pedestrian activity	Slow down, watch for pedestrian crossings, school timings: 7-9 AM, 2-4 PM
Toll Plazas	NH-344 - Estimated toll plaza (29.3, 77.4) (view)	Buildup of queues during peak times, payment delays	Plan breaks before toll, ensure lane discipline, keep exact change/ FASTag ready
Toll Plazas	NH-709 - Estimated toll plaza (29.4, 77.3) (view)	Buildup of queues during peak times, payment delays	Plan breaks before toll, ensure lane discipline, keep exact change/FASTag ready

WEATHER-RELATED ACCIDENT-PRONE AREAS IDENTIFIED AND CORRECTIVE MEASURES

Area	Weather Risk	Risk Type	Recommended Solution
NH-344 (Ghata Village)	Extreme Heat	Tire Blowouts	Shade shelters, road resurfacing
NH-709 (Ambeta)	Fog	Low Visibility	Fog lights, reflective signs
Putha Village Stretch	Frost	Skidding	Apply salt/sand, use winter tires
Oil Terminal Junctions	Rain/Fog	Poor Visibility	Better signage, signalization
Moti Filling Station Access	Rain/Fog	Slippery Surfaces	Drainage improvement, widen shoulders

EMERGENCY PREPAREDNESS & RESPONSE

MEDICAL FACILITIES - Emergency Healthcare Services - CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Link	Phono No.
1	Sanjeevani Yoga and Nature Cure Hospital (Kidney)	Unnamed Road, Surya Palace Colony, Meerut	2.3 km	107.1 km	28.946442, 77.682769	View	93580 23825
2	Chhatrapati Shivaji Subharti Hospital	Swami Vivekanand Subharti University	2.3 km	104.3 km	28.960460, 77.638502	View	96390 10313
3	Kalka Dental College	Near Partapur Flyover, By Pass, Partapur	3.4 km	108.2 km	28.924582, 77.639411	View	93191 80111
4	Davki Nandan Hospital	Near Transport Nagar, Baghpat Road, Thana	3.1 km	104.4 km	28.971272, 77.679234	View	70376 38168
5	Kailashi Super Speciality Hospital	C-2 Shardhapuri Phase 2 Kankerkheda,	9.0 km	98.0 km	29.029889, 77.671054	View	70551 15009
6	Hans Multispeciality Hospital	512, Sardhana Road, Om Nagar, Kanker Khera, Meerut Cantt, Meerut	9.2 km	98.1 km	29.030877, 77.678053	View	0121 263 0899
7	Prakash Hospital	1/108, Dantal Jatoli Road, Sector 1, Shradhapuri Phase 1, Meerut	9.0 km	98.8 km	29.027019, 77.686053	View	0121 255 6220

MEDICAL FACILITIES - Emergency Healthcare Services - CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Link	Phono No.
8	Omnibus Healthcare	1H, NH58, Ansal City, Meerut	11.9 km	96.9 km	29.050114, 77.700718	View	0121 257 7123
9	G.M. Modi Hospital	3P75+J72, Modipuram, Meerut	13.6 km	95.7 km	29.064021, 77.708142	View	01212575597
10	Govt Hospital - PHC	4GMR+XV2	23.5 km	83.1 km	29.134889, 77.542140	View	-----
11	CHC, Saroorpur Khurd	4GMR+QWG, Meerut	23.5 km	83.2 km	29.134449, 77.542317	View	-----
12	Panwar Medical	5G49+MVV, Gotka	26.7 km	80.2 km	29.156735, 77.519674	View	-----
13	Seva Charitable Hospital	Muzaffarnagar Road, Pulpaar, Budhana	41.1 km	65.8 km	29.280551, 77.470459	View	63983 84914
14	Life Line Clinic	2, Budhana	41.1 km	65.8 km	29.280561, 77.470466	View	80778 39678
15	Dr Aatma Ram Eye Hospital	Baraut Road, Budhana	41.0 km	65.8 km	29.280530, 77.471898	View	70157 17877
16	Rafikan Physio Clinic	Satheri Road, Budhana	41.2 km	65.6 km	29.281761, 77.470383	View	-----
17	Ayushman Arogya Mandir	6FJP+C6R, Kurthal	40.9 km	65.9 km	29.280251, 77.473738	View	-----
18	Get Well Hospital & USG	Karnal-Shamli Road, Subashnagar, Shamli	63.9 km	46.6 km	29.439844, 77.316208	View	94585 33848
19	Ayushman Arogya Mandir	C83X+279, Kabraut	58.7 km	50.8 km	29.402542, 77.348224	View	-----
20	Bansal Hospital	C83Q+V9C, Jhal	59.4 km	50.5 km	29.404680, 77.338399	View	-----

MEDICAL FACILITIES - Emergency Healthcare Services - CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Link	Phono No.
21	Ayushman Arogya Mandir	C83P+4PW, Jhal	59.3 km	50.7 km	29.402852, 77.336842	View	-----
22	Arvind Malik	C9F9+XQJ, Kudana	59.9 km	48.4 km	29.424951, 77.369401	View	-----

LAW ENFORCEMENT - Security & Emergency Response - CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Link	Phone No.
1	Nauchandi Police Station	Mohsin Bagh, Manzoor Nagar, Nauchandi	4.3 km	109.1 km	28.932659, 77.698791	View	73472 59199 / 9454403990
2	Shatabdi Nagar Police Choki	WMPG+W37, Shatabdi Nagar, Sector	2.1 km	107.8 km	28.937291, 77.675171	View	-
3	Police Choki Shubharti Univ.	XJ5Q+9R6, NH58, Meerut	2.1 km	104.6 km	28.958414, 77.639524	View	--
4	Pari Chowk	WJPR+VG3, Pari Chowk, NRI City, Omega II, Greater	2.2 km	106.9 km	28.937133, 77.641289	View	8595902542
5	Police Choki VedVyasPuri	XJ7R+37V, NH58, Ved Vyas Puri -Phase 1, Meerut	2.3 km	104.1 km	28.962737, 77.640663	View	--
6	Police Chawki Shradhapuri	2MMF+C6W, Unnamed Road, Shradhapuri Phase 2	9.4 km	97.6 km	29.033622, 77.673071	View	--
7	Police Station Kankarkheda	B30 Sardhana Rd, Kankar Khera Rd, Shradhapuri Phase 2	8.9 km	98.7 km	29.026453, 77.683659	View	9454403980
8	Police Chowki Kasba	1/126, Shradha Puri Rd, Sector 1, Shradhapuri Phase 1	8.8 km	98.9 km	29.025348, 77.685811	View	--
9	Police Choki Krishna Nagar	2PP4+QH4, Krishna Nagar	10.7 km	98.5 km	29.036898, 77.706458	View	--
10	Police Post Modipuram	Bus Station, 2PX4+JVG Low Floor, NH58	12.0 km	97.2 km	29.049080, 77.707205	View	--
11	Police Check Post Karnal	4HP8+GG5, Karnal	22.6 km	83.6 km	29.136274, 77.566349	View	--
12	Police Station Saroorpur	4GMR+54G, Saroorpur Khurd	23.4 km	83.3 km	29.132937, 77.540315	View	9454403997

LAW ENFORCEMENT - Security & Emergency Response – CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location(KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No.
13	Police Station Budhana	7FR9+29Q, Budhana	42.1 km	64.7 km	29.290086, 77.468494	View	9454404062 / 01392-233344
14	Bai Wala Police Station	7F54+GM5, Budhana Road	39.6 km	67.9 km	29.258760, 77.456743	View	--
15	Police Chunki Vigyana	7CMP+WW3, Vigyana	43.0 km	64.7 km	29.284754, 77.437300	View	--
16	Police Chowki Lank	99F9+GCP, National Highway 709A	55.0 km	54.1 km	29.373825, 77.368590	View	9454404083

FIRE & RESCUE - Emergency Response Services – CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No.
1	Fire Station	WMC5+X9P, Sector 2, MDA, Meerut	3.0 km	108.9 km	28.922465, 77.658456	View	0121-2440450 (Office)

FUEL STATIONS - Vehicle Refueling Points – ESSENTIAL

#	Facility Name	Location/Address	Distance From Supply Location(KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No
1	Hindustan Petroleum Corp. Ltd.	NH 709A, Shamli Road, Sardhana	23.1 km	83.1 km	29.139225, 77.561151	View	8920984642
2	Hindustan Petroleum Corporation – Budhana	Baraut Road, Budhana	41.0 km	65.8 km	29.280096, 77.471974	View	9412306289
3	HP Petrol Pump – Mamta Humara	Budhana Bagar	41.9 km	64.6 km	29.293826, 77.484294	View	9568112244
4	HPCL Petrol Pump – M K Energy	NH 709A, Meerut– Karnal Road, Shamli Station	60.9 km	48.8 km	29.419908, 77.338364	View	919990542793

EDUCATIONAL INSTITUTIONS - Speed Limit Zones (40 km/h) – AWARENESS

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No
1	J.P. International School	Opp. Grand Opera, NH 58, Kherwa Road, Kanker Khera, Meerut	10.5	96.7	29.043257, 77.674937	View	01212554041
2	J.N. Public School	5GGW+WXW, Meerut	27.5	78.7	29.177359, 77.547441	View	N/A
3	Balwanti Devi Kanya Inter College	Baraut, Budhana Road, Budhana	39.5	68	29.257118, 77.454560	View	N/A
4	Shaheed Rizwan Tyagi Govt. School	7CFV+CGF, State Highway 82, Vigyana	41.6	66	29.273569, 77.443791	View	01392234316
5	BrainZone Junior High	Karnal - Meerut Road, Shamli	56.2	53.0	29.383019, 77.361901	View	09756200021
6	UPS Barla Jat Composite	C89X+RXW, Barla Jatt Road, Barla	60.3	48.9	29.419611, 77.349965	View	N/A

NOTES - GENERAL EMERGENCY GUIDELINES FOR PETROLEUM TANKER

ASPECT	GUIDELINES / ACTIONS
Vehicle Safety	Park the tanker safely on the roadside with hazard lights and emergency triangles deployed. Avoid sudden braking or jerks, especially if the tanker is partially filled.
Communication	Immediately contact the Supply Location control room and, Transport supervisor. If in a dead zone, use alternate communications. Maintain communication with authorities if directed.
Emergency Contacts	Call local police, nearest hospital, or fire station, Supply Location. Keep a printed list of these numbers in the vehicle.
Basic First-Aid	Use the onboard first-aid kit for minor injuries. In case of severe injuries, prioritize immediate attention and inform the control room.
Spill / Hazard Response	Follow MSDS and company-specific SOP for spills. Do not attempt to clean up fuel spills without proper equipment. Use absorbent materials available. Use non-sparking tools.
Fire / Explosion Risk	If a fire starts, immediately shut off the engine and evacuate the area. Use the onboard fire extinguisher only if safe to do so and trained to handle it.
Evacuation Zone	Establish a safety perimeter (minimum 50 meters) around the tanker. Do not allow smoking or the use of mobile phones, non-FLP torches, sparking tools near the spill or fire area.
Convoy / Escort Movement	In areas requiring convoy travel (e.g., night operations under police escort), maintain close coordination and avoid separating from the group.
Incident Documentation	Record incident details: time, GPS coordinates, nature of spill/accident, vehicle condition, environmental impact.
Personal Safety & Well-being	Wear appropriate PPE (helmet, gloves, reflective jacket). Remain calm, prioritize personal safety, and wait for emergency responders if in doubt about next steps. Use coveralls during filling and unloading operations.
Regulatory Compliance	Follow all guidelines under Petroleum Rules 2002, CMVR, and company SOP for hazardous goods transportation.

Note: These guidelines are mandatory for all petroleum tanker operations. Compliance ensures safety and environmental protection

ENVIRONMENTAL & LOCAL CONSIDERATIONS

Zone / Area	Location / Stretch	Coordinates	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Located On/Near	Environmental / Local Risk
Eco-sensitive Zone	Wildlife Sanctuary near route	29.30456,77.42177 (view)	51.6	78.5	NH-344 near eco-sensitive area	Increased wildlife movement, no littering, noise restrictions
School Zone	Dewan Public School International.	28.9, 77.7 (view)	2.8	135	Near NH-344	Pedestrian activity, reduced speed required (25 km/h), school timings awareness
School Zone	Bhai Joga Singh Public School	28.9, 77.7 (view)	5	131	Near NH-344	Pedestrian activity, reduced speed required (25 km/h), school timings awareness
School Zone	METRO PUBLIC SCHOOL	28.9, 77.7 (view)	2	108	Near NH-344	Pedestrian activity, reduced speed required (25 km/h), school timings awareness
School Zone	PRESIDENCY PUBLIC SCHOOL	28.936917, 77.673481 (View)	2	107.8	Near NH-344	Pedestrian activity, reduced speed required (25 km/h), school timings awareness

NOTES - GENERAL ENVIRONMENTAL & LOCAL DRIVING GUIDELINES FOR PETROLEUM TANKER DRIVERS

Aspect	Guidelines / Actions
Eco-sensitive Areas	Drive slowly, avoid honking unnecessarily, and do not stop for breaks or cleaning in these areas.
Waterbody Crossings	Inspect for leaks before entering bridges, no refueling or repairs on or near bridges.
School & Market Areas	Maintain speed limits (25-30 km/h), stay alert for children and pedestrians, avoid peak school/market hours.
Festivals & Local Events	Expect road diversions or closures, confirm route with local authorities or control room.
Littering & Pollution Prevention	Never discard trash or spill fuel; carry spill kits and clean-up materials as per SOP.
Noise & Cultural Sensitivity	Avoid honking in populated areas and during religious or cultural gatherings.
Local Road Regulations	Follow local traffic signage and any state-specific restrictions for hazardous cargo.
Coordination with Locals	Be courteous to local communities; stop only at designated points for rest, food, or refueling.

Note: These guidelines are mandatory for all petroleum tanker operations. Compliance ensures safety and environmental protection.

DEFENSIVE DRIVING & DRIVER WELL-BEING

Checklist Item	Detailed Guidelines / Actions
Maintain safe distance, use indicators	Keep a minimum 3-second following distance from the vehicle ahead, adjust for heavy loads; always signal turns or lane changes well in advance.
Stay hydrated: carry water bottles	Carry at least 2 liters of drinking water. Avoid dehydration, especially in summer. Drink at rest stops every 1-2 hours.
Avoid heavy/oily meals before journey	Eat light, balanced meals to avoid drowsiness and discomfort. Avoid spicy, fried, or heavy foods before and during the trip.
Get at least 8 hours of sleep before starting	A good night's sleep is essential to reduce fatigue and maintain focus. Never start a trip when tired or drowsy.
Wear weather-appropriate protective gear	Use sun protection (caps, sunglasses) in summer; layered clothing in winter; always wear safety shoes and reflective vests.
Control speed based on road conditions	Adjust speed for weather, road curves, and heavy vehicle braking distances. Never exceed posted speed limits.
Plan rest breaks every 3 hours	Stop for at least 30 minutes to stretch, refresh, and check vehicle condition. Avoid continuous driving for more than 3 hours.
Defensive driving mindset	Stay calm, anticipate road users' actions, avoid aggression. Use mirrors frequently and watch for potential hazards ahead.
Emergency readiness	Keep fire extinguisher, first-aid kit, and communication device within easy reach. Be aware of nearest emergency services along the route.

Note: These guidelines are mandatory for all petroleum tanker operations. Compliance ensures safety and environmental protection.

COMPREHENSIVE ROUTE OVERVIEW & STATISTICS

BLIND SPOTS ANALYSIS WITH DUAL VISUAL EVIDENCE High Risk (Risk Score: 3.8)

Total Blind Spots Detected	14
Extreme Danger Turns (>=90 deg)	6
High-Risk Blind Spots (80-90 deg)	0
Moderate Risk Turns (45-70 deg)	8
Most Dangerous Turn Angle	180.0 deg
Average Turn Angle	88.4 deg
Street View Images Available	7
Satellite Images Available	7
Route Map Images Available	1
Total Visual Evidence Files	14

BLIND SPOT CLASSIFICATION SYSTEM

Angle Range	Classification	Risk Level	Max Speed	Safety Requirement
≥ 90°	EXTREME BLIND SPOT	CRITICAL	15 km/h	Full stop, check both mirrors, inch forward slowly
80°–90°	HIGH-RISK BLIND TURN	EXTREME	20 km/h	Reduce speed sharply, use horn, check for oncoming
70°–80°	BLIND SPOT	HIGH	25 km/h	Keep left, use indicators, maintain 2m clearance
60°–70°	HIGH-ANGLE TURN	MEDIUM	30 km/h	Brake before turn, avoid overtaking
45°–60°	SHARP TURN	LOW	40 km/h	Stay in lane, observe caution signage

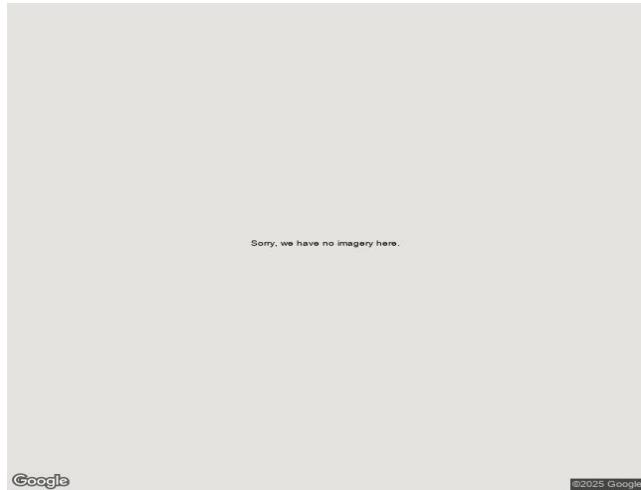
CRITICAL TURNS WITH DUAL VISUAL EVIDENCE ANALYSIS

CRITICAL TURN #1: 180.0 deg - EXTREME BLIND SPOT - CRITICAL RISK

GPS Coordinates	29.799710, 77.462060 (view)
Turn Angle	180.0 deg (Deviation from straight path)
Risk Classification	EXTREME BLIND SPOT - CRITICAL Risk Level
Recommended Maximum Speed	15 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	1 images available
Satellite Images	1 images available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #1:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_1_h0.jpg
 Size: 8.6 KB
 GPS: 29.7997, 77.4621

ROAD ANALYSIS:

- * Turn angle: 180.0 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: CRITICAL
- * Max speed: 15 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_1.png
 Size: 317.6 KB
 GPS: 29.7997, 77.4621

AERIAL ANALYSIS:

- * Turn geometry: 180.0 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

CRITICAL TURN #2: 159.6 deg - EXTREME BLIND SPOT - CRITICAL RISK

GPS Coordinates	29.800050, 77.458640 (view)
Turn Angle	159.6 deg (Deviation from straight path)
Risk Classification	EXTREME BLIND SPOT - CRITICAL Risk Level
Recommended Maximum Speed	15 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	2 images available
Satellite Images	2 images available
Total Visual Evidence	4 images for analysis

VISUAL EVIDENCE FOR TURN #2:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_2_h0.jpg
Size: 59.0 KB
GPS: 29.8000, 77.4586

ROAD ANALYSIS:

- * Turn angle: 159.6 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: CRITICAL
- * Max speed: 15 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_2.png
Size: 308.2 KB
GPS: 29.8000, 77.4586

AERIAL ANALYSIS:

- * Turn geometry: 159.6 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

CRITICAL TURN #3: 159.6 deg - EXTREME BLIND SPOT - CRITICAL RISK

GPS Coordinates	29.800050, 77.458640 (view)
Turn Angle	159.6 deg (Deviation from straight path)
Risk Classification	EXTREME BLIND SPOT - CRITICAL Risk Level
Recommended Maximum Speed	15 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	2 images available
Satellite Images	2 images available
Total Visual Evidence	4 images for analysis

VISUAL EVIDENCE FOR TURN #3:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_2_h0.jpg
Size: 59.0 KB
GPS: 29.8000, 77.4586

ROAD ANALYSIS:

- * Turn angle: 159.6 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: CRITICAL
- * Max speed: 15 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_2.png
Size: 308.2 KB
GPS: 29.8000, 77.4586

AERIAL ANALYSIS:

- * Turn geometry: 159.6 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

CRITICAL TURN #4: 113.0 deg - EXTREME BLIND SPOT - CRITICAL RISK

GPS Coordinates	29.801760, 77.459240 (view)
Turn Angle	113.0 deg (Deviation from straight path)
Risk Classification	EXTREME BLIND SPOT - CRITICAL Risk Level
Recommended Maximum Speed	15 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	2 images available
Satellite Images	2 images available
Total Visual Evidence	4 images for analysis

VISUAL EVIDENCE FOR TURN #4:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_4_h0.jpg
Size: 59.5 KB
GPS: 29.8018, 77.4592

ROAD ANALYSIS:

- * Turn angle: 113.0 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: CRITICAL
- * Max speed: 15 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_4.png
Size: 342.8 KB
GPS: 29.8018, 77.4592

AERIAL ANALYSIS:

- * Turn geometry: 113.0 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

CRITICAL TURN #5: 113.0 deg - EXTREME BLIND SPOT - CRITICAL RISK

GPS Coordinates	29.801760, 77.459240 (view)
Turn Angle	113.0 deg (Deviation from straight path)
Risk Classification	EXTREME BLIND SPOT - CRITICAL Risk Level
Recommended Maximum Speed	15 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	2 images available
Satellite Images	2 images available
Total Visual Evidence	4 images for analysis

VISUAL EVIDENCE FOR TURN #5:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_4_h0.jpg
Size: 59.5 KB
GPS: 29.8018, 77.4592

ROAD ANALYSIS:

- * Turn angle: 113.0 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: CRITICAL
- * Max speed: 15 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_4.png
Size: 342.8 KB
GPS: 29.8018, 77.4592

AERIAL ANALYSIS:

- * Turn geometry: 113.0 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

CRITICAL TURN #6: 97.4 deg - EXTREME BLIND SPOT - CRITICAL RISK

GPS Coordinates	29.804640, 77.454670 (view)
Turn Angle	97.4 deg (Deviation from straight path)
Risk Classification	EXTREME BLIND SPOT - CRITICAL Risk Level
Recommended Maximum Speed	15 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	1 images available
Satellite Images	1 images available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #6:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_6_h0.jpg
Size: 48.4 KB
GPS: 29.8046, 77.4547

ROAD ANALYSIS:

- * Turn angle: 97.4 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: CRITICAL
- * Max speed: 15 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_6.png
Size: 353.5 KB
GPS: 29.8046, 77.4547

AERIAL ANALYSIS:

- * Turn geometry: 97.4 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

CRITICAL TURN #7: 75.7 deg - BLIND SPOT - HIGH RISK

GPS Coordinates	29.625320, 77.439180 (view)
Turn Angle	75.7 deg (Deviation from straight path)
Risk Classification	BLIND SPOT - HIGH Risk Level
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	1 images available
Satellite Images	1 images available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #7:

STREET VIEW ANALYSIS:



STREET VIEW DATA:

File: streetview_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_7_h0.jpg
Size: 50.9 KB
GPS: 29.6253, 77.4392

ROAD ANALYSIS:

- * Turn angle: 75.7 degrees
- * Visibility: Limited due to sharp curve
- * Hazard level: HIGH
- * Max speed: 25 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:

File: satellite_af7c8826-2d03-4239-aceb-0c329bbf2064_turn_7.png
Size: 299.5 KB
GPS: 29.6253, 77.4392

AERIAL ANALYSIS:

- * Turn geometry: 75.7 deg curve
- * Road curvature: Sharp bend visible
- * Terrain context: Aerial perspective
- * Traffic flow impact: Potential bottleneck

SHARP TURNS ANALYSIS WITH DUAL VISUAL EVIDENCE High Risk (Risk Score: 4)

Total Sharp Turns Detected	5
Extreme Danger Turns (>=90 deg)	2 (117.9°, 90.0°)
High-Risk Blind Spots (80-90 deg)	1 (87.7°)
Sharp Danger Zones (70-80 deg)	0
Moderate Risk Turns (45-70 deg)	2 (68.3°, 40.8°)
Most Dangerous Turn Angle	117.9 deg
Average Turn Angle	80.94 deg
Street View Images Available	5
Satellite Images Available	5
Route Map Images Available	0
Total Visual Evidence Files	10

SHARP TURN CLASSIFICATION SYSTEM

Angle Range	Classification	Risk Level	Max Speed	Safety Requirement
≥ 120°	HAIRPIN TURN	CRITICAL	10–15 km/h	Full stop, sharp steering, extreme caution, check mirrors, inch forward slowly
100°–119.9°	EXTREME SHARP TURN	EXTREME	15–20 km/h	Slow down significantly, use mirrors, stay tight inside lane
80°–99.9°	VERY SHARP TURN	HIGH	20 km/h	Reduce speed, use mirrors, no overtaking
60°–79.9°	HIGH-ANGLE TURN	MEDIUM	25–30 km/h	Brake before turn, keep lane position
45°–60°	SHARP TURN	LOW	30–40 km/h	Stay in lane, observe caution signage
30°–44.9°	MODERATE TURN	VERY LOW	40–50 km/h	Normal caution, light braking
< 30°	GENTLE CURVE	MINIMAL	50+ km/h	Maintain lane, standard driving

CRITICAL TURN #1: 117.9 deg - SHARP TURN – HIGH RISK ZONE

GPS Coordinates	28.95023, 77.65947 (view)
Turn Angle	117.9° (Deviation from straight path)
Risk Classification	SHARP TURN – HIGH RISK ZONE
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 30m approach visibility
Driver Action Required	Slow down, stay in lane, observe signage, maintain steering control
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #1:

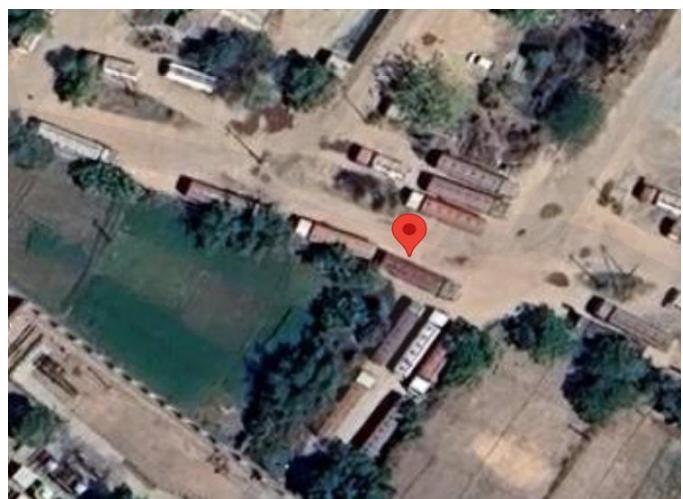
STREET VIEW ANALYSIS:



STREET VIEW DATA:
GPS: 28.95023, 77.65947

ROAD ANALYSIS:
Heading: 270°, FOV: 90
* Turn angle: 117.9° degrees
* Visibility: Good
* Hazard level: HIGH
* Max speed: 20 km/h

SATELLITE VIEW ANALYSIS:



SATELLITE VIEW DATA:
GPS: 28°57'00.8"N 77°39'34.1"E

CRITICAL TURN #2: 40.8 deg - SHARP TURN – MODERATE RISK

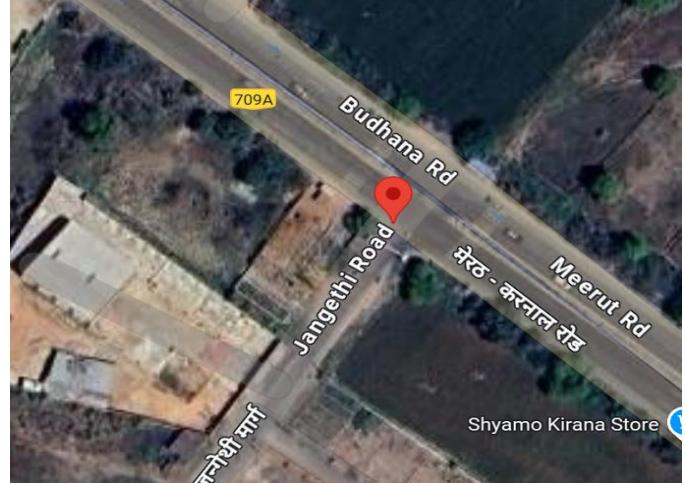
GPS Coordinates	29.05306, 77.64637 (view)
Turn Angle	40.8°
Risk Classification	SHARP TURN – MODERATE RISK
Recommended Maximum Speed	30 km/h
Safety Distance Required	Minimum 25m visibility
Driver Action Required	Reduce speed, use side mirror, avoid overtaking
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #2:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



STREET VIEW DATA:

GPS29.05306, 77.64637

ROAD ANALYSIS:

- * Heading: 90°, FOV: 90
- * Turn angle: 40.8° degrees
- * Visibility: Good
- * Hazard level: Medium
- * Max speed: 30 km/h

CRITICAL TURN #3: 90.0 deg - SHARP TURN – HIGH RISK

GPS Coordinates	29.25871, 77.45699 (view)
Turn Angle	90.0°
Risk Classification	SHARP TURN – HIGH RISK
Recommended Maximum Speed	20 km/h
Safety Distance Required	40m minimum
Driver Action Required	Reduce speed early, use mirror, steer tightly
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #3:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



STREET VIEW DATA:

GPS: 29.25871, 77.45699

ROAD ANALYSIS:

- * Heading: 90°, FOV: 90
- * Turn angle: 90.0° degrees
- * Visibility: Good
- * Hazard level: Medium
- * Max speed: 20 km/h

CRITICAL TURN #4: 87.7 deg - SHARP TURN – MODERATE TO HIGH RISK

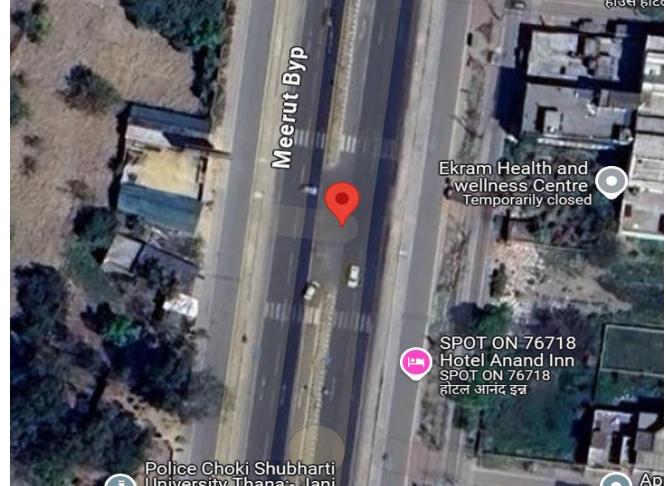
GPS Coordinates	28.95893, 77.6399 (view)
Turn Angle	87.7°
Risk Classification	SHARP TURN – MODERATE TO HIGH RISK
Recommended Maximum Speed	20 km/h
Safety Distance Required	40m minimum
Driver Action Required	Slow before turn, prepare for sharp curve
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #4:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



STREET VIEW DATA:
GPS: 28.95893, 77.6399

ROAD ANALYSIS:
Heading: 90°, FOV: 90
* Turn angle: 87.7° degrees
* Visibility: Good
* Hazard level: Medium
* Max speed: 20 km/h

CRITICAL TURN #5: 68.3 deg - HIGH-ANGLE TURN - MEDIUM RISK

GPS Coordinates	28.960250, 77.639950 (view)
Turn Angle	68.3 deg (Deviation from straight path)
Risk Classification	HIGH-ANGLE TURN - MEDIUM Risk Level
Recommended Maximum Speed	30 km/h
Safety Distance Required	Minimum 50m approach visibility
Driver Action Required	Reduce speed, check mirrors, signal early
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #5:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



STREET VIEW DATA:

GPS: 28.960250, 77.639950

ROAD ANALYSIS:

- * Heading: 90°, FOV: 90
- * Turn angle: 68.3° degrees
- * Visibility: Good
- * Hazard level: Medium
- * Max speed: 30 km/h

ACCIDENT PRONE TURNS ZONES ANALYSIS WITH DUAL VISUAL EVIDENCE High Risk (Risk Score: 4)

Total Accident-Prone Turns Detected	3
Extreme Danger Turns (>=90 deg)	2 (98.4°, 95.8°)
High-Risk Blind Spots (80-90 deg)	1 (80.8°)
Sharp Danger Zones (70-80 deg)	0
Moderate Risk Turns (45-70 deg)	0
Most Dangerous Turn Angle	98.4 deg
Average Turn Angle	80.8 deg
Street View Images Available	3
Satellite Images Available	3
Route Map Images Available	0
Total Visual Evidence Files	6

ACCIDENT-PRONE TURNS ZONES CLASSIFICATION SYSTEM

Angle Range	Classification	Risk Level	Max Speed	Safety Requirement
≥ 120°	HAIRPIN TURN	CRITICAL	10–15 km/h	Full stop, sharp steering, extreme caution, check mirrors, inch forward slowly
100°–119.9°	EXTREME SHARP TURN	EXTREME	15–20 km/h	Slow down significantly, use mirrors, stay tight inside lane
80°–99.9°	VERY SHARP TURN	HIGH	20 km/h	Reduce speed, use mirrors, no overtaking
60°–79.9°	HIGH-ANGLE TURN	MEDIUM	25–30 km/h	Brake before turn, keep lane position
45°–60°	SHARP TURN	LOW	30–40 km/h	Stay in lane, observe caution signage
30°–44.9°	MODERATE TURN	VERY LOW	40–50 km/h	Normal caution, light braking
< 30°	GENTLE CURVE	MINIMAL	50+ km/h	Maintain lane, standard driving

ACCIDENT TURN ZONE #1: 80.8 deg - SHARP TURN – RISK ZONE

GPS Coordinates	29.0368, 77.6688 (view)
Turn Angle	80.8°
Risk Classification	SHARP TURN – RISK ZONE
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 30m approach visibility
Driver Action Required	Slow down, stay in lane, observe signage, maintain steering control
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #1:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



ACCIDENT TURN ZONE #2: 98.4 deg - SHARP TURN – HIGH RISK ZONE

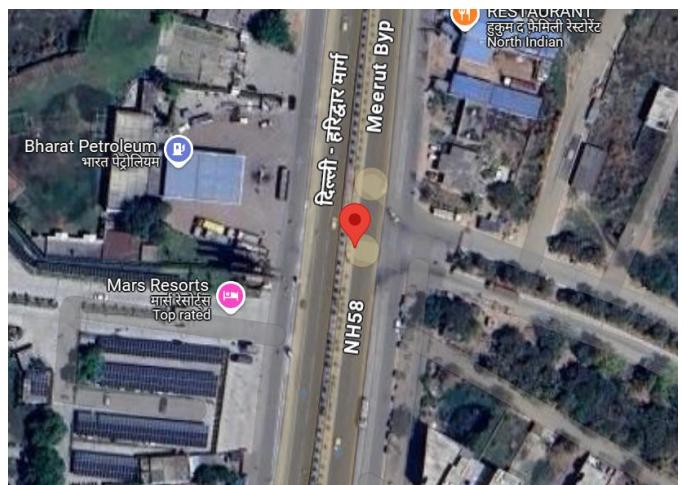
GPS Coordinates	28.96253, 77.6404 (view)
Turn Angle	98.4°
Risk Classification	SHARP TURN – HIGH RISK ZONE
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 30m approach visibility
Driver Action Required	Slow down, stay in lane, observe signage, maintain steering control
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #2:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



ACCIDENT TURN ZONE #3: 95.8 deg - SHARP TURN – HIGH RISK ZONE

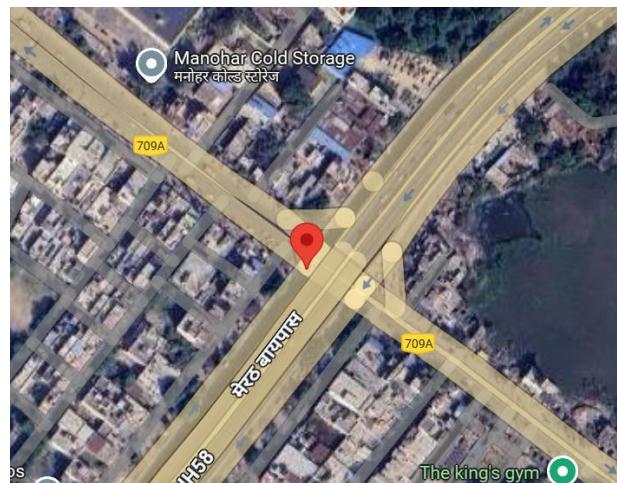
GPS Coordinates	28.96253, 77.6404 (view)
Turn Angle	95.8°
Risk Classification	SHARP TURN – HIGH RISK ZONE
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 30m approach visibility
Driver Action Required	Slow down, stay in lane, observe signage, maintain steering control
Street View Images	1 image available
Satellite Images	1 image available
Total Visual Evidence	2 images for analysis

VISUAL EVIDENCE FOR TURN #3:

STREET VIEW ANALYSIS:



SATELLITE VIEW ANALYSIS:



COMPREHENSIVE POINTS OF INTEREST ANALYSIS: LOW RISK (Risk Score: 1)

Total POIs Identified	119
Emergency Services	44
Essential Services	25
Other Services	50
Coverage Score	100/100
Service Availability Rating	EXCELLENT

MEDICAL FACILITIES - Emergency Healthcare Services – CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Link	Phono No.
1	Sanjeevani Yoga And Nature Cure Hospital (Kidney)	Unnamed Road, Surya Palace Colony, Meerut	2.3 km	107.1 km	28.946442, 77.682769	View	93580 23825
2	Chhatrapati Shivaji Subharti Hospital	Swami Vivekanand Subharti University	2.3 km	104.3 km	28.960460, 77.638502	View	96390 10313
3	Kalka Dental College	Near Partapur Flyover, By Pass, Partapur	3.4 km	108.2 km	28.924582, 77.639411	View	93191 80111
4	Davki Nandan Hospital	Near Transport Nagar, Baghpat Road, Thana	3.1 km	104.4 km	28.971272, 77.679234	View	70376 38168
5	Kailashi Super Speciality Hospital	C-2 Shardhapuri Phase 2 Kankerkheda,	9.0 km	98.0 km	29.029889, 77.671054	View	70551 15009
6	Hans Multispeciality Hospital	512, Sardhana Road, Om Nagar, Kanker Khera, Meerut Cantt, Meerut	9.2 km	98.1 km	29.030877, 77.678053	View	0121 263 0899
7	Prakash Hospital	1/108, Dantal Jatoli Road, Sector 1, Shradhapuri Phase 1, Meerut	9.0 km	98.8 km	29.027019, 77.686053	View	0121 255 6220
8	Omnibus Healthcare	1H, NH58, Ansal City, Meerut	11.9 km	96.9 km	29.050114, 77.700718	View	0121 257 7123
9	G.M. Modi Hospital	3P75+J72, Modipuram, Meerut	13.6 km	95.7 km	29.064021, 77.708142	View	0121257559 7
10	Govt Hospital - PHC	4GMR+XV2	23.5 km	83.1 km	29.134889, 77.542140	View	-----

MEDICAL FACILITIES - Emergency Healthcare Services – CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Link	Phone No.
11	CHC, Saroorpur Khurd	4GMR+QWG, Meerut	23.5 km	83.2 km	29.134449, 77.542317	View	-----
12	Panwar Medical	5G49+MVV, Gotka	26.7 km	80.2 km	29.156735, 77.519674	View	-----
13	Seva Charitable Hospital	Muzaffarnagar Road, Pulpaar, Budhana	41.1 km	65.8 km	29.280551, 77.470459	View	63983 84914
14	Life Line Clinic	2, Budhana	41.1 km	65.8 km	29.280561, 77.470466	View	80778 39678
15	Dr Aatma Ram Eye Hospital	Baraut Road, Budhana	41.0 km	65.8 km	29.280530, 77.471898	View	70157 17877
16	Rafikan Physio Clinic	Satheri Road, Budhana	41.2 km	65.6 km	29.281761, 77.470383	View	-----
17	Ayushman Arogya Mandir	6FJP+C6R, Kurthal	40.9 km	65.9 km	29.280251, 77.473738	View	-----
18	Get Well Hospital & USG	Karnal–Shamli Road, Subashnagar, Shamli	63.9 km	46.6 km	29.439844, 77.316208	View	94585 33848
19	Ayushman Arogya Mandir	C83X+279, Kabraut	58.7 km	50.8 km	29.402542, 77.348224	View	-----
20	Bansal Hospital	C83Q+V9C, Jhal	59.4 km	50.5 km	29.404680, 77.338399	View	-----
21	Ayushman Arogya Mandir	C83P+4PW, Jhal	59.3 km	50.7 km	29.402852, 77.336842	View	-----
22	Arvind Malik	C9F9+XQJ, Kudana	59.9 km	48.4 km	29.424951, 77.369401	View	-----

LAW ENFORCEMENT - Security & Emergency Response - CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location(KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No.
1	Nauchandi Police Station	Mohsin Bagh, Manzoor Nagar, Nauchandi	4.3 km	109.1 km	28.932659, 77.698791	View	73472 59199 / 94544039 90
2	Shatabdi Nagar Police Choki	WMPG+W37, Shatabdi Nagar, Sector	2.1 km	107.8 km	28.937291, 77.675171	View	-
3	Police Choki Shubharti Univ.	XJ5Q+9R6, NH58, Meerut	2.1 km	104.6 km	28.958414, 77.639524	View	--
4	Pari Chowk	WJPR+VG3, Pari Chowk, NRI City, Omega II, Greater	2.2 km	106.9 km	28.937133, 77.641289	View	8595902542

LAW ENFORCEMENT - Security & Emergency Response – CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location(KM)	Distance From Customer Location(KM)	Coordinates	Map Link	Phone No.
5	Police Choki VedVyasPuri	XJ7R+37V, NH58, Ved Vyas Puri -Phase 1, Meerut	2.3 km	104.1 km	28.962737, 77.640663	View	--
6	Police Chowki Shradhapuri	2MMF+C6W, Unnamed Road, Shradhapuri Phase 2	9.4 km	97.6 km	29.033622, 77.673071	View	--
7	Police Station Kankarkheda	B30 Sardhana Rd, Kankar Khera Rd, Shradhapuri Phase 2	8.9 km	98.7 km	29.026453, 77.683659	View	9454403980
8	Police Chowki Kasba	1/126, Shradha Puri Rd, Sector 1, Shradhapuri Phase 1	8.8 km	98.9 km	29.025348, 77.685811	View	--
9	Police Choki Krishna Nagar	2PP4+QH4, Krishna Nagar	10.7 km	98.5 km	29.036898, 77.706458	View	--
10	Police Post Modipuram	Bus Station, 2PX4+JVG Low Floor, NH58	12.0 km	97.2 km	29.049080, 77.707205	View	--
11	Police Check Post Karnal	4HP8+GG5, Karnal	22.6 km	83.6 km	29.136274, 77.566349	View	--
12	Police Station Saroorpur	4GMR+54G, Saroorpur Khurd	23.4 km	83.3 km	29.132937, 77.540315	View	9454403997
13	Police Station Budhana	7FR9+29Q, Budhana	42.1 km	64.7 km	29.290086, 77.468494	View	9454404062 / 01392-233344
14	Bai Wala Police Station	7F54+GM5, Budhana Road	39.6 km	67.9 km	29.258760, 77.456743	View	--
15	Police Chunki Vigyana	7CMP+WW3, Vigyana	43.0 km	64.7 km	29.284754, 77.437300	View	--
16	Police Chowki Lank	99F9+GCP, National Highway 709A	55.0 km	54.1 km	29.373825, 77.368590	View	9454404083

FIRE & RESCUE - Emergency Response Services – CRITICAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No.
1	Fire Station	WMC5+X9P, Sector 2, MDA, Meerut	3.0 km	108.9 km	28.922465, 77.658456	View	0121-2440450 (Office)

FUEL STATIONS - Vehicle Refueling Points – ESSENTIAL

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No
1	Hindustan Petroleum Corporation Limited	Crossing Meerut, near Mevla Phatak, Delhi Road	2.2 km	106.2 km	28.954517, 77.680880	View	9837020741
2	Shiv Kailash Fuel Point (HPCL)	NH 709A, Bhuni	23.5 km	82.8 km	29.141739, 77.559163	View	9319454525
3	Hindustan Petroleum Corp. Ltd.	NH 709A, Shamli Road, Sardhana	23.1 km	83.1 km	29.139225, 77.561151	View	8920984642
4	Hindustan Petroleum Corporation – Budhana	Baraut Road, Budhana	41.0 km	65.8 km	29.280096, 77.471974	View	9412306289
5	HP Petrol Pump – Mamta Humara	Budhana Bagar	41.9 km	64.6 km	29.293826, 77.484294	View	9568112244
6	HP Petrol Pump – Ganga Filling Station	C84X+9WF, Kabraut	58.9 km	50.5 km	29.405623, 77.350728	View	--
7	HPCL Petrol Pump – M K Energy	NH 709A, Meerut–Karnal Road, Shamli Station	60.9 km	48.8 km	29.419908, 77.338364	View	919990542793

EDUCATIONAL INSTITUTIONS - Speed Limit Zones (40 km/h) – AWARENESS

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No
1	Dewan Public School International	143, Delhi Road, Phase-II, Industrial Area, Rithani, Meerut	1.2	107	28.944049, 77.669808	View	01212441491
2	Bhai Joga Singh Public	WMXM+H76, Surya Palace Colony, Meerut	2.3	106.9	28.948902, 77.683139	View	01212401008
3	Metro Public School	Shatabdi Nagar, Rithani, Meerut	2	108	28.933198, 77.666332	View	09358401164
4	Presidency Public School	WMPF+Q99, Delhi Road, Shatabdi Nagar, Sector, Meerut	2	107.8	28.936917, 77.673481	View	08923446683
5	Shemrock Smart Learners	Pocket B, NS-2, Shatabdi Nagar, Sector 1, Rithani, Meerut	2.2	108.2	28.932607, 77.669779	View	09359931817
6	St. Francis' Convent	Sardhana Road, Kanker Khera, Meerut	9	98.3	29.028522, 77.677963	View	01212630770
7	St. Mary's Academy	2M4X+H44, Cariappa Rd, Meerut Cantt, Meerut	7.2	101.6	29.004068, 77.699162	View	01212640838
8	K.D. International School	NH 58, Shardha Puri Phase 2, Shradhapuri Phase 2, Meerut	9.3	97.6	29.032892, 77.670502	View	N/A
9	J.P. International School	Opp. Grand Opera, NH 58, Khirwa Road, Kanker Khera, Meerut	10.5	96.7	29.043257, 77.674937	View	01212554041
10	American Kidz Play School	Ark City D Block, Laxmi Vihar, Shastry Nagar, Meerut	9.1	97.5	29.031048, 77.660846	View	08881207847
11	J.N. Public School	5GGW+WXW, Meerut	27.5	78.7	29.177359, 77.547441	View	N/A
12	Chaudhary Amar Singh ITI	4HQ6+VMQ, Gotka	23.2	83.1	29.139708, 77.561689	View	N/A
13	Kadam Public School	Bhooni Chauraha, Shamli Road, Meerut	22.7	83.6	29.136055, 77.564573	View	09927018569
14	Guljaridrishi	4HP8+GG3, Ranchhar, Jiwana	22.6	83.6	29.136273, 77.566311	View	N/A
15	Saraswati Shishu Mandir	4GWP+HM9, Dahar, 250344	24.9	81.8	29.146408, 77.536735	View	01214001203
16	Balwanti Devi Kanya Inter College	Baraut, Budhana Road, Budhana	39.5	68	29.257118, 77.454560	View	N/A
17	Shaheed Rizwan Tyagi Govt. School	7CFV+CGF, State Highway 82, Vigyana	41.6	66	29.273569, 77.443791	View	01392234316
18	Maples Academy	7CPV+2C2, Kandhla - Budhana Road, Budhana	42.8	64.8	29.285007, 77.443529	View	08439519750
19	Rashtriya Inter College	7FQ9+4F3, Teacher Colony, Budhana	41.9	64.9	29.287766, 77.468666	View	09412663516
20	Indian Public School	7CJ7+WM3, Jaula	44	64.7	29.282266, 77.414157	View	09761392392
21	Vedantam Public School	Kudana Main Road, Jamalpur	60.9	47.6	29.432029, 77.361423	View	09627128822
22	BrainZone Junior High	Karnal - Meerut Road, Shamli	56.2	53.0	29.383019, 77.361901	View	09756200021
23	KVM High School Kabraut	C942+XFG, Karnal - Meerut Road, Kabraut	59.0	50.3	29.407449, 77.351215	View	N/A
24	UPS Barla Jat Composite	C89X+RXW, Barla Jatt Road, Barla	60.3	48.9	29.419611, 77.349965	View	N/A

FOOD & REST - Meal Stops & Driver Rest Areas - CONVENIENCE

#	Facility Name	Location/Address	Distance From Supply Location (KM)	Distance From Customer Location (KM)	Coordinates	Map Link	Phone No
1	Domino's Pizza	Shoprix Mall, Major Dhyani Chand Nagar, Meerut	1.6	106.7	28.947876, 77.674961	View	18002081234
2	KFC	Shoprix Mall, Major Dhyanchand Nagar, Hapur Bypass	1.6	106.8	28.947647, 77.675441	View	07055514361
3	SF Food Pure Veg	Shoprix Mall, Surya Palace, Meerut	1.6	106.8	28.947600, 77.675505	View	07055514361
4	CROWN Hotel & Restaurant	Ved Vyas Puri - Phase 1, Meerut	2	104.7	28.957438, 77.640010	View	06395560284
5	Hotel Bravura Gold Resort	NH 58, Partapur, Meerut	3.3	108.3	28.923952, 77.641838	View	N/A
6	Aangan Restaurant	Cariappa Road, Meerut Cantt	7.3	101.6	29.004389, 77.699872	View	07830500591
7	Meera's Bistro Amoroso	Kanker Khera, NH-58, Meerut	7.9	98.7	29.020790, 77.662973	View	08191999560
8	Biggies Restaurant	NH-58, Meerut	10.2	97.4	29.039129, 77.682855	View	08755301305
9	Veera Deluxe Restaurant	Sardhana Bypass Road, Nangla Tashi	9.9	96.9	29.038387, 77.666995	View	07248723887
10	Anupam Fast Food	Meerut Bypass	12	97.2	29.048964, 77.707086	View	N/A
11	Fauji Restaurant	Bhuni Chowk	22.6	83.6	29.135811, 77.565210	View	N/A
12	Chaudhary Dhaba	Sardhana-Binauli Road	22.6	83.5	29.137468, 77.569021	View	N/A
13	Green Vatika Restaurant	Sardhana - Binauli Road	22.6	83.5	29.137931, 77.571347	View	09999503606
14	Sunny Restaurant	Bhuni	23.1	83.2	29.139613, 77.563249	View	08954122090
15	Akki Fast Food	Baiwala	25.6	80.9	29.154553, 77.538238	View	N/A
16	Ashok Maggie Point	Baiwala	39.7	67.7	29.260395, 77.457469	View	09368315469
17	Mahadev Maggie Point	Karnal - Meerut Road	39.3	68.2	29.256506, 77.458472	View	N/A
18	Sadda Adda	Baiwala chowk, Budhana	39.3	68.2	29.256129, 77.458493	View	08273395559
19	Vinayak Enterprises	Near Baiwala, Baraut Rd	39.8	67.6	29.261558, 77.459011	View	09927117727
20	Madhav Dhaba	Near Baiwala	39.8	67.6	29.262112, 77.460010	View	N/A
21	Mid-Way Point Restaurant	NH 709A, Karnal - Meerut Road	59.8	49.6	29.413244, 77.346351	View	08218727005
22	Amritsari Truck Dhaba	Shamli	59.9	49.6	29.413677, 77.345908	View	N/A
23	Highway Family Dhaba	C87W+R5G, Barla Jatt	60	49.5	29.414570, 77.345452	View	N/A
24	Shiva Pure Vegetarian	Village and post, Kabraut	58.7	50.6	29.404253, 77.351667	View	N/A
25	Hotel Midway Guest	C82X+W83, Kabraut	58.7	50.8	29.402273, 77.348287	View	N/A

CRITICAL SERVICE GAPS IDENTIFIED

* No critical service gaps identified - Good service coverage along route

COMPREHENSIVE EMERGENCY PREPAREDNESS CHECKLIST

- First aid kit with bandages, antiseptic, pain relievers, emergency medications
- Emergency contact numbers saved in phone and written backup copy
- Vehicle emergency kit - tools, spare tire, jumper cables, tow rope
- Emergency water supply (minimum 2 liters per person for 24 hours)
- Non-perishable emergency food (energy bars, nuts, dried fruits)
- Flashlight with extra batteries or hand-crank/solar-powered model
- Emergency blanket, warm clothing, and weatherproof gear
- Portable phone charger/power bank with multiple cables
- Emergency cash in small denominations (ATMs may be unavailable)
- Vehicle documents in waterproof container (registration, insurance)
- Road atlas or offline maps as backup to GPS navigation
- Emergency whistle, signal mirror, or flares for signaling help
- Multi-tool or knife, duct tape, and basic repair supplies
- Personal medications for at least 3 days
- Important documents (ID, medical info, emergency contacts)
- Fire extinguisher (small vehicle type) and basic safety equipment

EMERGENCY RESPONSE ACTION PLAN

1. ASSESS THE SITUATION - Ensure personal safety first, then assess severity
2. CALL FOR HELP - Dial the appropriate emergency number (112 for general emergencies)
3. PROVIDE LOCATION - Give precise GPS coordinates or landmark descriptions
4. STAY CALM - Speak clearly and provide requested information to operators
5. FOLLOW INSTRUCTIONS - Emergency operators are trained to guide you
6. SIGNAL FOR HELP - Use emergency signals if phone coverage is unavailable
7. STAY WITH VEHICLE - Unless immediate danger, stay near your vehicle
8. CONSERVE RESOURCES - Ration water, food, and phone battery if stranded
9. MAINTAIN COMMUNICATION - Update emergency contacts on your status
10. DOCUMENT INCIDENT - Take photos/notes for insurance and authorities

COMPREHENSIVE NETWORK COVERAGE ANALYSIS: HIGH RISK (Risk score: 3.8)

Analysis Points Tested	20
Overall Coverage Score	57.0/100
Coverage Status	MODERATE
Dead Zones Identified	3
Poor Coverage Areas	4
Good Coverage Areas	35.0%
Network Reliability Rating	LOW

SIGNAL QUALITY DISTRIBUTION ANALYSIS

Signal Quality Level	Points Count	Route %	Status
No Signal (Dead Zone)	3	15.0%	Critical
Fair Signal (2-3 bar)	6	30.0%	Good
Poor Signal (1-2 bar)	4	20.0%	Attention
Good Signal (3-4 bar)	4	20.0%	Good
Excellent Signal (4-5 bar)	3	15.0%	Good

CRITICAL COMMUNICATION PROBLEMS (7 areas)

DEAD ZONES - NO CELLULAR SERVICE (3 Locations):

Zone #	GPS Coordinates	Map Link	Impact Level	Recommendation
1	28.9497, 77.6591	View	CRITICAL	Use a satellite phone or download offline maps
2	28.9959, 77.6459	View	CRITICAL	Use a satellite phone or download offline maps
3	29.7682, 77.4412	View	CRITICAL	Use a satellite phone or download offline maps

POOR COVERAGE AREAS (4 Locations):

Area #	GPS Coordinates	Map Link	Signal Level	Recommendation
1	29.1456, 77.5534	View	WEAK	Download offline maps, use a GPS device, and avoid online services
2	29.1900, 77.4955	View	WEAK	Download offline maps, use a GPS device, and avoid online services
3	29.8073, 77.4475	View	WEAK	Download offline maps, use a GPS device, and avoid online services
4	29.8417, 77.3956	View	WEAK	Download offline maps, use a GPS device, and avoid online services

NETWORK COVERAGE RECOMMENDATIONS

1. Route has 3 dead zones - consider satellite communication device
2. Multiple poor coverage areas - download offline maps before travel
3. Inform someone of your route and expected arrival time

EMERGENCY COMMUNICATION PLAN

- * Download offline maps before travel (Google Maps, Maps.me)
- * Inform someone of your route and expected arrival time
- * Carry a satellite communication device for dead zones
- * Keep emergency numbers saved: 112 (Emergency), 100 (Police), 108 (Ambulance)
- * Consider two-way radios for convoy travel
- * Identify nearest towers and repeater Locations along the route

COMPREHENSIVE WEATHER CONDITIONS ANALYSIS Mild Risk (Risk Score: 3)

Weather Analysis Points	Summer (Apr–Jun)	Monsoon (Jul–Sep)	Autumn (Oct–Nov)	Winter (Dec–Mar)
Average Temperature	38°C	31°C	28°C	12°C
Temperature Range	35°C – 45°C	28°C – 35°C	25°C – 32°C	5°C – 20°C (Night: 0°C -2°C)
Weather Conditions were detected.	Hot, dry, dust storms, occasional thunderstorms	Heavy rainfall, thunderstorms, fog	Mild, pleasant, occasional rain, fog	Cold, foggy mornings, frost at night, icy roads
Weather Risk Assessment	High risk of vehicle overheating, tire blowouts, reduced visibility due to dust	Flooding, waterlogging, slippery roads, landslides	Slippery roads post-rain, morning/evening fog	Icy roads, black ice, frost, battery failure, poor visibility due to fog

SEASONAL WEATHER VARIATIONS ACROSS THE ROUTE

Route: Northern Plains of India – Meerut District, Uttar Pradesh

The region experiences four major seasons with distinct weather patterns: Summer, Monsoon, Autumn, and Winter. Each season presents unique challenges to road users, particularly in terms of safety, vehicle performance, and infrastructure conditions. Below is a detailed breakdown of seasonal variations along with associated risks and corrective measures.

Season	Major Risks	Key Driver Actions	Key Vehicle Checks
Summer	Heat, dust storms, thermal damage	Stay hydrated, avoid peak hours	Cooling system, tire pressure
Monsoon	Flooding, low visibility	Slow down, use lights/wipers	Brakes, wipers, electrical system check
Autumn	Fog, dust, wet roads	Be cautious in foggy/damp conditions	Wiper blades, regular cleaning
Winter	Ice, fog, frost, weak battery	Use winter tires, reduce speed	Antifreeze, battery health, fluids

COMPREHENSIVE REGULATORY COMPLIANCE ANALYSIS

COMPLIANCE STATUS: NEEDS ATTENTION

VEHICLE & ROUTE COMPLIANCE DETAILS

Vehicle Type	Heavy Goods Vehicle
Vehicle Category	Heavy Goods Vehicle
AIS-140 GPS Tracking Required	YES (Mandatory)
Route Origin	MEERUT DEPOT [1146]
Route Destination	MOTI FILLING STATION [0041025372]
Total Route Distance	131 km
Estimated Travel Duration	2 hours 27 mins
Interstate Travel	NO

MANDATORY COMPLIANCE REQUIREMENTS

Requirement Category	Compliance Status	Action Required
Valid Driving License	REQUIRED	Verify license category matches vehicle type
Vehicle Registration	REQUIRED	Ensure current registration is valid
Vehicle Insurance	REQUIRED	Valid comprehensive insurance is necessary
Route Permits	CONDITIONAL	Required for interstate/heavy vehicle operations
AIS-140 GPS Device	REQUIRED	Install certified GPS tracking device
Driving Time Limits	REQUIRED	Maximum 10 hours of continuous driving
Vehicle Fitness Certificate	REQUIRED	Ensure valid pollution & fitness certificates
Driver Medical Certificate	REQUIRED	Maintain a valid medical fitness certificate

COMPLIANCE ISSUES REQUIRING IMMEDIATE ATTENTION (2)

1. AIS-140 GPS tracking device required - Address before travel
2. Heavy vehicle - weight restrictions may apply - Address before travel

APPLICABLE REGULATORY FRAMEWORK

- * Motor Vehicles Act, 1988 - Vehicle registration and licensing requirements
- * Central Motor Vehicles Rules, 1989 - Technical specifications and safety
- * AIS-140 Standards - GPS tracking and panic button requirements
- * Road Transport and Safety Policy (RTSP) - Driver working hours
- * Interstate Transport Permits - Required for commercial interstate travel
- * Pollution Control Board Norms - Emission standards compliance
- * Goods and Services Tax (GST) - Tax compliance for commercial transport
- * Road Safety and Transport Authority - State-specific requirements

COMPLIANCE RECOMMENDATIONS

1. Ensure all vehicle documents are current and accessible
2. Verify the driver license category matches vehicle type
3. Check route-specific permits and restrictions
4. Install AIS-140 compliant GPS tracking device

NON-COMPLIANCE PENALTIES & CONSEQUENCES

- * Driving without valid license: Fine up to Rs 5,000 + imprisonment
- * Vehicle without registration: Fine up to Rs 10,000 + vehicle seizure
- * No insurance: Fine up to Rs 2,000 + vehicle seizure
- * AIS-140 non-compliance: Permit cancellation + heavy fines
- * Overloading violations: Fine Rs 20,000 + per excess ton
- * Driving time violations: License suspension + fines
- * Interstate without permits: Vehicle seizure + penalty
- * Environmental violations: Fine up to Rs 10,000 + registration cancellation

COMPREHENSIVE ELEVATION & TERRAIN ANALYSIS - LOW RISK (Risk Score: 1)

Data Source	SRTM (Shuttle Radar Topography Mission) DEM (Digital Elevation Model) data (30m resolution), Topographic maps
Total Analysis Points	~100 elevation points sampled at 100 m intervals along the route (~10–12 km)
Minimum Elevation	214 m above sea level
Maximum Elevation	236 m above sea level
Average Elevation	225 m above sea level
Total Elevation Range	22 m (very minimal variation)
Terrain Classification	Flat Plains Terrain – Alluvial Soil (Indo-Gangetic Plain)
Driving Difficulty Level	Very Easy – No sharp slopes or rugged surfaces
Fuel Consumption Impact	Minimal – No gradient resistance; consistent throttle level
Significant Changes Detected	None – No sudden elevation gain/loss >5 m/km observed

TERRAIN CHARACTERISTICS & DRIVING CONDITIONS

Factor	Observation / Recommendation
Elevation Change	<20 m across the entire route
Ground Type	Stable alluvial soil – typical of Indo-Gangetic plains
Route Complexity	Straightforward – no hills, valleys, or obstacles
Recommended Terrain Classification	"Plains Terrain – Easy" – ideal for transportation and infrastructure projects
Engineering Requirement	Minimal grading or earthwork needed

ELEVATION-BASED DRIVING CHALLENGES

Factor	Details
Gradient	Very gentle throughout (<1.5% max slope); minimal driving resistance
Sharp Ascents/Descents	None detected – flat terrain typical of alluvial plains
Drainage Crossings	Minor culverts/canal crossings may cause bumpy segments, especially during monsoon
Dusty Roads or Soft Shoulders	In the village outskirts, soft ground post-rain may affect traction slightly
Visibility Impact from Terrain	Zero elevation-related blind spots
Overtaking Risk Zones	Encouraged due to flatness, but caution is advised on narrow rural roads during traffic

Conclusion: No elevation-based driving challenges detected. Road surface condition and traffic are more critical than terrain.

ELEVATION-SPECIFIC VEHICLE PREPARATION

Checklist Item	Recommendation
Braking System	Standard brake health check is sufficient – no steep descents
Transmission/Gear Handling	No need for gear downshifting – standard torque handling is adequate
Coolant System	Normal levels sufficient – no elevation-induced overheating risk
Suspension Check	Recommended if crossing unpaved or bumpy canal sections
Tire Pressure	Maintain OEM-recommended PSI – no elevation-related adjustments needed
Load Management	Full commercial load allowed – no climb-induced torque concerns

Conclusion: Standard vehicle maintenance is adequate. No special elevation-based prep required.

FUEL CONSUMPTION IMPACT ANALYSIS

Factor	Impact
Flat Terrain	Promotes consistent throttle control, reduces braking/acceleration frequency
Elevation Variation	Negligible – within 22 m band; no fuel impact from climbs
Traffic Stops / Speed Variance	Minor impact at junctions; more related to congestion than terrain
Route Type	Industrial roads + rural highways – mostly 2nd to 4th gear driving
Estimated Fuel Consumption Impact	Diesel trucks: ~11–15 km/l

Conclusion: Flat terrain enhances fuel efficiency. Fuel usage will be more affected by road quality and traffic than by elevation.

Final Summary & Route Classification

Route Type: Flat Plains (Alluvial Soil)

Classification: "Plains Terrain – Easy"

Driving Difficulty: Very Low

Infrastructure Suitability: High – suitable for all types of transport and development

Special Considerations:

- Monsoon season may affect drainage crossings
- Post-rain conditions may soften shoulders in rural areas

COMPREHENSIVE TRAFFIC ANALYSIS LOW RISK (Risk Score: 1)

Route Segments Analyzed	10
Overall Traffic Score	97.5/100
Traffic Condition	EXCELLENT
Average Travel Time Index	1.03
Average Current Speed	50.7 km/h
Average Free Flow Speed	51.8 km/h
Heavy Traffic Segments	0
Moderate Traffic Segments	0
Free Flow Segments	9
Worst Congestion Areas	0.0% of the route

TRAFFIC-BASED RECOMMENDATIONS

1. Check current traffic conditions before departure
2. Consider public transportation alternatives for heavily congested routes
3. Plan rest stops during low-traffic segments

COMPREHENSIVE ROAD QUALITY & SURFACE CONDITIONS High Risk: (Risk Score :4)

Total Analysis Points	21
Road Quality Issues Detected	21
Critical Condition Areas	2
High Risk Areas	19
Medium Risk Areas	0
API Sources Used	Google Roads, map box
Analysis Confidence	Medium

IDENTIFIED ROAD QUALITY ISSUES (21 Locations)

Location (GPS)	Map link	Issue Type	Severity	Speed Limit	Description
28.94966,77.65908	View	critical condition	critical	30	Critical road conditions - exercise extreme caution
28.99594,77.64593	View	poor surface	critical	30	Critical road conditions - exercise extreme caution
29.03815,77.66689	View	minor issues	high	40	Poor road surface conditions were detected.
29.08921,77.61121	View	minor issues	high	40	Poor road surface conditions were detected
29.14557,77.55345	View	poor surface	high	40	Poor road surface conditions were detected
29.18999,77.49552	View	minor issues	high	40	Poor road surface conditions were detected
29.25872,77.45698	View	minor issues	high	40	Poor road surface conditions were detected.
29.33126,77.40118	View	poor surface	high	40	Poor road surface conditions were detected.
29.41094,77.35002	View	poor surface	high	40	Poor road surface conditions were detected.
29.45141,77.31979	View	poor surface	high	40	Poor road surface conditions were detected.
29.50563,77.36444	View	poor surface	high	40	Poor road surface conditions were detected.
29.58728,77.4202	View	minor issues	high	40	Poor road surface conditions were detected.
29.6244,77.43862	View	poor surface	high	40	Poor road surface conditions were detected.
29.69607,77.42242	View	minor issues	high	40	Poor road surface conditions were detected.

IDENTIFIED ROAD QUALITY ISSUES (21 Locations)

29.76819,77.44121	View	minor issues	high	40	Poor road surface conditions were detected.
29.80384,77.45615	View	poor surface	high	40	Poor road surface conditions were detected.
29.80032,77.45924	View	poor surface	high	40	Poor road surface conditions were detected.
29.80727,77.44747	View	poor surface	high	40	Poor road surface conditions were detected.
29.82385,77.42426	View	minor issues	high	40	Poor road surface conditions were detected.
29.84169,77.39563	View	minor issues	high	40	Poor road surface conditions were detected.
29.85925,77.32924	View	minor issues	high	40	Poor road surface conditions were detected.

VEHICLE-SPECIFIC ROAD QUALITY RECOMMENDATIONS

- * Heavy vehicles: Reduce speed by 20% in areas with road quality scores below 6/10
- * Check tire pressure more frequently when traveling through poor surface areas
- * Increase following distance by 50% in road quality risk zones
- * Plan additional maintenance checks after routes with multiple road quality issues
- * Consider alternative routes for high-value or sensitive cargo in critical condition areas
- * Carry emergency repair kit for tire damage in poor road surface zones

COMPREHENSIVE ENVIRONMENTAL ASSESSMENT

Total Analysis Points	7
Eco-Sensitive Zones	2
Air Quality Risk Areas	0
Weather Hazard Zones	5
Seasonal Risk Areas	0
Primary Risk Level	High
API Sources Used	Open Weather, Visual Crossing, Tomorrow.io, Google Places

Risk Type	GPS Location	Maps Link	Severity	Category	Description
wildlife_sanctuary	29.30456,77.42177	View	critical	ecological	Drive slowly and stay alert.
poor_visibility	29.00995,77.65335	View	high	weather	Reduced visibility conditions - increased accident risk
poor_visibility	29.06129,77.63745	View	high	weather	Reduced visibility conditions - increased accident risk
poor_visibility	29.14419,77.55522	View	high	weather	Reduced visibility conditions - increased accident risk
poor_visibility	29.20165,77.48903	View	high	weather	Reduced visibility conditions - increased accident risk

ENVIRONMENTAL COMPLIANCE & BEST PRACTICES

- * Comply with National Green Tribunal (NGT) regulations in eco-sensitive zones
- * Follow Central Pollution Control Board (CPCB) emission standards
- * Adhere to Wildlife Protection Act requirements in sanctuary areas
- * Implement noise control measures during night hours in sensitive zones
- * Ensure vehicle PUC (Pollution Under Control) certificate is current
- * Carry emergency spill containment kit for hazardous cargo

COMPREHENSIVE EMERGENCY PREPAREDNESS: LOW RISK (Risk Score: 1)

EMERGENCY SERVICES AVAILABILITY ASSESSMENT

Medical Facilities (Hospitals)	20 facilities identified
Law Enforcement (Police)	20 stations identified
Fire & Rescue Services	4 stations identified
Emergency Clinics	20 clinics identified
Pharmacies (24hr)	20 pharmacies identified
Communication Reliability	100%
Coverage Gaps	0 areas
Overall Service Coverage	EXCELLENT

CRITICAL EMERGENCY CONTACT NUMBERS - MEMORIZE OR SAVE

Emergency Service	Contact Number	When to Call	Response Type
National Emergency	112	Any life-threatening situation	Police / Fire / Medical
Police Emergency	100	Crime, accidents, theft	Law Enforcement
Fire Services	101	Fire, rescue, hazardous material incidents	Fire & Rescue Team
Medical Emergency	108	Accidents, health emergencies	Ambulance Service
Highway Patrol	1033	Highway accidents, traffic support	Traffic Police
Tourist Helpline	1363	Tourist-related emergencies or support	Tourist Support
Women Helpline	1091	Women in distress or danger	Women Safety Assistance
Disaster Management	1078	Natural disasters, large-scale emergencies	Disaster Response Team

Emergency Situation Standard Operating Procedure (SOP)

ROAD ACCIDENT PROTOCOL

Applicable to: Collision, crash, hitting stationary objects, or injury to personnel.

Immediate Actions:

- Stop the vehicle safely; engage handbrake, switch on hazard lights.
- Check for injuries; call 108 for ambulance if required.
- Inform control room or transport coordinator (via phone or VHF radio).
- Take photographs of damage, road conditions, and position of vehicles.
- If serious: Inform Police (100) and wait for clearance.
- Record witness contact (if any) and note surrounding conditions.

Driver Must Have:

- First aid kit
- Emergency contact card (Appendix B)
- Accident report form

VECHICLE BREAKDOWN PROTOCOL

Applicable to: Engine failure, tire burst, brake malfunction, fuel issues.

Immediate Actions:

- Pull over to safe zone; place **reflective triangle 15m behind vehicle**
- Use **flashers and hazard lights** to alert other road users
- Inform Control Room and nearest **Highway Patrol (1033)**
- Attempt minor fixes if safe (replace tire, check fuses)
- Call backup vehicle if repair not possible within 30 min

Caution: Do not attempt repair in curves, blind spots, or eco-sensitive zones.

WILDLIFE ENCOUNTER PROTOCOL

Applicable to: Forest fringe, wildlife corridor

Immediate Actions:

- NOT honk, rev engine, or flash headlights
- Stop the vehicle quietly at a safe distance
- Monitor movement through side mirrors; do not exit vehicle
- Inform control room only if delay >15 min
- Take photos only if safe; do not get out

DO NOT:

- Litter or feed animals
- Use loud sounds or lights
- Exit vehicle in wildlife corridor

MEDICAL EMERGENCY PROTOCOL

Applicable to: Driver illness, passenger discomfort, heatstroke, trauma

Immediate Actions:

- Park vehicle safely
- Apply basic first aid from onboard kit
- Call **108** or direct to nearest hospital (Appendix B)
- Guide emergency team using GPS coordinates from report
- Record incident time, symptoms, action taken