JOURNEY RISK MANAGEMENT (JRM) STUDY

Gorakhpur LPG BP TO B B S INDANE GRAMIN

Objective of the JRM Report

This JRM report is designed to ensure compliance with the Central Motor Vehicle Rules, 1989 (CMVR), AIS 140 standards, and the Road Transport Safety Policy (RTSP). It provides a comprehensive risk assessment for the transportation of hazardous materials along specified routes. By integrating these legal frameworks, the report offers a broad strategy for identifying and mitigating route-specific risks.

Regulatory Compliance

The report complies with the Central Motor Vehicles (Eleventh Amendment) Rules, 2022, mandating safe transportation practices for N2 and N3 category vehicles carrying hazardous materials. These rules require detailed route assessments, especially regarding road conditions, speed limits, and risk areas, to ensure safety compliance.

Risk Management Strategy

This report categorizes transportation routes into high-risk and medium-risk areas, with a focus on factors such as sharp turns, accident-prone regions, and elevation changes. The goal is to provide actionable

recommendations to minimize these risks, including speed regulations, driver warnings for hazardous zones, and the option of alternate routes.

Compliance with the Road Transport Safety Policy (RTSP)

The report integrates RTSP provisions, including mandatory driving hours, rest periods, and nighttime driving restrictions. It ensures that drivers follow official guidelines, such as taking prescribed rest breaks and avoiding dangerous road conditions like poor visibility, heavy crowds, or high-traffic areas during peak hours.

Emergency Preparedness and Response

The report highlights the significance of predetermined emergency stops for refueling, rest, and overnight stays. It includes protocols for safe responses to road hazards, alternative routes, and rerouting processes if roads are closed or severe weather arises. This aligns with the RTSP emphasis on driver safety and rapid emergency response.

Environmental Considerations

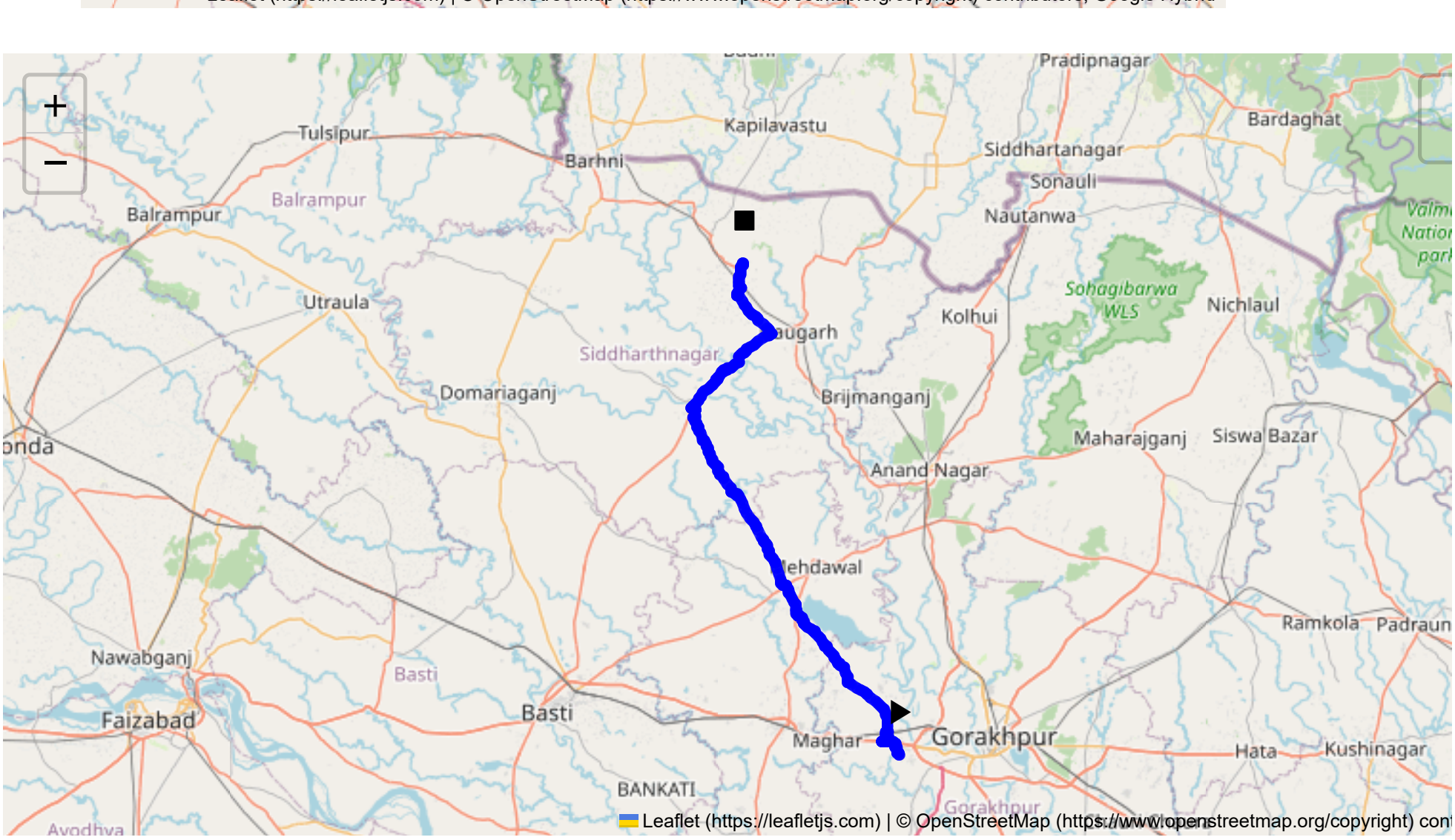
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental impacts during transport.

Journey Risk Mitigation

The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety norms.

Compliance with Government Directives

This report fully adheres to governmental directives regarding hazardous material transportation, implementing mandatory speed limits, nighttime driving restrictions, and comprehensive driver briefings and real-time alerts about route-related risks.



Route Summary:

Total Distance: 92.44 km
Estimated Duration: 2.5 hours
Adjusted Duration (Heavy Vehicle): 3.2 hours
Start: (26.735959, 83.229398)
End: (27.3664, 83.00348)

Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route begins at GIDA Industrial Area Phase 1 in Sahjanwa, traversing through the town of Sahjanwa itself. It then heads southeast via Nandaur in Mahdewa and further through Bansi, finally reaching the destination in Chilhiya on Palta Devi Rd. The route is approximately 92.44 kilometers and typically requires 2.53 hours for heavy vehicles carrying hazardous materials.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a humid subtropical climate. Summers (March to June) can be extremely hot, with temperatures soaring up to 40°C (104°F), which might lead to overheating of vehicles. The monsoon season (July to September) brings heavy rainfall, potentially causing flooding or waterlogging, particularly in lower-lying stretches of the route. Winters (December to February) are mild but can bring fog, reducing visibility, especially in early mornings and late evenings.

3. Analysis of Traffic Patterns

- **Peak Hours**: Morning (8 AM - 10 AM) and evening (5 PM - 7 PM) witness high local traffic, especially near urban areas like Sahjanwa and Bansi.
- **Congestion-Prone Areas**: Major congestion can be expected around market areas and urban settlements in Sahjanwa and Bansi. These areas might also have slower-moving local traffic.

4. Assessment of Road Quality and Infrastructure

Road quality varies along the route:

- **Sahjanwa to Nandaur**: Generally well-maintained, but occasional potholes and uneven surfaces may be encountered.
- **Nandaur to Bansi**: Some rural stretches are narrower, with potential for loose gravel or poorly marked lanes.
- **Bansi to Chilhiya**: Mixed quality, with certain stretches that might require caution due to construction or maintenance works.

5. Suggestions for Alternative Routes for Emergencies

- **Alternative Route 1**: For northbound detours, consider diversions via NH27, a major highway that may offer faster detours during emergencies.
- **Alternative Route 2**: Local roads connecting directly to Gorakhpur could provide ample services and facilities in emergencies.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials requires compliance with national and local regulations, including proper documentation, specific placarding on vehicles, and restricted movement during night hours or high-traffic periods in urban areas.

7. Overview of Historical Incidents

Detailed incident data is limited, but any past heavy vehicle incidents mainly stemmed from road conditions and isolated mechanical failures. Review local news archives or government transportation reports for in-depth records.

8. Environmental Considerations and Sensitive Areas

The route passes through relatively rural and semi-urban areas, with few sensitive ecosystems. However, preservation zones around water bodies or agrarian lands need to be observed for environmental safety when transporting hazardous materials.

9. Analysis of Communication Coverage

Cellular coverage is generally reliable in urban and semi-urban areas, but dead zones may exist in rural stretches, particularly between Nandaur and Bansi.

10. Estimated Emergency Response Times

- **Sahjanwa to Nandaur**: Approximately 20-30 minutes, due to urban proximity.
- **Nandaur to Bansi**: 30-50 minutes, accounting for rural access.
- **Bansi to Chilhiya**: 25-45 minutes, contingent upon road conditions and proximity to local emergency services.

12. Overall Summary of Risk Assessment

In summary, while the route encompasses varied road conditions and infrastructural challenges, awareness of weather impacts, potential congestion, and compliance with transport regulations generally mitigate risks. Ensuring robust logistical and communication plans enhances safety and efficiency for transporting hazardous materials. Regular updates and continuous monitoring are recommended to address any developing issues along the route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
0	Turn	High	26.73746, 83.22938	15 KM/Hr	0.14 km
1	Turn	High	26.73788, 83.22642	15 KM/Hr	0.32 km
2	Turn	Medium	26.73812, 83.22630	30 KM/Hr	0.48 km
3	Turn	High	26.74524, 83.22746	15 KM/Hr	1.14 km
4	Turn	High	26.74654, 83.22390	15 KM/Hr	1.63 km
5	Blind Spot	Blind Spot	26.75126, 83.22476	10 KM/Hr	2.15 km
6	Blind Spot	Blind Spot	26.75353, 83.20457	10 KM/Hr	4.21 km
7	Turn	High	26.75377, 83.20465	15 KM/Hr	4.26 km
8	Turn	Medium	26.75378, 83.21338	30 KM/Hr	5.12 km

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
9	Turn	High	26.75386, 83.21352	15 KM/Hr	5.15 km
10	Turn	Medium	26.75640, 83.21275	30 KM/Hr	5.42 km
11	Blind Spot	Blind Spot	26.76132, 83.21435	10 KM/Hr	5.93 km
12	Turn	High	26.76131, 83.21143	15 KM/Hr	6.29 km
13	Turn	Medium	26.76403, 83.21129	30 KM/Hr	6.62 km
14	Turn	Medium	26.76555, 83.21385	30 KM/Hr	6.86 km
15	Turn	Medium	26.76593, 83.21408	30 KM/Hr	6.96 km
16	Turn	Medium	26.81740, 83.18022	30 KM/Hr	13.84 km
17	Turn	Medium	26.83008, 83.15664	30 KM/Hr	16.69 km
18	Turn	Medium	26.86197, 83.13749	30 KM/Hr	20.70 km
19	Turn	High	26.91597, 83.08449	15 KM/Hr	29.01 km
20	Blind Spot	Blind Spot	26.91433, 83.08351	10 KM/Hr	29.19 km
21	Turn	High	26.91843, 83.08101	15 KM/Hr	29.60 km
22	Turn	Medium	26.92258, 83.08191	30 KM/Hr	30.19 km
23	Turn	High	26.94829, 83.07156	15 KM/Hr	33.22 km
24	Turn	Medium	26.98317, 83.05063	30 KM/Hr	37.50 km
25	Turn	Medium	26.98353, 83.04986	30 KM/Hr	37.91 km
26	Turn	Medium	27.07125, 82.99577	30 KM/Hr	49.05 km
27	Turn	Medium	27.07137, 82.99515	30 KM/Hr	49.19 km
28	Turn	High	27.07059, 82.99365	15 KM/Hr	49.36 km
29	Turn	Medium	27.07376, 82.98855	30 KM/Hr	49.96 km
30	Turn	High	27.16975, 82.93429	15 KM/Hr	62.09 km
31	Turn	High	27.17966, 82.93498	15 KM/Hr	63.19 km
32	Turn	Medium	27.17992, 82.93461	30 KM/Hr	63.25 km
33	Turn	High	27.18005, 82.93461	15 KM/Hr	63.27 km
34	Turn	High	27.18194, 82.93124	15 KM/Hr	63.64 km
35	Turn	Medium	27.18212, 82.93129	30 KM/Hr	63.69 km
36	Turn	Medium	27.18395, 82.93294	30 KM/Hr	63.91 km
37	Turn	Medium	27.18426, 82.93547	30 KM/Hr	64.17 km
38	Turn	High	27.27589, 83.04691	15 KM/Hr	79.74 km
39	Turn	High	27.27614, 83.04693	15 KM/Hr	79.80 km
40	Turn	Medium	27.32578, 82.99699	30 KM/Hr	87.20 km
41	Turn	Medium	27.32795, 82.99703	30 KM/Hr	87.45 km
42	Turn	Medium	27.33513, 83.00069	30 KM/Hr	88.38 km

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
43	Turn	Medium	27.33697, 82.99827	30 KM/Hr	88.62 km
44	Turn	Medium	27.33777, 82.99799	30 KM/Hr	88.79 km
45	Turn	Medium	27.34330, 82.99987	30 KM/Hr	89.32 km
46	Turn	Medium	27.34363, 82.99982	30 KM/Hr	89.50 km
47	Turn	High	27.34500, 82.99867	15 KM/Hr	89.61 km
48	Turn	Medium	27.36132, 83.00136	30 KM/Hr	91.48 km
49	Turn	Medium	27.36390, 83.00348	30 KM/Hr	91.89 km
50	Blind Spot	Blind Spot	27.36608, 83.00428	10 KM/Hr	92.15 km

Route Photos of Risky Spots

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 2.15 km

Coordinates: 26.75126, 83.22476

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 4.21 km

Coordinates: 26.75353, 83.20457

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 4.26 km

Coordinates: 26.75377, 83.20465

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 5.12 km

Coordinates: 26.75378, 83.21338

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 5.15 km

Coordinates: 26.75386, 83.21352

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 5.42 km

Coordinates: 26.75640, 83.21275

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 5.93 km

Coordinates: 26.76132, 83.21435

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 6.29 km

Coordinates: 26.76131, 83.21143

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.62 km

Coordinates: 26.76403, 83.21129

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.86 km

Coordinates: 26.76555, 83.21385

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.96 km

Coordinates: 26.76593, 83.21408

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 13.84 km

Coordinates: 26.81740, 83.18022

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 16.69 km

Coordinates: 26.83008, 83.15664

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 20.70 km

Coordinates: 26.86197, 83.13749

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 29.01 km

Coordinates: 26.91597, 83.08449

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 29.19 km

Coordinates: 26.91433, 83.08351

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 29.60 km

Coordinates: 26.91843, 83.08101

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 30.19 km

Coordinates: 26.92258, 83.08191

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 33.22 km

Coordinates: 26.94829, 83.07156

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 37.50 km

Coordinates: 26.98317, 83.05063

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 37.91 km

Coordinates: 26.98353, 83.04986

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.05 km

Coordinates: 27.07125, 82.99577

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.19 km

Coordinates: 27.07137, 82.99515

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 49.36 km

Coordinates: 27.07059, 82.99365

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.96 km

Coordinates: 27.07376, 82.98855

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 62.09 km

Coordinates: 27.16975, 82.93429

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 63.19 km

Coordinates: 27.17966, 82.93498

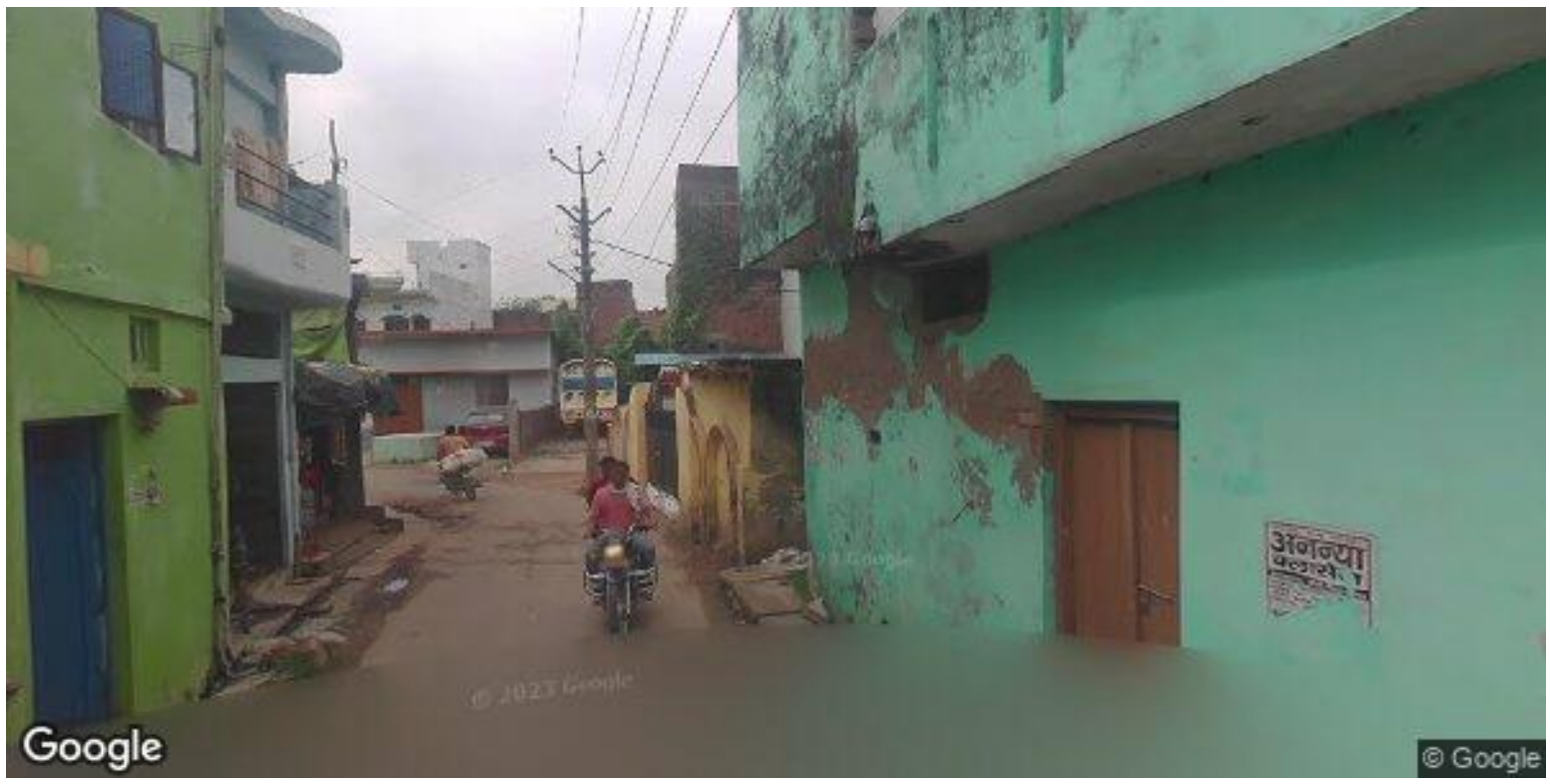
Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 63.25 km

Coordinates: 27.17992, 82.93461



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 63.27 km

Coordinates: 27.18005, 82.93461

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 63.64 km

Coordinates: 27.18194, 82.93124

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 63.91 km

Coordinates: 27.18395, 82.93294

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 64.17 km

Coordinates: 27.18426, 82.93547

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 79.74 km

Coordinates: 27.27589, 83.04691

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 79.80 km

Coordinates: 27.27614, 83.04693

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 87.20 km

Coordinates: 27.32578, 82.99699

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 87.45 km

Coordinates: 27.32795, 82.99703

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 88.38 km

Coordinates: 27.33513, 83.00069

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 88.62 km

Coordinates: 27.33697, 82.99827

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 88.79 km

Coordinates: 27.33777, 82.99799

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 89.32 km

Coordinates: 27.34330, 82.99987

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 89.50 km

Coordinates: 27.34363, 82.99982

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 89.61 km

Coordinates: 27.34500, 82.99867

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 91.48 km

Coordinates: 27.36132, 83.00136

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 91.89 km

Coordinates: 27.36390, 83.00348

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 92.15 km

Coordinates: 27.36608, 83.00428

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