

# **HINDUSTAN PETROLEUM CORPORATION**

Journey Risk Management Division

Powered by Route Analytics Pro - Al Intelligence Platform

# COMPREHENSIVE JOURNEY RISK MANAGEMENT ANALYSIS REPORT

Enhanced with Artificial Intelligence & Multi-API Analysis

## **ROUTE ANALYSIS DETAILS**

Route ID: af7c8826-2d0...

Origin: Unnamed Road, Oil Industry Terminals, Part

Destination: V85H+WR5, Saharanpur Rd, Ambehata Dehat, A

Total Distance: 131 km

Estimated Duration: 2 hours 27 mins

Analysis Date: June 25, 2025 Report Generated: 07:22 PM

ROAD QUALITY ENVIRONMENTAL

TRAFFIC

AI ANALYSIS

VISUAL EVIDENCE

# **COMPREHENSIVE ROUTE OVERVIEW & STATISTICS**

# **ROUTE INFORMATION**

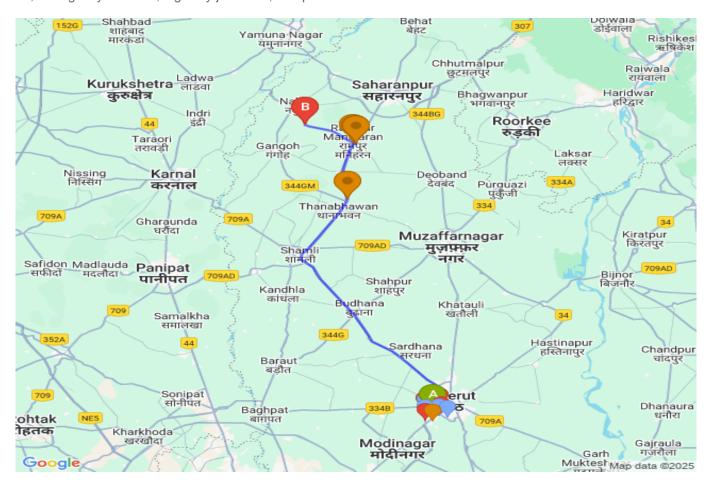
| From Address   | Unnamed Road, Oil Industry Terminals,<br>Partapur, Meerut, Uttar Pradesh   |
|----------------|--|
| To Address     | V85H+WR5, Saharanpur Rd, Ambehata<br>Dehat, Ambheta, Uttar Pradesh 247340, |
| Distance       | 131 km   |
| Duration       | 2 hours 27 mins  |
| Major Highways | NH-344, NH-709   |
| Terrain        | Rural Plains   |

# **ROUTE ANALYSIS STATISTICS**

| Sharp Turns Detected      | 15       |
|---------------------------|----------|
| Critical Turns (>=70 deg) | 7        |
| Points of Interest        | 119      |
| Major Highways            | 2        |
| Highway Length            | 15.08 km |
| Terrain Confidence        | 100.0%   |

#### 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
- T# Critical Sharp Turns
- P Police Stations
- **G** Gas Stations
- \* Highway Junctions

- **B** Route End Point
- **H** Hospitals
- F Fire Stations
- S Schools/Education

# **KEY SAFETY MEASURES & REGULATORY COMPLIANCE**

| Speed Limits        | NH: 60 km/h; Rural: 25-30 km/h  |
|---------------------|---|
| Night Driving       | Prohibited: 00:00-06:00 hrs   |
| Rest Breaks         | Mandatory 15 min every 2 hours;<br>Schedule: 1 breaks of 15 min every 2.0 |
| Vehicle Compliance  | Check brakes, tires, lights, high-speed capability, emergency             |
| Permits & Documents | Carry valid transport permits,<br>Hazardous vehicle license, Highway      |
| VTS                 | VTS device shall be functional (Mandatory for NH routes)                  |

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**

| Туре                       | from<br>Start | from End | Coordinates           | Risk<br>Level | Speed<br>Limit | Driver<br>Action        |
|----------------------------|---------------|----------|-----------------------|---------------|----------------|-------------------------|
| Sharp Turn #1              | 96.4 km       | 14.4 km  | 29.79971,<br>77.46206 | Critical      | 10 km/h        | Stop, check visibility, |
| Sharp Turn #2              | 96.5 km       | 14.1 km  | 29.80005,<br>77.45864 | Critical      | 10 km/h        | Stop, check visibility, |
| Sharp Turn #3              | 96.5 km       | 14.1 km  | 29.80005,<br>77.45864 | Critical      | 10 km/h        | Stop, check visibility, |
| Sharp Turn #4              | 96.7 km       | 14.1 km  | 29.80176,<br>77.45924 | Critical      | 10 km/h        | Stop, check visibility, |
| Sharp Turn #5              | 96.7 km       | 14.1 km  | 29.80176,<br>77.45924 | Critical      | 10 km/h        | Stop, check visibility, |
| Sharp Turn #6              | 97.1 km       | 13.6 km  | 29.80464,<br>77.45467 | Critical      | 10 km/h        | Stop, check visibility, |
| Sharp Turn #7              | 78.1 km       | 28.1 km  | 29.62532,<br>77.43918 | High          | 20 km/h        | Slow down, cautious     |
| Blind Spot #1              | 2.2 km        | 104.4 km | 28.96025,<br>77.63995 | Medium        | 30 km/h        | Use horn,<br>stay alert |
| Blind Spot #2              | 106.1 km      | 0.5 km   | 29.86096,<br>77.33386 | Medium        | 30 km/h        | Use horn,<br>stay alert |
| Wildlife<br>Sanctuary      | 45.7 km       | 62.3 km  | 29.30456,<br>77.42177 | Critical      | Normal         | Follow<br>environmental |
| Communication Dead Zone #1 | 0.0 km        | 106.1 km | 28.94966,<br>77.65908 | High          |                | Use<br>alternative      |
| Communication Dead Zone #2 | 5.3 km        | 100.8 km | 28.99594,<br>77.64593 | High          |                | Use<br>alternative      |
| Poor<br>Visibility         | 0.0 km        | 106.1 km | 28.94966,<br>77.65908 | High          | Normal         | Follow<br>environmental |

## RISK SUMMARY: 13 high-risk zones identified

Critical: 7 | High: 4 | Medium: 2

# **SEASONAL ROAD CONDITIONS & TRAFFIC PATTERNS**

| Season /<br>Condition | Critical Stretches<br>/ Coordinates /                 | Typical Challenges   | Driver Caution   |
|-----------------------|---|--|--|
| Summer                | NH-344 (29.3, 77.5<br>to 29.3, 77.4)                  | High temperatures -> vehicle overheating, tire blowouts        | Pre-check cooling<br>systems, carry extra<br>water                 |
| Summer                | NH-709 (29.4, 77.4 to 29.5, 77.3)                     | High temperatures -> vehicle overheating, tire blowouts        | Pre-check cooling<br>systems, carry extra<br>water                 |
| Summer                | Rural plains<br>section (28.9, 77.7<br>to 29.9, 77.3) | Extreme heat exposure, limited shade, dust storms              | Plan travel during cooler hours, carry sun protection              |
| Monsoon               | NH-344 (29.3, 77.5 to 29.3, 77.4)                     | Waterlogging, reduced visibility, flooding                     | Slow down, use wipers,<br>headlights on, plan for<br>delays        |
| Monsoon               | NH-709 (29.4, 77.4 to 29.5, 77.3)                     | Waterlogging, reduced visibility, flooding                     | Slow down, use wipers,<br>headlights on, plan for<br>delays        |
| Schools               | Dewan Public School<br>International<br>(28.9, 77.7)  | Children crossing,<br>school vehicles,<br>increased pedestrian | Slow down, watch for pedestrian crossings, school timings: 7-9 AM, |
| Schools               | Bhai Joga Singh<br>Public School<br>(28.9, 77.7)      | Children crossing,<br>school vehicles,<br>increased pedestrian | Slow down, watch for pedestrian crossings, school timings: 7-9 AM, |
| Schools               | METRO PUBLIC SCHOOL<br>(28.9, 77.7)                   | Children crossing,<br>school vehicles,<br>increased pedestrian | Slow down, watch for pedestrian crossings, school timings: 7-9 AM, |
| Toll<br>Plazas        | NH-344 - Estimated<br>toll plaza (29.3,<br>77.4)      | Buildup of queues<br>during peak times,<br>payment delays      | Plan breaks before<br>toll, ensure lane<br>discipline, keep exact  |
| Toll<br>Plazas        | NH-709 - Estimated<br>toll plaza (29.4,<br>77.3)      | Buildup of queues<br>during peak times,<br>payment delays      | Plan breaks before toll, ensure lane discipline, keep exact        |

#### **SEASONAL ANALYSIS: 10 conditions identified for route**

Current season: Monsoon. Review relevant conditions above before departure.

# **ENVIRONMENTAL & LOCAL CONSIDERATIONS**

| Eco-sensitive Zone         Pollution Sensitive Area near route section 1         28.9. T7.7. area coc-sensitive area coc-sensitive area coc-sensitive area coc-sensitive area route section 1         Increased wildlife movement, no littering, noise restrictions           Eco-sensitive Zone         Wildlife Sanctuary near route section 2         77.4. NH-344 near eco-sensitive area coc-sensitive area coc-sensitive area.         Increased wildlife movement, no littering, noise restrictions           School Zone         Dewan Public School Public Public School Public School Public School Public School Public School Public School Public Public School Public Public School Public Pu   | Zone / Area  | Location /<br>Stretch     | Coordinates | Located On /<br>Near | Environmental / Local<br>Risk     |
|--|--------------|---------------------------|-------------|----------------------|-----------------------------------|
| Zone Sanctuary near route section 2 77.4 eco-sensitive area movement, no littering, noise restrictions  School Zone Dewan Public School Intermetational 77.7 Pedestrian activity, reduced speed required (25 km/h), school timings  School Zone Bhai Joga Singh Public School 77.7 Pedicare speed required (25 km/h), school timings  School Zone METRO PUBLIC SCHOOL 77.7 Pedestrian activity, reduced speed required (25 km/h), school timings  School Zone PRESIDENCY PUBLIC 28.9, Near NH-344 Pedestrian activity, reduced speed required (25 km/h), school timings  School Zone PRESIDENCY PUBLIC 28.9, Near NH-344 Pedestrian activity, reduced speed required (25 km/h), school timings  Market Area Commercial zone 1 (3 28.9, City centre area, local unpredictable congestion, parking challenges  Market Area Commercial zone 2 (5 29.3, 77.5 area, local unpredictable congestion, parking challenges  Market Area Commercial zone 3 (3 3 29.4, 77.3 area, local unpredictable congestion, parking challenges  Market Area Commercial zone 3 (3 3 29.4, 77.3 area, local unpredictable congestion, parking challenges  Market Area Commercial zone 3 (3 4 29.4, 77.3 area, local unpredictable congestion, parking challenges  |              | Sensitive Area near route |             | eco-sensitive        | movement, no<br>littering, noise  |
| School International  School Zone Bhai Joga Singh Public School Publi    |              | Sanctuary near            | *           | eco-sensitive        | movement, no<br>littering, noise  |
| Public School  Refro Public School  METRO PUBLIC SCHOOL  Reduced Speed required (25 km/h), school timps  School Zone  METRO PUBLIC SCHOOL  Reduced Speed required (25 km/h), school timps  School Zone  PRESIDENCY PUBLIC SCHOOL  Reduced Speed required (25 km/h), school timings  School Zone  PRESIDENCY PUBLIC SCHOOL  Reduced Speed required (25 km/h), school timings  Market Area  Commercial zone 1 (3 77.7  Reduced Speed required (25 km/h), school timings  Market Area  Commercial zone 1 (3 77.7  Reduced Speed required (25 km/h), school timings  Preduced Speed required (25 km/h), school timings  City centre  High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 2 (5 77.5  Reduced Speed required (25 km/h), school timings  City centre  High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 (3 77.3  Reduced Speed required (25 km/h), school timings  City centre  High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 (3 77.3  Reduced Speed required (25 km/h), school timings  Reduced Speed required (25 km/h), school timin | School Zone  | School                    |             | Near NH-344          | reduced speed required (25 km/h), |
| SCHOOL  T7.7  Reduced speed required (25 km/h), school timings  School Zone  PRESIDENCY PUBLIC 28.9, 77.7  Rough a pedestrian activity, reduced speed required (25 km/h), school timings  Market Area  Commercial zone 1 28.9, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 2 29.3, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 2 29.3, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 29.4, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 29.4, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 29.4, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 29.4, City centre High foot traffic, unpredictable congestion, parking challenges   | School Zone  |                           |             | Near NH-344          | reduced speed required (25 km/h), |
| SCHOOL 77.7 reduced speed required (25 km/h), school timings  Market Area Commercial zone 1 (3 77.7 area, local roads congestion, parking challenges  Market Area Commercial zone 2 (5 77.5 area, local unpredictable congestion, parking challenges  Market Area Commercial zone 2 (5 77.5 area, local unpredictable congestion, parking challenges  Market Area Commercial zone 3 (3 77.3 area, local unpredictable congestion, parking challenges  Market Area City centre High foot traffic, unpredictable congestion, parking challenges  Market Area Commercial zone 3 (3 77.3 area, local unpredictable congestion, parking   | School Zone  |                           |             | Near NH-344          | reduced speed required (25 km/h), |
| (3 establishments)  77.7 area, local congestion, parking challenges  Market Area  Commercial zone 2 29.3, City centre High foot traffic, unpredictable congestion, parking challenges  77.5 area, local unpredictable congestion, parking challenges  Market Area  Commercial zone 3 29.4, City centre High foot traffic, unpredictable congestion, parking challenges  Market Area  Commercial zone 3 29.4, City centre High foot traffic, unpredictable congestion, parking challenges  77.3 area, local unpredictable congestion, parking   | School Zone  |                           |             | Near NH-344          | reduced speed required (25 km/h), |
| (5 77.5 area, local unpredictable congestion, parking challenges  Market Area Commercial zone 3 29.4, City centre High foot traffic, (3 77.3 area, local unpredictable establishments) roads congestion, parking challenges  | Market Area  | (3                        | *           | area, local          | unpredictable congestion, parking |
| (3 77.3 area, local unpredictable establishments) roads congestion, parking  | Market Area  | (5                        | ,           | area, local          | unpredictable congestion, parking |
|  | Vlarket Area | (3                        |             | area, local          | unpredictable congestion, parking |

## **ENVIRONMENTAL SUMMARY: 9 zones requiring special attention**

Eco-sensitive Zone: 2 | School Zone: 4 | Market Area: 3

# **NOTES - GENERAL ENVIRONMENTAL & LOCAL DRIVING GUIDELINES FOR PETROL**

| Aspect                                 | Guidelines / Actions   |
|--|--|
| Eco-sensitive<br>Areas                 | Drive slowly, avoid honking unnecessarily, do not stop for breaks or cleaning in these areas.                |
| Waterbody<br>Crossings                 | Inspect for leaks before entering bridges, no refuelling or repairs on or near bridges.                      |
| School & Market<br>Areas               | Maintain speed limits (25-30 km/h), stay alert for children and pedestrians, avoid peak school/market hours. |
| Festivals & Local<br>Events            | Expect road diversions or closures, confirm route with local authorities or control room.                    |
| Littering &<br>Pollution<br>Prevention | Never discard trash or spill fuel; carry spill kits and clean-up materials as per SOP.                       |
| Noise & Cultural<br>Sensitivity        | Avoid honking in populated areas and during religious or cultural gatherings.                                |
| Local Road<br>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 refuelling.             |

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<br>distance, use<br>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:<br>carry water<br>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 iournev               | Eat light, balanced meals to avoid drowsiness and discomfort. Avoid spicy, fried, or heavy foods before and during the trip.                    |
| Get at least 8<br>hours of sleep<br>before starting | A good night's sleep is essential to reduce fatigue and maintain focus. Never start a trip when tired or drowsv.                                |
| Wear<br>weather-appropriate<br>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<br>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.

# SHARP TURNS ANALYSIS WITH DUAL VISUAL EVIDENCE

| Total Sharp Turns Detected        | 15        |
|-----------------------------------|-----------|
| Extreme Danger Turns (>=90 deg)   | 6         |
| High-Risk Blind Spots (80-90 deg) | 0         |
| Sharp Danger Zones (70-80 deg)    | 1         |
| 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       | 15        |

# [OK] VISUAL EVIDENCE STATUS: EXCELLENT VISUAL EVIDENCE (14 images)

## **TURN CLASSIFICATION SYSTEM**

| Angle Range | Classification  | Risk Level | Max Speed | Safety Requirement    |
|-------------|-----------------|------------|-----------|-----------------------|
| >=90 deg    | EXTREME BLIND S | CRITICAL   | 15 km/h   | Full stop may be requ |
| 80-90 de    | HIGH-RISK BLIND | EXTREME    | 20 km/h   | Extreme caution requi |
| 70-80 de    | BLIND SPOT      | HIGH       | 25 km/h   | High caution required |
| 60-70 de    | HIGH-ANGLE TURN | MEDIUM     | 30 km/h   | Moderate caution requ |
| 45-60 de    | SHARP TURN      | LOW        | 40 km/h   | Normal caution requir |

## CRITICAL TURNS WITH DUAL VISUAL EVIDENCE ANALYSIS

| CRITICAL TURN #1: 180.0 deg - EXTREME BLIND SPOT - CRITICAL RISK |   |  |
|--|---|--|
| GPS Coordinates  | 29.799710, 77.462060                      |  |
| 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:

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                      |  |
| 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

| CRITICAL TURN #3: 159.6 deg - EXTREME BLIND SPOT - CRITICAL RISK |   |  |
|--|---|--|
| GPS Coordinates  | 29.800050, 77.458640                      |  |
| 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                      |  |
| 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

| CRITICAL TURN #5: 113.0 deg - EXTREME BLIND SPOT - CRITICAL RISK |   |  |
|--|---|--|
| GPS Coordinates  | 29.801760, 77.459240                      |  |
| 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

| CRITICAL TURN #6: 97.4 deg - EXTREME BLIND SPOT - CRITICAL RISK |   |  |
|---|---|--|
| GPS Coordinates   | 29.804640, 77.454670                      |  |
| 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:

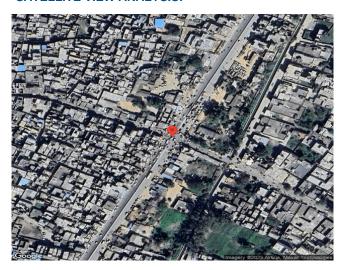
\* Turn angle: 97.4 degrees

\* 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

| CRITICAL TURN #7: 75.7 deg - BLIND SPOT - HIGH RISK |   |  |
|---|---|--|
| GPS Coordinates                                     | 29.625320, 77.439180                      |  |
| 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

| CRITICAL TURN #8: 68.3 deg - HIGH-ANGLE TURN - MEDIUM RISK |   |  |
|--|---|--|
| GPS Coordinates  | 28.960250, 77.639950                      |  |
| 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   | 0 images available                        |  |
| Satellite Images   | 0 images available                        |  |
| Total Visual Evidence                                      | 0 images for analysis                     |  |

No visual evidence available for Turn #8

Images may be available at nearby coordinates: 28.9602, 77.6399

# **COMPREHENSIVE POINTS OF INTEREST ANALYSIS**

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

**SERVICE AVAILABILITY: EXCELLENT SERVICE COVERAGE (100/100)** 

# MEDICAL FACILITIES - Emergency Healthcare Services (25 found) - CRITICAL

| #  | Facility Name      | Location/Address      | Distance | Notes    |
|----|--------------------|-----------------------|----------|----------|
| 1  | Sanjeevani Yoga An | Unnamed Road, Surya P | Along ro | Emergenc |
| 2  | Chhatrapati Shivaj | Swami Vivekanand Subh | Along ro | Emergenc |
| 3  | Dr Lal PathLabs -  | Shop No 17, Khana Pla | Along ro | Emergenc |
| 4  | Kalka Dental Colle | near Partapur Flyover | Along ro | Emergenc |
| 5  | Davki Nandan Hospi | Devkinandan hospital, | Along ro | Emergenc |
| 6  | kailashi super spe | C-2 Shardhapuri Phase | Along ro | Emergenc |
| 7  | Hans Multispeciali | 512, Sardhana Road, O | Along ro | Emergenc |
| 8  | Prakash Hospital   | 1/108, Dantal Jatoli  | Along ro | Emergenc |
| 9  | Omnibus Healthcare | 1H, NH58, Ansal City, | Along ro | Emergenc |
| 10 | G.M. Modi Hospital | 3P75+J72, Modipuram,  | Along ro | Emergenc |
| 11 | Government Hospita | 4GMR+XV2              | Along ro | Emergenc |
| 12 | Community health c | 4GMR+QWG, Meerut      | Along ro | Emergenc |
| 13 | medical store      | 4GWP+9HQ, Dahar       | Along ro | Emergenc |
| 14 | Aadi Medical Store | Jasar Sultannagar     | Along ro | Emergenc |
| 15 | Panwar Medical Sto | 5G49+MVV, Gotka       | Along ro | Emergenc |
| 16 | Seva Charitable Ho | Muzaffarnagar Road, p | Along ro | Emergenc |
| 17 | life line clinic   | 2, Budhana            | Along ro | Emergenc |
| 18 | Dr aatma ram eye h | Baraut Road, Budhana  | Along ro | Emergenc |
| 19 | Rafikan Physio Cli | satheri road, Budhana | Along ro | Emergenc |
| 20 | Ayushman arogye ma | 6FJP+C6R, Kurthal     | Along ro | Emergenc |
| 21 | Get Well Hospital  | Karnal - Shamli Road, | Along ro | Emergenc |
| 22 | Ayushman Arogya Ma | C83X+279, Kabraut     | Along ro | Emergenc |
| 23 | bansal hospital    | C83Q+V9C, Jhal        | Along ro | Emergenc |
| 24 | Ayushman arogya ma | C83P+4PW, Jhal        | Along ro | Emergenc |
| 25 | Arvind I owner     | C9F9+XQJ, Kudana      | Along ro | Emergenc |
|    |                    |                       |          |          |

# LAW ENFORCEMENT - Security & Emergency Response (18 found) - CRITICAL

| #  | Facility Name      | Location/Address      | Distance | Notes |
|----|--------------------|-----------------------|----------|-------|
| 1  | Nauchandi Police S | Mohsin Bagh, Manzoor  | Along ro |       |
| 2  | Shatabdi Nagar Pol | WMPG+W37, Shatabdi Na | Along ro |       |
| 3  | Police Choki Shubh | XJ5Q+9R6, NH58, Meeru | Along ro |       |
| 4  | Pari Chowk         | WJPR+VG3, Pari Chowk, | Along ro |       |
| 5  | Police Choki VedVy | XJ7R+37V, NH58, Ved V | Along ro |       |
| 6  | Police chawki      | 2MMF+C6W, Unnamed Roa | Along ro |       |
| 7  | Police Station, Ka | B30 Sardhana Road, Ka | Along ro |       |
| 8  | Police Chowki kasb | 1/126, Shradha Puri R | Along ro |       |
| 9  | Police Choki       | 2PP4+QH4, Krishna Nag | Along ro |       |
| 10 | Police post Modipu | Bus Station, 2PX4+JVG | Along ro |       |
| 11 | Police check post  | 4HP8+GG5, Karnal - Me | Along ro |       |
| 12 | Police Station Sar | 4GMR+54G              | Along ro |       |
| 13 | Diwan ji           | 4GR9+GX, Jasar Sultan | Along ro |       |
| 14 | Police Station     | 7FR9+29Q, Budhana     | Along ro |       |
| 15 | Bai wala police st | 7F54+GM5, Budhana Roa | Along ro |       |
| 16 | Police chunki      | 7CMP+WW3, Vigyana     | Along ro |       |
| 17 | ????? ???? ??????  | 7FRG+6H8, MDR 22W, Bu | Along ro |       |
| 18 | Police Chowki Lank | 99F9+GCP, National Hi | Along ro |       |

# FIRE & RESCUE - Emergency Response Services (1 found) - CRITICAL

| # | Facility Name      | Location/Address      | Distance | Notes |  |
|---|--------------------|-----------------------|----------|-------|--|
| 1 | Fire Station Parta | WMC5+X9P, Sector 2, M | Along ro |       |  |

# FUEL STATIONS - Vehicle Refueling Points (25 found) - ESSENTIAL

| #  | Facility Name      | Location/Address      | Distance | Notes |
|----|--------------------|-----------------------|----------|-------|
| 1  | IndianOil          | Rithani, Delhi - Meer | Along ro | Fuel  |
| 2  | cng pump meerut    | WMJ5+6X6, Block 4A, S | Along ro | Fuel  |
| 3  | Hindustan Petroleu | Ground Floor, Crossin | Along ro | Fuel  |
| 4  | Allen Oil          | WMG5+4FP, Sector 2, M | Along ro | Fuel  |
| 5  | Raj Service Statio | Bhoor Baral, NH 58, M | Along ro | Fuel  |
| 6  | IndianOil          | Sardhana Road, Kanker | Along ro | Fuel  |
| 7  | Nayara Filling Sta | 279/1, Shradha Puri R | Along ro | Fuel  |
| 8  | IndianOil          | Ground Floor,NH 58, H | Along ro | Fuel  |
| 9  | IndianOil          | Roorkee Road, Vivek V | Along ro | Fuel  |
| 10 | IndianOil          | Ground Floor, Roorkee | Along ro | Fuel  |
| 11 | RDML Energy Servic | Bhuni Crossing Binoli | Along ro | Fuel  |
| 12 | Petrol Pump        | Meerut                | Along ro | Fuel  |
| 13 | Shiv Kailash Fuel  | Meerut Karnal, Nation | Along ro | Fuel  |
| 14 | Hindustan Petroleu | Khasra No 29 NH 709A, | Along ro | Fuel  |
| 15 | IndianOil          | Ground Floor, Julhera | Along ro | Fuel  |
| 16 | Hindustan Petroleu | Ground Floor, Baraut  | Along ro | Fuel  |
| 17 | Hp Petrol Pump - M | Budhana Bagar         | Along ro | Fuel  |
| 18 | IndianOil          | Ground Floor, Budhana | Along ro | Fuel  |
| 19 | Shaheed Rizwan gas | 7FM5+8FG, Budhana Bag | Along ro | Fuel  |
| 20 | Manya Garg         | Budhana-Muzaffarnagar | Along ro | Fuel  |
| 21 | IndianOil          | Ground Floor, Shamli  | Along ro | Fuel  |
| 22 | HP Petrol Pump - G | C84X+9WF, Kabraut     | Along ro | Fuel  |
| 23 | My Eco Energy      | India                 | Along ro | Fuel  |
| 24 | HPCL Petrol Pump-  | NH709A, Meerut, to, K | Along ro | Fuel  |
| 25 | BPCL petrol pump M | Kudana Road, Shamli   | Along ro | Fuel  |

# EDUCATIONAL INSTITUTIONS - Speed Limit Zones (40 km/h) (25 found) - AWARENESS

| #  | Facility Name      | Location/Address      | Distance | Notes   |
|----|--------------------|-----------------------|----------|---------|
| 1  | Dewan Public Schoo | 143, Delhi Road, Phas | Along ro | 40 km/h |
| 2  | Bhai Joga Singh Pu | WMXM+H76, Surya Palac | Along ro | 40 km/h |
| 3  | METRO PUBLIC SCHOO | Shatabdi Nagar, Ritha | Along ro | 40 km/h |
| 4  | PRESIDENCY PUBLIC  | WMPF+Q99, Delhi Road, | Along ro | 40 km/h |
| 5  | SHEMROCK Smart Lea | Pocket B, NS-2, Shata | Along ro | 40 km/h |
| 6  | St. Francis' Conve | Sardhana Road, Kanker | Along ro | 40 km/h |
| 7  | St Mary's Academy  | 2M4X+H44, Cariappa Rd | Along ro | 40 km/h |
| 8  | K.D. International | National Highway 58,  | Along ro | 40 km/h |
| 9  | J.P. International | opposite grand opera, | Along ro | 40 km/h |
| 10 | American Kidz Play | Ark city D Block, Lax | Along ro | 40 km/h |
| 11 | J.N.Public School  | 5GGW+WXW, Meerut      | Along ro | 40 km/h |
| 12 | Chaudhary Amar Sin | 4HQ6+VMQ, Gotka       | Along ro | 40 km/h |
| 13 | Kadam Public Schoo | Bhooni Chauraha, Sham | Along ro | 40 km/h |
| 14 | Guljaridrishi      | 4HP8+GG3, Road, Ranch | Along ro | 40 km/h |
| 15 | saraswati shishu m | 4GWP+HM9, Dahar       | Along ro | 40 km/h |
| 16 | Balwanti Devi Kany | Baraut, Budhana Road, | Along ro | 40 km/h |
| 17 | Shaheed Rizwan Tya | 7CFV+CGF, State Highw | Along ro | 40 km/h |
| 18 | Maples Academy     | 7CPV+2C2, Kandhla - B | Along ro | 40 km/h |
| 19 | RASHTRIYA INTER CO | 7FQ9+4F3, teacher col | Along ro | 40 km/h |
| 20 | Indian Public Scho | 7CJ7+WM3, Jaula       | Along ro | 40 km/h |
| 21 | Vedantam Public Sc | Kudana Main Road, Jam | Along ro | 40 km/h |
| 22 | BrainZone Junior H | Karnal - Meerut Road, | Along ro | 40 km/h |
| 23 | KVM High School Ka | C942+XFG, Karnal - Me | Along ro | 40 km/h |
| 24 | UPS BARLA JAT COMP | C89X+RXW, Barla Jatt  | Along ro | 40 km/h |
| 25 | Sahib,s home       | C83Q+8WP, Jhal        | Along ro | 40 km/h |

# FOOD & REST - Meal Stops & Driver Rest Areas (25 found) - CONVENIENCE

| #  | Facility Name      | Location/Address      | Distance                       | Notes |
|----|--------------------|-----------------------|--------------------------------|-------|
| 1  | Hotel Bravura Gold | Delhi Roorkee, Bypass | Along ro                       |       |
| 2  | CROWN Hotel & Rest | Ved Vyas Puri -Phase  | Along ro                       |       |
| 3  | Domino's Pizza   S | Shop No. 7A, Upper Gr | Along ro                       |       |
| 4  | KFC                | Sports Goods Complex, | Along ro                       |       |
| 5  | SF Food Pure Veg P | 3rd Floor, Food Court | Along ro                       |       |
| 6  | Biggies Restaurant | NH-58, NH58, Meerut   | Along ro                       |       |
| 7  | Meera's Bistro Amo | 2MF8+M9, Kanker Khera | Along ro                       |       |
| 8  | Anupam Fast Food C | 2PX4+HRP, Meerut Bypa | Along ro                       |       |
| 9  | Aangan restaurant  | 160, opposite Hotel D | Along ro                       |       |
| 10 | Veera deluxe Resta | 2MQ8+9Q5, Sardhana By | Along ro                       |       |
| 11 | Sunny restaurant   | 4HQ7+R7X, Bhuni       | Along ro                       |       |
| 12 | Fauji Restaurant & | 4HP8+83G, Bhuni Chowk | Along ro                       |       |
| 13 | CHAUDHARY DHABA    | 4HP9+XJJ, Sardhana -  | Along ro                       |       |
| 14 | Akki fast food     | India                 | Along ro                       |       |
| 15 | Green Vatika Resta | 4HQC+5GH, Sardhana -  | Along ro                       |       |
| 16 | Ashok Maggie Point | Ashok Maggie Point, B | Along ro                       |       |
| 17 | Mahadev Maggie Poi | Karnal - Meerut Road, | Along ro                       |       |
| 18 | Sadda Adda         | Baiwala chowk, Budhan | Along ro                       |       |
| 19 | VINAYAK ENTERPRISE | near Baiwala, Baraut  | Along ro                       |       |
| 20 | Madhav Dhaba No.   | India                 | Along ro                       |       |
| 21 | Mid-Way Point Fami | NH 709A, Karnal - Mee | Along ro                       |       |
| 22 | Amritsari Truck Dh | C87W+F9F, Shamli      | Along ro                       |       |
| 23 | Highway family dha | C87W+R5G, Barla Jatt  | Along ro                       |       |
| 24 | Shiva pure vegetar | Village and post, Kab | Village and post, Kab Along ro |       |
| 25 | hotel midway guest | C82X+W83, Kabraut     | C82X+W83, Kabraut Along ro     |       |

|   | L SERVICE |  |  |
|---|-----------|--|--|
| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | CLDVII    |  |  |
| 1.RIII.AI                               | SERVILE   |  |  |
|   |           |  |  |

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

# **COMPREHENSIVE NETWORK COVERAGE ANALYSIS**

| 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      |

## **NETWORK RELIABILITY: MODERATE (57.0/100)**

#### 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%   | Attentio |
| Good Signal (3-4 bar | 4            | 20.0%   | Good     |
| Excellent Signal (4- | 3            | 15.0%   | Good     |

# **CRITICAL COMMUNICATION PROBLEMS (7 areas)**

## **DEAD ZONES - NO CELLULAR SERVICE (3 locations):**

| Zone # | GPS Coordinates  | Impact Level | Recommendation               |
|--------|------------------|--------------|------------------------------|
| 1      | 28.9497, 77.6591 | CRITICAL     | Use satellite phone or emerg |

| 2 | 28.9959, 77.6459 | CRITICAL | Use satellite phone or emerg |
|---|------------------|----------|------------------------------|
| 3 | 29.7682, 77.4412 | CRITICAL | Use satellite phone or emerg |

### **POOR COVERAGE AREAS (4 locations):**

| Area # | GPS Coordinates  | Signal Level | Recommendation               |
|--------|------------------|--------------|------------------------------|
| 1      | 29.1456, 77.5534 | WEAK         | Download offline maps, carry |
| 2      | 29.1900, 77.4955 | WEAK         | Download offline maps, carry |
| 3      | 29.8073, 77.4475 | WEAK         | Download offline maps, carry |
| 4      | 29.8417, 77.3956 | WEAK         | Download offline maps, carry |

#### 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 route

# **COMPREHENSIVE WEATHER CONDITIONS ANALYSIS**

| Weather Analysis Points     | 10                       |
|-----------------------------|--------------------------|
| Average Temperature         | 32.7 deg C               |
| Temperature Range           | 32.1 deg C to 33.5 deg C |
| Average Humidity            | 52.1%                    |
| Average Wind Speed          | 2.9 km/h                 |
| Weather Conditions Detected | 2 different types        |
| Weather Risk Assessment     | LOW                      |

# TEMPERATURE STATUS: MODERATE TEMPERATURE CONDITIONS (32.7 deg C)

#### **WEATHER CONDITIONS BREAKDOWN**

| Weather Condition | Frequency | Route % | Risk Level | Driver Impact             |
|-------------------|-----------|---------|------------|---------------------------|
| Clouds            | 7         | 70.0%   | MODERATE   | Reduced visibility, lower |
| Clear             | 3         | 30.0%   | LOW        | Good driving conditions   |

#### WEATHER-BASED VEHICLE PREPARATION

- \* Standard vehicle maintenance check recommended
- \* Ensure all fluid levels are adequate
- \* Check tire condition and pressure
- \* Verify all lights are functioning properly

# **COMPREHENSIVE REGULATORY COMPLIANCE ANALYSIS**

# [!] COMPLIANCE STATUS: NEEDS ATTENTION (Score: 70/100)

## **VEHICLE & ROUTE COMPLIANCE DETAILS**

| Vehicle Type                  | Heavy Goods Vehicle                                |
|-------------------------------|--|
| Vehicle Category              | Heavy Goods Vehicle                                |
| Vehicle Weight Classification | 18,000 kg  |
| AIS-140 GPS Tracking Required | YES (Mandatory)                                    |
| Route Origin                  | Unnamed Road, Oil Industry Terminals, Partapur, Me |
| Route Destination             | V85H+WR5, Saharanpur Rd, Ambehata Dehat, Ambheta,  |
| 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 Licens | REQUIRED          | Verify license category matc |
| Vehicle Registration | REQUIRED          | Ensure current registration  |
| Vehicle Insurance    | REQUIRED          | Valid comprehensive insuranc |
| Route Permits        | CONDITIONAL       | Required for interstate/heav |
| AIS-140 GPS Device   | REQUIRED          | Install certified GPS tracki |
| Driving Time Limits  | REQUIRED          | Maximum 10 hours continuous  |
| Vehicle Fitness Cert | REQUIRED          | Valid pollution and fitness  |
| Driver Medical Certi | REQUIRED          | Valid medical fitness certif |

# **COMPLIANCE ISSUES REQUIRING IMMEDIATE ATTENTION (2)**

- 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 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**

| Data Source                  | Google Elevation API (Live Data)         |
|------------------------------|--|
| Total Analysis Points        | 20 coordinates                           |
| Minimum Elevation            | 244.9 meters above sea level             |
| Maximum Elevation            | 284.0 meters above sea level             |
| Average Elevation            | 264.0 meters above sea level             |
| Total Elevation Range        | 39.1 meters                              |
| Terrain Classification       | PLAINS                                   |
| Driving Difficulty Level     | LOW                                      |
| Fuel Consumption Impact      | LOW - Minimal impact on fuel consumption |
| Significant Changes Detected | 0 elevation changes > 50m                |

## **TERRAIN ASSESSMENT: PLAINS TERRAIN - EASY CONDITIONS**

#### **ELEVATION-BASED DRIVING CHALLENGES**

- \* Minimal elevation changes with flat terrain
- \* Normal fuel consumption expected
- \* Standard vehicle performance throughout
- \* No significant gradient-related challenges

#### **ELEVATION-SPECIFIC VEHICLE PREPARATION**

- \* Standard vehicle maintenance check sufficient
- \* Normal fuel planning adequate
- \* Standard tire and brake inspection

#### **FUEL CONSUMPTION IMPACT ANALYSIS**

\* Normal fuel consumption expected

- \* Standard fuel planning adequate
- \* Total ascent sections identified: 0
- \* Total descent sections identified: 0

# **COMPREHENSIVE TRAFFIC ANALYSIS**

| 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 route |

# TRAFFIC STATUS: EXCELLENT TRAFFIC CONDITIONS (97.5/100)

#### 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**

| 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, mapbox |
| Analysis Confidence          | Medium               |
| Overall Road Quality Score   | 3.8/10               |

# **ROAD QUALITY STATUS: POOR ROAD CONDITIONS (3.8/10)**

## **IDENTIFIED ROAD QUALITY ISSUES (21 locations)**

| Location (GPS) | Issue Type  | Severity | Speed Limit | Description           |
|----------------|-------------|----------|-------------|-----------------------|
| 28.9497, 77.6  | Critical Co | Critical | 30 km/h     | Critical road conditi |
| 28.9959, 77.6  | Poor Surfac | Critical | 30 km/h     | Critical road conditi |
| 29.0382, 77.6  | Minor Issue | High     | 40 km/h     | Poor road surface con |
| 29.0892, 77.6  | Minor Issue | High     | 40 km/h     | Poor road surface con |
| 29.1456, 77.5  | Poor Surfac | High     | 40 km/h     | Poor road surface con |
| 29.1900, 77.4  | Minor Issue | High     | 40 km/h     | Poor road surface con |
| 29.2587, 77.4  | Minor Issue | High     | 40 km/h     | Poor road surface con |
| 29.3313, 77.4  | Poor Surfac | High     | 40 km/h     | Poor road surface con |
| 29.4109, 77.3  | Poor Surfac | High     | 40 km/h     | Poor road surface con |
| 29.4514, 77.3  | Poor Surfac | High     | 40 km/h     | Poor road surface con |

#### **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 RISK ASSESSMENT**

| Total Analysis Points       | 7  |
|-----------------------------|--|
| Eco-Sensitive Zones         | 2  |
| Air Quality Risk Areas      | 0  |
| Weather Hazard Zones        | 5  |
| Seasonal Risk Areas         | 0  |
| Overall Environmental Score | 3.0/10   |
| Primary Risk Level          | High   |
| API Sources Used            | OpenWeather, Visual Crossing, Tomorrow.io, Google Places |

# **ENVIRONMENTAL STATUS: CRITICAL ENVIRONMENTAL RISKS (3.0/10)**

## **ENVIRONMENTAL RISKS IDENTIFIED (7 locations)**

| Risk Type   | GPS Location  | Severity | Category | Description           |
|-------------|---------------|----------|----------|-----------------------|
| Pollution S | 28.9497, 77.6 | Medium   | Ecologic |                       |
| Wildlife Sa | 29.3046, 77.4 | Critical | Ecologic |                       |
| Poor Visibi | 28.9497, 77.6 | High     | Weather  | Reduced visibility co |
| Poor Visibi | 29.0099, 77.6 | High     | Weather  | Reduced visibility co |
| Poor Visibi | 29.0613, 77.6 | High     | Weather  | Reduced visibility co |
| Poor Visibi | 29.1442, 77.5 | High     | Weather  | Reduced visibility co |
| Poor Visibi | 29.2017, 77.4 | High     | Weather  | Reduced visibility co |

# **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 ANALYSIS**

# K] EMERGENCY PREPAREDNESS: EXCELLENT PREPAREDNESS (Score: 100/10

## **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 Emerge   | 112            | Any life-threateni | Police/Fire/Medica |
| Police Emergenc   | 100            | Crime, accidents,  | Law enforcement    |
| Fire Services     | 101            | Fire, rescue, hazm | Fire & rescue team |
| Medical Emergen   | 108            | Medical emergencie | Ambulance service  |
| Highway Patrol    | 1033           | Highway accidents, | Traffic police     |
| Tourist Helplin   | 1363           | Tourist emergencie | Tourist support    |
| Women Helpline    | 1091           | Women in distress, | Women safety       |
| Disaster Manage   | 1078           | Natural disasters, | Disaster response  |

## **EMERGENCY FACILITIES ALONG ROUTE WITH CONTACT DETAILS**

## **MEDICAL FACILITIES (40 identified):**

| #  | Facility Name    | Address          | Phone Number  | Distance   |
|----|------------------|------------------|---------------|------------|
| 1  | G.M. Modi Hospit | 3P75+J72, Modipu | 0121 257 5597 | Along rout |
| 2  | Jindal Hospital  | Eves Crossing, H | 0121 400 0444 | Along rout |
| 3  | Siddhi Vinayaka  | Opp. Medical Col | 092580 63686  | Along rout |
| 4  | Eye Hospital Nur | Meerut, K-1252,  | 0121 276 0991 | Along rout |
| 5  | Kalka Dental Col | By Pass, near Pa | 093191 80111  | Along rout |
| 6  | Meerut Kidney Ho | Surya Nagar, Pra | 0121 267 2022 | Along rout |
| 7  | PGI              | 2P25+QVG, Medha  |               | Along rout |
| 8  | Madhu Nursing Ho | Nai Sarak, Secto | 091051 07070  | Along rout |
| 9  | Meerut           | Meerut, Uttar Pr |               | Along rout |
| 10 | Krome            | Delhi Rd, opposi | 075002 44525  | Along rout |

## **POLICE STATIONS (20 identified):**

| # | Police Station   | Address          | Phone Number  | Distance   |
|---|------------------|------------------|---------------|------------|
| 1 | Nauchandi Police | Mohsin Bagh, Man | 073472 59199  | Along rout |
| 2 | Police Chowki L- | near, Budhana Rd | 094577 53092  | Along rout |
| 3 | Lalkurti Police  | Mall Road, 2P35+ | 0121 264 2610 | Along rout |
| 4 | HP Petrol Pump   | XP7R+CPP, Ramgar |               | Along rout |
| 5 | Shatabdi Nagar P | WMPG+W37, Shatab |               | Along rout |
| 6 | Police Choki Shu | XJ5Q+9R6, NH58,  |               | Along rout |
| 7 | Pari Chowk       | Pari Chowk, NRI  |               | Along rout |
| 8 | Police Choki Ved | XJ7R+37V, NH58,  |               | Along rout |

## FIRE STATIONS (4 identified):

| # Fire Station Address Phone Number |
|-------------------------------------|
|-------------------------------------|

| 1 | Fire Station Par | WMC5+X9P, Sector | Along rout |
|---|------------------|------------------|------------|
| 2 | Fire station pol | 693, Subhash Nag | Along rout |
| 3 | Police fire stat | 7GQ2+PP5, Budhan | Along rout |
| 4 | Fire Station Sha | C8W6+8Q6, Shamli | Along rout |

#### 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 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