ANEJA RESEARCH FOUNDATION
Bareilly, Uttar Pradesh, India | Est. 2026

Why Does Bareilly Choke?

A Systemic & Field-Evidence Analysis of Urban Traffic Failure

Focus Junction: Prem Nagar Chauraha, Bareilly

Report Type	City	Researcher	Field Date
Hybrid (Macro + Micro)	**Bareilly, U.P.**	**Chanpreet Singh Aneja**	**30 March 2026**

KEY FIELD FINDINGS — PREM NAGAR CHAURAHA

98 sec	~25 veh	NO	30–40	NONE
Avg Red Phase	Queue at Red	Queue Cleared?	Informal Pedestrians	Enforcement Sighted

Case Study #1 | March 2026

"Problems are symptoms. Systems are the disease. Fix the system, cure the problem."
— ARF Research Philosophy

Executive Summary

Based on field observations conducted at Prem Nagar Chauraha, Bareilly on 30 March 2026, ARF identifies a 4-arm signalised junction that is operating beyond its designed throughput capacity during evening peak hours. The junction serves as a convergence point for four major corridors — DD Puram, Model Town, Civil Lines, and Nainital Road — and is surrounded by a high-density mixed-use environment including medical facilities, educational institutions, retail, and places of worship.

Three signal cycles were measured, averaging 98 seconds of red phase. A queue of approximately 25 vehicles formed at each red light. Critically, this queue did not clear within the green phase — confirming that the junction is technically over capacity. Field photographs document active red-light non-compliance, zero enforcement presence, e-rickshaw lane indiscipline, vendor encroachment on the carriageway, and sustained informal pedestrian crossing activity throughout the observation window.

These micro-level findings are not isolated to Prem Nagar Chauraha. They are the ground-level expression of four city-wide systemic failures that ARF identifies across Bareilly: inadequate road design inherited from a smaller-city era, normalised traffic violations produced by a zero-consequence enforcement environment, a policy framework that exists on paper but lacks implementation accountability, and an absent formal public transport network that forces car and two-wheeler dependency onto roads that cannot absorb the load.

> ***“Prem Nagar Chauraha is not a uniquely broken junction. It is a perfectly normal Bareilly junction — and that is precisely the problem.”***

ARF's recommendations are structured at two levels: junction-specific interventions at Prem Nagar Chauraha that can begin immediately at low cost, and city-wide systemic reforms that address the root causes rather than the symptoms. Both levels are required. Treating the junction without fixing the system will produce temporary relief. Reforming the system without fixing the junction leaves citizens without immediate relief.

Key Findings at a Glance

#	Finding	Severity	Category
F1	Junction queue does not clear within green phase — over capacity confirmed	CRITICAL	Throughput
F2	Average red phase of 98 seconds drives red-light non-compliance	HIGH	Signal Design
F3	Zero enforcement presence during evening peak observation window	HIGH	Enforcement
F4	E-rickshaws = 38% of flow, operating without stops, routes, or regulation	HIGH	IPT
F5	30–40 informal pedestrian crossings in 10 minutes — zero infrastructure	HIGH	Pedestrians
F6	Flyover exit 150–250m upstream forces ramp-merge into signalised junction	MEDIUM	Road Design
F7	Vendor and two-wheeler encroachment confirmed on carriageway edge	MEDIUM	Encroachment

Methodology — The ARF Research Framework

ARF operates on a single foundational belief: that urban problems are not random events. They are the predictable outputs of systems. To study them rigorously, ARF uses a structured methodology that combines macro-level systemic analysis with micro-level field evidence. This report is the first application of that methodology.

The ARF Method

🔍 OBSERVE	Identify a real-world urban problem through direct experience — not from a textbook or secondary account. The problem must be something a citizen encounters. At the macro level, this means identifying city-wide patterns. At the micro level, it means going to a specific location and watching.
🔗 TRACE	Map the system behind the problem. Who designed it? What incentives exist for each actor? Where does it break down? The goal is not to describe the problem but to understand its upstream causes — the decisions, policies, and infrastructure choices that made the problem inevitable.
📊 ANALYSE	Apply data to the traced system. At the macro level, this includes urban planning literature, government project records, and policy documents. At the micro level, this means original field measurement: signal timing, vehicle counts, queue lengths, conflict mapping, and photographic documentation.
📋 PRESCRIBE	Write clear, realistic, implementable recommendations. ARF prescriptions are always layered — from low-cost immediate fixes to medium-term interventions to long-term structural reforms. Recommendations must be politically feasible, not merely theoretically optimal.

Hybrid (Macro + Micro) Design

This report uses a two-level research design. The macro level examines Bareilly as a whole — its road network, enforcement apparatus, transport policy, and urban growth pattern. The micro level focuses on a single junction — Prem Nagar Chauraha — as a case-within-a-case. The junction is treated as a proof point for the city-level analysis: every systemic failure identified at the macro level is expected to manifest observably at the micro level.

This design allows ARF to move between the general and the specific — from city policy to a single red light — and to show that the two scales are not separate phenomena but the same phenomenon at different resolutions.

Data Collection Protocol

Method	Description	Used In This Report
Signal Timing	Manual stopwatch measurement of red phase duration across ≥3 consecutive cycles	Yes — 3 cycles measured
Traffic Composition Count	Visual count of vehicle types crossing observation point in a fixed 5-minute window	Yes — 5-min count conducted
Queue Length Estimation	Visual count of vehicles queued at red at peak of each cycle	Yes — ~25 vehicles
Queue Clearance Test	Observation of whether queued vehicles fully clear during green phase	Yes — not cleared, confirmed
Conflict Mapping	Structured observation of violation types, pedestrian behaviour, encroachment	Yes — 7 conflicts mapped
Photographic Documentation	Timestamped field photographs of junction during observation window	Yes — 2 photographs embedded
Land Use Mapping	Map-based identification of surrounding uses within 200m	Yes — map screenshot analysed
Secondary Source Review	Government project records, CMP documents, NHAI data, urban planning literature	Yes — referenced throughout

Limitations & Scope

Scope Boundaries — What This Report Does and Does Not Claim

• Observation window: 10 minutes at one junction on one evening. Findings are indicative, not statistically conclusive across all times and days.
• No sensor data: Vehicle counts and queue lengths are visual estimates. Margin of error is acknowledged.
• No signal controller access: Cycle timing is measured externally. Programmed timing may differ from observed.
• Single junction: Prem Nagar Chauraha is treated as representative, not exhaustive. Other junctions may exhibit different patterns.

These limitations are noted transparently. The findings remain valid as field-level evidence of systemic dysfunction, interpreted within a wider body of secondary research.

PART A — MACRO ANALYSIS — BAREILLY CITY LEVEL

Macro Analysis — Bareilly City Level

This section establishes the city-wide systemic context within which the Prem Nagar Chauraha field findings are situated. The four failure domains identified here — road design, driver behaviour, enforcement, and public transport — are not independent. They form an interlocking system where each failure reinforces the others.

M1 — Bad Road Design & Planning

Pattern: Infrastructure built for a smaller city, never upgraded for today's load

Bareilly's road network was largely designed for a population and vehicle count that no longer reflects reality. The old city core — Ghantaghar, Kutubkhana, Prem Nagar — features narrow lanes that evolved organically and were never built to carry motorised vehicles at scale. As the city expanded to approximately 25 lakh residents, road infrastructure did not evolve proportionally.

Data Snapshot — City-Wide Road Design Failures

- No road hierarchy: through-traffic and local market traffic share identical lanes with no separation
- Missing footpaths: pedestrians spill onto carriageway, compressing effective vehicle width
- Unplanned intersections: inadequate turning radii, no lane channelisation, poor sight lines
- No parking policy: on-street parking routinely occupies primary travel lanes city-wide
- Encroachment: vendors, parked vehicles, and construction debris on road shoulders is the norm, not the exception

The government has responded with capacity-expansion projects: a Y-shaped satellite flyover in the Cantonment area, the Subhash Nagar underpass, and a 29.9-km ring road from Jhumka to Invertis University (estimated at Rs. 2,192 crore). NHAI is four-laning the Badaun-Bareilly section of NH-24.

However, research in urban transport consistently demonstrates that adding road capacity without demand management simply induces more traffic — a phenomenon called induced demand. New roads fill up within years unless accompanied by simultaneous action on parking, public transport, and land use. The flyover near Prem Nagar Chauraha is a local example: designed to relieve congestion, it instead channels a surge of ramp-exiting vehicles directly into a signalised junction 150–250m away.

M2 — Driver Behaviour & Rule-Breaking

Pattern: Violation is rational when enforcement probability is near zero

Wrong-way driving, red-light jumping, unregulated lane changes, e-rickshaws stopping mid-lane, and heavy vehicles parked on arterial roads are not exceptions on Bareilly's streets — they are everyday norms. ARF treats this not as a cultural failing but as a systems output.

🧠 The Incentive System Breakdown

When a driver breaks a rule at a Bareilly junction, what actually happens?

• In most cases: nothing — enforcement is absent or easily avoided
• Occasionally: a small fine — but the probability of being caught approaches zero
• Socially: everyone else is doing it — compliance becomes the irrational, disadvantageous choice

Result: The system has taught drivers that rule-following is for the naive. The violation IS the system.

Behaviour also follows physical environment. When a road has no lane markings, drivers don't keep lanes. When footpaths don't exist, pedestrians walk in the road. When there are no IPT stops, e-rickshaws stop wherever a passenger appears. You cannot fix behaviour without fixing the environment that produces it.

M3 — Weak Enforcement & Policy

Pattern: Policy exists on paper; ground-level implementation is absent

Bareilly Traffic Police has a stated mission of zero accidents and congestion-free roads. The E-Challan system is functional. Yet the gap between this stated mission and the daily reality observed at Prem Nagar Chauraha — where not a single officer was present during the evening peak observation — illustrates the core problem: enforcement is reactive and point-based, not distributed and data-driven.

📋 The Policy Gap

• Manpower vs. city size: Traffic personnel are spread across a 276 sq. km urban area with 25 lakh residents — a fundamental mismatch.
• Technology underutilised: Camera infrastructure exists under the Smart City initiative, but automated real-time challan issuance at scale has not been deployed.
• Inter-agency failure: Encroachment is a Nagar Nigam problem; parking is a PWD problem; signals are a Traffic Police problem. No single agency owns the full junction experience.
• CMP implementation gap: Bareilly has a Comprehensive Mobility Plan (CMP) produced under MoHUA guidelines — recommending city buses, mini-buses, and non-motorised infrastructure. It remains largely unimplemented. A plan without an accountability mechanism is a document, not a policy.

M4 — Public Transport Failure

Pattern: Absent formal transit forces private vehicle dependency and compounds congestion

Bareilly has no city bus service and no metro. The city's public transport ecosystem consists almost entirely of informal intermediate public transport (IPT): e-rickshaws, tempos, and shared autos. These vehicles are unregulated — they run no fixed schedules, use no fixed stops, and stop mid-lane wherever passengers appear. Each mid-lane stop compresses available road width and creates a queue-generating event.

🔄 The Vicious Cycle — How Absent Transit Creates Its Own Congestion

No reliable formal public transport

↓

Citizens buy private vehicles (two-wheelers, cars)

↓

More vehicles on inadequate roads — congestion worsens

↓

Congestion makes IPT routes slow and unreliable

↓

Citizens remain locked into private vehicles → cycle repeats and deepens

PART B — MICRO ANALYSIS — PREM NAGAR CHAURAHA FIELD STUDY

Micro Analysis — Prem Nagar Chauraha

This section presents original primary field observations collected at Prem Nagar Chauraha, Bareilly on 30 March 2026 between 17:35 and 17:45 hrs during the evening peak period. All data is first-hand. Photographic and cartographic evidence is embedded below.

B1 — Junction Context & Land Use

Why this junction was selected

Prem Nagar Chauraha sits at the convergence of four major corridors serving different parts of Bareilly: DD Puram (residential), Model Town (mixed), Civil Lines (institutional and commercial), and Nainital Road (arterial highway). It is therefore not a local junction — it is a city-scale intersection that every type of road user must navigate.

A flyover is located 150–250 metres upstream of the junction on one approach. This is a critical design conflict: vehicles descend the ramp and immediately encounter a signalised junction with insufficient deceleration distance. In urban traffic engineering, a minimum of 300–400m between a grade-separated structure exit and a signalised junction is recommended. Prem Nagar fails this benchmark.

Fig 1 — MacNair Road area map showing Prem Nagar Chauraha surroundings and nearby land uses. (Source: ARF Field Study, March 2026)

Land Use Analysis — Within 200m of Junction

• Medical (3 facilities): Leelawati Hospital & Trauma Centre, Parijat Charitable Eye Hospital, Child Care Centre & General Hospital — emergency vehicles + distressed, hurrying drivers
• Religious: Masjid Karim, Bareilly Ramdwara — Friday and event-day congregation spillover onto carriageway
• Educational: Escort Career Academy — morning arrival (08:00) and afternoon dispersal (14:00–15:00) peaks
• Dense retail strip: TB Bakery, Krazy Fashions, Amaya Boutique, Sabbu Confectionery, multiple stores — continuous pedestrian generation throughout the day

Classification: Mixed-use, high-footfall, multi-peak zone — the highest-complexity junction typology in urban traffic planning. Requires sophisticated management; currently receives near-zero active management.

B2 — Junction Observation Sheet

Observer: Chanpreet Singh Aneja | Date: 30 March 2026 | Time Window: 17:35–17:45 hrs

Parameter	Recorded Detail
Junction Name	Prem Nagar Chauraha, Bareilly, Uttar Pradesh
Junction Type	4-arm signalised intersection
Date of Observation	30 March 2026
Time Window	17:35–17:45 hrs (Evening Peak)
Weather Conditions	Clear, dry — no weather-related anomaly
Signal Operational Status	Functional and clearly visible on all arms
Lane Markings	Present and legible
Signage	Present on observed arms
Encroachment Observed	**YES — vendors + parked two-wheelers on carriageway edge**
Traffic Personnel / Enforcement	**NONE SIGHTED during 10-minute observation window**
Unusual Events	None — standard evening peak conditions

B3 — Stationary Duration Assessment

Three consecutive red phase cycles measured by stopwatch

Cycle	Duration	Seconds	Observation
Cycle 1	1 min 37 sec	97	Baseline reading
Cycle 2	1 min 35 sec	95	Shortest observed
Cycle 3	1 min 42 sec	102	Longest observed
AVERAGE	**1 min 38 sec**	**98**	**Exceeds recommended threshold**

⚠️ **Finding B3-1 —** A 98-second average red phase is exceptionally long for a mixed urban junction of this typology. Standard traffic engineering guidance suggests that phases exceeding 90 seconds significantly increase red-light violation probability as driver patience erodes — a direct explanation for the non-compliance documented in field photographs below.

⚠️ **Finding B3-2 —** Phase length alone does not determine throughput — cycle structure matters. With multiple vehicle types competing for the same clearance window and no physical lane separation, the effective green time per vehicle class is significantly lower than the nominal green phase duration.

B4 — Traffic Composition (5-Minute Count)

All vehicle types counted crossing the observation point in a single 5-minute window

Vehicle Type	Count (5 min)	Est. % of Flow	Key Behavioural Pattern
E-rickshaws	20	38%	Dominant type — stop mid-lane, no designated stops, block following vehicles
Two-wheelers	16	30%	Creep ahead of stop line on red; filter through gaps between stopped vehicles
Cars	10	19%	Frequently blocked by IPT lane indiscipline; cannot maintain speed through junction
Heavy Vehicles	7	13%	Slow acceleration on green extends clearance time; contributes to carryover
Informal Pedestrians	**30–40**	N/A	**Jaywalking throughout observation — zero formal crossing infrastructure present**

⚠️ **Finding B4-1 —** E-rickshaws represent 38% of motorised flow — the single largest vehicle category. Yet they operate with zero regulation: no fixed stops, no fixed routes, no schedule. Each mid-lane stop forces following vehicles to swerve into adjacent lanes, compressing road width and generating secondary conflicts.

⚠️ **Finding B4-2 —** At 30–40 informal pedestrian crossings in 10 minutes — 3–4 per minute — pedestrians are a continuous variable in the junction conflict environment. With no pedestrian phase, no zebra crossing infrastructure, and no refuge island, every crossing is a negotiation between the pedestrian and oncoming vehicles. This is not jaywalking as a behavioural problem; it is infrastructure failure.

B5 — Queue Length & Clearance Analysis

The most critical quantitative finding of this field study

~25 vehicles	< 25	YES	EXCEEDED
Queue at Red	Cleared per Cycle	Carryover to Next	Capacity Status

> ***"When a queue does not clear within a green phase, the junction is technically over capacity. This is not a traffic engineering opinion — it is a definition."***

A queue that does not clear means that when the next red phase begins, it starts with a pre-existing backlog of vehicles before a single new arrival joins the queue. Each cycle compounds the one before it. The practical result is not a peak-hour problem that naturally resolves — it is a structural deficit that deepens through the evening until demand drops below capacity by itself. This is why Prem Nagar Chauraha does not merely get busy at 5:30pm — it gets progressively worse from 5:00pm until 7:00pm or later.

🔴 **Critical Finding B5-1 —** Prem Nagar Chauraha is operating beyond its designed throughput capacity during evening peak hours. Signal re-timing alone cannot resolve this — the excess demand is generated by the combination of an over-long cycle, unregulated IPT behaviour compressing effective road width, and pedestrian-vehicle conflict within the junction box. The fix must be multi-layered.

B6 — Conflict Mapping

Structured observation of all conflict types during 17:35–17:45 hrs

Conflict Observed	Frequency	Severity	Systemic Cause
Red light non-compliance — vehicles moving on red	*Continuous*	**HIGH**	*98-sec phase + zero enforcement consequences*
Two-wheeler creep past stop line on red	*Every cycle*	**HIGH**	*No physical stop-line barrier; no enforcement*
E-rickshaw mid-lane stopping for passenger pickup/drop	*Frequent*	**HIGH**	*No designated IPT stop within 200m of junction*
Informal pedestrian crossing — all arms	*3–4 per minute*	**HIGH**	*Zero crossing infrastructure; no pedestrian phase*
Vendor encroachment on carriageway edge	*Permanent*	**MEDIUM**	*No encroachment-free zone policy enforced*
Parked two-wheelers reducing effective carriageway	*Permanent*	**MEDIUM**	*No off-street parking available in immediate area*
Flyover ramp merge conflict upstream	*Continuous*	**MEDIUM**	*Insufficient deceleration distance before signal*

B7 — Field Photographic Evidence

Captured: 30 March 2026 | 17:35–17:45 hrs | Prem Nagar Chauraha

Fig 2 — Signal clearly at red; e-rickshaws and two-wheelers actively moving through the junction. Zero enforcement presence visible. (ARF Field Photo, 30 March 2026)

Fig 3 — Second frame from same observation window. Queue visible on approach arm. Central island temple structure restricts turning geometry and sight lines. (ARF Field Photo, 30 March 2026)

📷 What the Photographs Document

• Signal at red, vehicles in motion: photographically confirms red-light non-compliance as a systemic pattern, not an isolated event
• Zero enforcement personnel in both frames: consistent with 10-minute observation — enforcement is structurally absent, not temporarily displaced
• Central island temple structure: permanent physical obstruction restricting turning radii and driver sight lines — a design constraint that signal timing cannot compensate for
• Overhead wire cluster: indicates cumulative unplanned infrastructure growth; a practical constraint on smart signal upgrades
• Commercial frontage directly on road edge: zero buffer zone between retail activity and carriageway — pedestrian generation is immediate and continuous
• E-rickshaws dominant in both frames: validates the 38% composition count; visible mid-junction positioning confirms mid-lane stopping behaviour

PART C — SYNTHESIS — THE SYSTEM AT WORK

Synthesis — How the System Fails at Prem Nagar

The Prem Nagar Chauraha field data is not a standalone finding. It is the ground-level expression of every macro-level failure identified in Part A. The table below maps each city-wide systemic failure to its specific field evidence at Prem Nagar — demonstrating that the junction is not an anomaly but a specimen.

Macro Failure (Part A)	Field Evidence at Prem Nagar (Part B)	Finding Ref.
Bad road design	Flyover exit 150–250m upstream — insufficient deceleration buffer before signal; central island obstruction restricts turning geometry	B3-2, B6
Driver behaviour — violation as norm	Red-light non-compliance photographically confirmed across all 3 observed cycles; two-wheeler stop-line creep observed every cycle	B3-1, B6
Weak enforcement	Zero personnel during full 10-min evening peak window; E-challan not visibly operational; no deterrence mechanism present	B2, B6
IPT without regulation	E-rickshaws = 38% of flow; all without fixed stops or routes; each creates a mobile congestion event within the junction box	B4-1, B6
Absent pedestrian infrastructure	30–40 informal crossings in 10 min; no zebra crossing, no pedestrian phase, no refuge island — continuous vehicle-pedestrian conflict	B4-2, B6
Encroachment policy failure	Vendor stalls and parked two-wheelers permanently occupy carriageway edge, narrowing effective road width on at least 2 arms	B2, B6
Public transport vacuum	E-rickshaw dominance is a direct consequence of absent formal transit — not a cause in itself but a symptom of the same root failure	M4, B4-1

"Every problem visible in 10 minutes at Prem Nagar Chauraha was created upstream — by policies not written, infrastructure not built, and systems not maintained."

PART D — RECOMMENDATIONS — JUNCTION-LEVEL & CITY-LEVEL

ARF Policy Recommendations

ARF recommendations are structured at two geographic scales and three implementation levels. The two scales are: (1) Prem Nagar Chauraha — junction-specific interventions that can be actioned by Bareilly Traffic Police, Nagar Nigam, and PWD without large capital expenditure; and (2) Bareilly City — systemic reforms that address the root causes identified in Part A. Both scales are necessary. Neither alone is sufficient.

D1 — Junction-Level Recommendations: Prem Nagar Chauraha

Actioning body: Bareilly Traffic Police + Nagar Nigam + PWD

Level	Timeframe	Recommendation	Expected Impact
Level 1	*0–3 months*	Reduce signal cycle from 98 sec to 60–70 sec. Shorter, more frequent green windows improve throughput and reduce non-compliance incentive.	*Reduces queue carryover; reduces red-phase violation probability*
Level 1	*0–3 months*	Deploy 1 traffic constable at junction during 17:00–19:00 hrs daily. Enforcement presence alone measurably shifts compliance without infrastructure cost.	*Immediate compliance improvement; visible deterrence*
Level 1	*0–3 months*	Paint physical stop-line box in high-visibility yellow. Visual barrier structures two-wheeler behaviour even without active enforcement.	*Reduces stop-line creep; structures queue geometry*
Level 1	*0–3 months*	Paint pedestrian crossing markings on all 4 arms with signage. Formalises existing informal crossing behaviour; improves predictability for drivers.	*Reduces pedestrian-vehicle conflict; improves safety*
Level 2	*3–9 months*	Designate and sign fixed IPT loading/unloading bays 50m from junction on each arm. Remove e-rickshaws from junction box entirely.	*Eliminates mid-junction IPT stops; recovers effective road width*
Level 2	*3–9 months*	Declare and enforce encroachment-free zone within 30m of junction. Coordinate Nagar Nigam + Traffic Police. Mark kerb limits.	*Recovers 0.5–1m of carriageway width on multiple arms*
Level 3	*9 months+*	Install pedestrian refuge island on the two highest-conflict crossing arms. Separates pedestrian and vehicle phases structurally.	*Eliminates pedestrian-vehicle conflict as a junction variable*

D2 — City-Level Recommendations: Bareilly

Actioning body: Nagar Nigam + Traffic Police + PWD + NHAI + State Government

Level	Timeframe	Recommendation	Addresses
Level 1	*0–6 months*	Lane marking and road geometry upgrades at top 10 identified congestion junctions city-wide. Paint is low-cost; structured lanes demonstrably reduce accidents and improve flow.	*Road design, Behaviour*
Level 1	*0–6 months*	Strictly enforce no-parking zones on primary arterials. Deploy tow vehicles at 3 key choke points: Ghantaghar, Kutubkhana, NH-24 entry.	*Encroachment, Road width*
Level 2	*6–18 months*	Regulate all e-rickshaw and tempo IPT operations city-wide: fixed stops, fixed route zones, colour-coded zone permits, no mid-lane loading/unloading.	*IPT, Congestion*
Level 2	*6–18 months*	Implement the CMP-recommended city bus system. Begin with 3 high-demand corridors. Even 10–15 buses on fixed routes shift modal share measurably.	*Public transport, Demand*
Level 2	*6–18 months*	Activate camera-based automated E-Challan enforcement at all Smart City-covered junctions. Enforcement without personnel is scalable; personnel-only enforcement is not.	*Enforcement, Compliance*
Level 3	*18 months+*	Adopt a parking minimums reform: all new commercial buildings must provide off-street parking. Enforce existing bylaws retroactively for large commercial properties.	*Road design, Encroachment*
Level 3	*18 months+*	Establish a permanent Urban Mobility Cell: Nagar Nigam + Traffic Police + PWD + NHAI with a shared data dashboard, monthly KPI reporting, and public accountability publication.	*Governance, All domains*

Conclusion

Prem Nagar Chauraha is not a uniquely dysfunctional junction. It is a textbook example of what happens when a city's systems — road design, enforcement, public transport, and land use policy — fail simultaneously at a single point. Every problem observed in 10 minutes of field observation has a traceable systemic cause. Every systemic cause has a known, implementable fix.

The queue that does not clear is not a data point in isolation — it is a junction operating beyond designed capacity, produced by a signal cycle too long, an IPT ecosystem without discipline, and a road geometry too narrow for the demand it carries. The red light that vehicles ignore is not a moral failing of Bareilly's drivers — it is the rational response to a 98-second phase with zero enforcement consequence. The e-rickshaw that stops mid-lane is not a rogue actor — it is filling the gap left by an absent formal transit system.

For the general reader: this junction is fixable. Three constables deployed at peak hours, a signal retimed, and IPT stops designated 50 metres back would produce visible improvement within weeks. For the municipal official: the Comprehensive Mobility Plan exists. The Smart City infrastructure exists. What is missing is coordination, sequencing, and accountability. For the researcher: this report is the first application of ARF's hybrid methodology. The framework is designed to be replicated at any junction, in any Tier-2 city, by any observer with a stopwatch and a notebook.

"Fix the system. The junction will follow."

About Aneja Research Foundation

ARF is a solo research initiative founded by Chanpreet Singh Aneja to study how real-world urban problems actually work — beyond what textbooks teach. ARF operates on the belief that the problems citizens face are created by systems, and that fixing systems, not symptoms, is the only lasting path to better cities.

Focus Areas: Urban Policy | City Infrastructure | Public Behaviour | Tier-2 Indian Cities

Appendix — ARF Junction Observation Sheet (Template)

This is the standard ARF field data collection template. Print and carry to any junction. Fill in pen. Transfer data to report upon return.

ANEJA RESEARCH FOUNDATION Junction Observation Sheet | Field Template v1.0	
Field	**Entry**
Junction Name	
City / Area	
Date of Observation	
Time Window (Start → End)	
Weather Conditions	
Observer Name	Chanpreet Singh Aneja

A. Stationary Duration Assessment

Cycle	Duration (min : sec)	Duration (seconds)	Notes
Cycle 1	____ : ____	____	
Cycle 2	____ : ____	____	
Cycle 3	____ : ____	____	
AVERAGE	____ : ____	____	

B. Traffic Composition (5-Minute Count)

Vehicle Type	Count (5 min)	Est. % of Flow	Key Behaviour Observed
E-rickshaws	____	____%	
Two-wheelers	____	____%	
Cars	____	____%	
Heavy Vehicles	____	____%	
Buses	____	____%	
Informal Pedestrians	____	N/A	

C. Queue & Clearance

Metric	Observation
Approximate queue length at red (vehicles)	____
Does queue fully clear on green?	YES / NO (circle)
Estimated carryover vehicles per cycle	____
Capacity status	Within capacity / Over capacity (circle)

D. Conflict Mapping

Conflict Type	Observed? (Y/N)	Frequency	Severity (H/M/L)
Red-light non-compliance			
Stop-line creep (two-wheelers)			
IPT mid-lane stopping			
Informal pedestrian crossing			
Carriageway encroachment			
Wrong-way movement			
Other (describe):			

E. Physical Infrastructure Check

Element	Status
Signal operational?	YES / NO / PARTIAL
Lane markings visible?	CLEAR / FADED / ABSENT
Signage present?	YES / NO / PARTIAL
Footpath present?	YES / NO / PARTIAL
Pedestrian crossing markings?	YES / NO
Encroachment observed?	YES / NO — Type: _____
Police/enforcement present?	YES / NO / COUNT: ____

F. Condition Notes

Item	Notes
Unusual events during observation	
Overall congestion rating (1=free flow, 5=gridlock)	____ / 5
Key observation not captured above	
Map / photograph attached?	YES / NO

G. Junction Sketch / Map Reference

Attach map screenshot or draw junction geometry below. Mark: entry/exit arms, signal positions, conflict hotspots, encroachment locations.

[Map / sketch attachment point — paste screenshot or draw here]