Project Coordination Spec: Rules of the Road

Objective: Ensure all modules (Citizen, Authority, Worker, System Admin, Analytics) follow the same lifecycle, data rules, and validation standards.

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1. The 5 Players

Role	Description	Key Function/Needs
Citizen	Reports issues.	Accurate location + verified photo.
Govt Admin	Manages a zone.	Assigns work, sets priority.
Field Worker	Fixes issues.	Needs verified evidence capture.
System Admin	Platform owner.	Onboards authorities, configures categories.
Analytics Viewer	Public/NGO.	Read-only transparency data.

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2. Issue Lifecycle (Single Source of Truth)

1. **REPORTED (Start)**
   - **Action:** Citizen submits location + photo.
   - **Rule:** System performs silent duplicate check within 5m.
     - If duplicate -> append evidence and increment report_count.
     - If new -> create ticket.

2. **ASSIGNED**
   - **Action:** Govt Admin assigns a worker.

3. **IN_PROGRESS**
   - **Action:** Worker taps "Start Work".

4. **RESOLVED**
   - **Action:** Worker uploads verified "After" photo.

5. **CLOSED (End)**
   - **Action:** Admin closes after review.

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3. Core Properties of Issues

A. Identity & Location

- **Issue ID:** Unique identifier.
- **Category:** Type of issue.
- **Status:** REPORTED, ASSIGNED, IN_PROGRESS, RESOLVED, CLOSED, DISMISSED.
- **GPS Location:** Exact latitude/longitude.
- **Zone ID:** GHMC area (Hyderabad only for now).
- **Address:** Human-readable address.

B. Evidence & Verification

- **Report Photo:** Required at creation.

- **Resolve Photo:** Required to resolve.
- **EXIF Rules:**
    - Timestamp must be within 7 days of submission.
    - EXIF location must be within 5m of device GPS / issue location.
    - Missing/invalid EXIF blocks submission.

C. People & Ownership

- **Reporter ID:** Citizen who reported.
- **Assigned Worker ID:** Worker handling the issue.
- **Organization ID:** Govt authority responsible.

D. Priority & Metrics

- **report_count:** Aggregated reports for the same issue.
- **Admin Priority:** P1-Critical to P4-Low.
- **Estimated Completion:** Provided by worker on acceptance.
- **Days Open:** Time since REPORTED.
- **Citizen Feedback:** Like/Dislike counts for resolved/closed issues.

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4. Authentication & Access

- Email OTP login and Google OAuth only (no SMS/phone OTP) for Citizen, Worker, Authority, and System Admin logins.
- Role-based access control applies across all dashboards.

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5. Worker Onboarding (Invite-Only)

- Govt Admin adds worker emails from the Authority dashboard.
- Workers can only register with an invited email.
- First login auto-links the worker to the org and sets status ACTIVE.
- Invites can be revoked to block registration.
- Invite lifecycle: INVITED -> ACTIVE -> INACTIVE.
- Invites expire after a configured window (default 7 days) and can be re-sent.
- Optional allowed-domain restriction (e.g., *@ghmc.gov.in) can be enforced.

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6. Jurisdiction & Zones

- Use GHMC boundaries for Hyderabad (current target).
- Zone creation/editing is System Admin only.
- No custom zone drawing in the initial release.

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7. Duplicate Detection & Report Aggregation

- Duplicate check is silent (no display to citizen during reporting).
- Match radius: 5m.
- If duplicate found, append evidence and increment report_count.
- Future phase: add computer vision matching to reduce false positives.

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8. Maps & Base Tiles

- OpenStreetMap is the default base layer.
- Mapbox can be configured optionally for enhanced tiles.

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9. Worker Lifecycle Rules

- Workers can be DEACTIVATED but never hard-deleted.
- Deactivated workers lose access, but historical tasks remain linked.

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10. Citizen Feedback Loop

- Citizens can like/dislike resolved/closed issues only.
- Feedback is visible in authority and analytics dashboards.
- No upvoting on report creation; report_count is only from duplicate aggregation.