https://gemini.google.com/u/1/app/b90970622259e225

\* \* \* \* \*

### Production-Ready Specification: `public.view\_transport\_stops\_enriched` (V2.1)

Version: 2.1

Date: May 18, 2025

1. Purpose & Primary Use-Cases

The public.view\_transport\_stops\_enriched view provides a comprehensive, denormalized, and read-only representation of public transportation stops. It is designed to simplify data retrieval for pilgrim-facing applications, such as populating maps, lists of transport options, and detailed stop information pages. This view joins transport\_stops\_details with its parent waypoints table, and related master tables (transport\_stop\_types\_master, content\_statuses\_master), and aggregates information from transport\_stop\_facilities\_master. All textual information intended for display (labels, descriptions, notes) is presented in the primary reference language (English), sourced directly from the underlying tables.

- Pilgrim Use: Enables pilgrims to easily access key details about a transport stop, including its official name, geographical location, type (e.g., "Main Train Station"), operator information, links to official timetables, and a clear summary of available facilities, all through a unified interface.

- API Layer Use: Serves as an efficient and simplified data source for API endpoints that deliver transport stop information to frontend applications or external services, reducing the need for complex join logic in the API layer.

- Filtering & Display: Facilitates the display of transport stops on maps and lists, and supports basic filtering based on attributes available in the view.

2. View Columns & Derivations

This view selects and derives columns from several base tables: public.transport\_stops\_details (aliased as tsd), public.waypoints (w), public.transport\_stop\_types\_master (tstm), public.content\_statuses\_master (csm), and public.transport\_stop\_facilities\_master (tsfm in a subquery).

| View Column | Source Table(s) & Column(s) / Derivation | Data Type | Notes |

| :----------------------------------- | :------------------------------------------------------------------------------------------------------- | :---------- | :-------------------------------------------------------------------------------------------------- |

| waypoint\_id | tsd.waypoint\_id | BIGINT | Primary key of the transport stop detail and the linked waypoint. |

| waypoint\_name | w.name | TEXT | Name of the waypoint (primary reference language - English). |

| waypoint\_geom | w.geom | GEOMETRY | Geographical location of the waypoint. |

| waypoint\_primary\_image\_media\_id | w.primary\_image\_media\_id | UUID | FK to media.id for the waypoint's primary image. |

| waypoint\_content\_status\_code | csm.code (via w.content\_visibility\_status\_id) | TEXT | The publication status code of the waypoint (e.g., 'published\_live'). |

| stop\_type\_code | tstm.code | TEXT | Machine-readable code for the transport stop type. |

| stop\_type\_label | tstm.label | TEXT | Human-readable label for the stop type (primary reference language - English). |

| stop\_type\_description | tstm.description | TEXT | Description of the stop type (primary reference language - English). |

| stop\_type\_icon\_identifier | tstm.icon\_identifier | TEXT | UI icon identifier for the stop type. |

| operator\_names\_text | tsd.operator\_names\_text | TEXT[] | Array of operator names (primary reference language - English). |

| operator\_stop\_code\_primary | tsd.operator\_stop\_code\_primary | TEXT | Primary operator's internal stop code. |

| gtfs\_stop\_id | tsd.gtfs\_stop\_id | TEXT | GTFS stop ID. |

| lines\_or\_routes\_served\_summary | tsd.lines\_or\_routes\_served\_summary | TEXT | Summary of lines/routes served (primary reference language - English). |

| specific\_timetable\_url | tsd.specific\_timetable\_url | TEXT | URL to a specific timetable. |

| general\_operator\_info\_url | tsd.general\_operator\_info\_url | TEXT | URL to general operator information. |

| ticketing\_information\_notes | tsd.ticketing\_information\_notes | TEXT | Notes on ticketing (primary reference language - English). |

| stop\_facility\_ids | tsd.stop\_facility\_ids | INTEGER[] | Array of facility IDs. |

| facilities\_details | JSONB aggregation from tsfm based on tsd.stop\_facility\_ids | JSONB | JSON array of facility objects (id, code, label, description, icon\_identifier, category). |

| platform\_track\_bay\_information\_notes | tsd.platform\_track\_bay\_information\_notes | TEXT | Notes on platforms/tracks (primary reference language - English). |

| frequency\_of\_service\_general\_notes | tsd.frequency\_of\_service\_general\_notes | TEXT | Notes on service frequency (primary reference language - English). |

| is\_major\_interchange\_node | tsd.is\_major\_interchange\_node | BOOLEAN | Flag for major interchange. |

| accessibility\_notes\_transport\_stop | tsd.accessibility\_notes\_transport\_stop | TEXT | Accessibility notes (primary reference language - English). |

| bicycle\_transport\_on\_service\_notes | tsd.bicycle\_transport\_on\_service\_notes | TEXT | Bicycle transport notes (primary reference language - English). |

| notes\_for\_pilgrims\_at\_stop | tsd.notes\_for\_pilgrims\_at\_stop | TEXT | Notes for pilgrims (primary reference language - English). |

| data\_last\_verified\_at | tsd.data\_last\_verified\_at | TIMESTAMPTZ| Timestamp of last data verification. |

| details\_created\_at | tsd.created\_at | TIMESTAMPTZ| Creation timestamp of the transport stop details record. |

| details\_updated\_at | tsd.updated\_at | TIMESTAMPTZ| Last update timestamp of the transport stop details record. |

| details\_created\_by\_profile\_id | tsd.created\_by\_profile\_id | UUID | Creator profile ID for the details record. |

| details\_updated\_by\_profile\_id | tsd.updated\_by\_profile\_id | UUID | Updater profile ID for the details record. |

3. View Definition (DDL)

SQL

```

CREATE OR REPLACE VIEW public.view\_transport\_stops\_enriched AS

SELECT

tsd.waypoint\_id,

w.name AS waypoint\_name, -- Assumes w.name stores primary reference language (English)

w.geom AS waypoint\_geom,

w.primary\_image\_media\_id AS waypoint\_primary\_image\_media\_id,

csm.code AS waypoint\_content\_status\_code,

tstm.code AS stop\_type\_code,

tstm.label AS stop\_type\_label, -- Primary language label from master

tstm.description AS stop\_type\_description, -- Primary language description from master

tstm.icon\_identifier AS stop\_type\_icon\_identifier,

tsd.operator\_names\_text,

tsd.operator\_stop\_code\_primary,

tsd.gtfs\_stop\_id,

tsd.lines\_or\_routes\_served\_summary, -- Primary language from details table

tsd.specific\_timetable\_url,

tsd.general\_operator\_info\_url,

tsd.ticketing\_information\_notes, -- Primary language from details table

tsd.stop\_facility\_ids,

(

SELECT jsonb\_agg(

jsonb\_build\_object(

'id', tsfm.id,

'code', tsfm.code,

'label', tsfm.label, -- Primary language label from master

'description', tsfm.description, -- Primary language description from master

'icon\_identifier', tsfm.icon\_identifier,

'category', tsfm.category

) ORDER BY tsfm.sort\_order ASC

)

FROM public.transport\_stop\_facilities\_master tsfm

WHERE tsfm.id = ANY(tsd.stop\_facility\_ids) AND tsfm.is\_active = true

) AS facilities\_details,

tsd.platform\_track\_bay\_information\_notes, -- Primary language from details table

tsd.frequency\_of\_service\_general\_notes, -- Primary language from details table

tsd.is\_major\_interchange\_node,

tsd.accessibility\_notes\_transport\_stop, -- Primary language from details table

tsd.bicycle\_transport\_on\_service\_notes, -- Primary language from details table

tsd.notes\_for\_pilgrims\_at\_stop, -- Primary language from details table

tsd.data\_last\_verified\_at,

tsd.created\_at AS details\_created\_at,

tsd.updated\_at AS details\_updated\_at,

tsd.created\_by\_profile\_id AS details\_created\_by\_profile\_id,

tsd.updated\_by\_profile\_id AS details\_updated\_by\_profile\_id

FROM

public.transport\_stops\_details tsd

JOIN

public.waypoints w ON tsd.waypoint\_id = w.id

JOIN

public.transport\_stop\_types\_master tstm ON tsd.stop\_type\_id = tstm.id

LEFT JOIN -- Assuming content\_visibility\_status\_id can be null or to allow stops even if status is somehow missing

public.content\_statuses\_master csm ON w.content\_visibility\_status\_id = csm.id

WHERE

w.deleted\_at IS NULL

AND tstm.is\_active = true; -- Only join with active stop types

COMMENT ON VIEW public.view\_transport\_stops\_enriched IS 'Enriched, denormalized view of transport stop details, joining with waypoints and master tables for types and facilities. Provides data in the primary reference language (English). Intended for public read access to published content. Version 2.1';

```

4. JSON Output Structure Example (for `GET /transport\_stops/{waypoint\_id}` based on this view)

JSON

```

{

"waypoint\_id": 101,

"waypoint\_name": "Assisi Station", // Primary language (English)

"waypoint\_geom": { "type": "Point", "coordinates": [12.6189, 43.0592] },

"waypoint\_primary\_image\_media\_id": "media-uuid-assisi-station-img",

"waypoint\_content\_status\_code": "published\_live",

"stop\_type\_code": "train\_station\_main",

"stop\_type\_label": "Main Train Station", // Primary language (English)

"stop\_type\_description": "Primary railway station with comprehensive services.", // Primary language (English)

"stop\_type\_icon\_identifier": "icon-train-main",

"operator\_names\_text": ["Trenitalia"],

"operator\_stop\_code\_primary": "ASIS",

"gtfs\_stop\_id": "IT:S05133:assisi",

"lines\_or\_routes\_served\_summary": "Lines to Foligno, Perugia, Rome, Florence.", // Primary language (English)

"specific\_timetable\_url": "https://www.trenitalia.com/stazione/assisi",

"general\_operator\_info\_url": "https://www.trenitalia.com",

"ticketing\_information\_notes": "Ticket office at station and automated machines.", // Primary language (English)

"stop\_facility\_ids": [1, 3, 77, 78],

"facilities\_details": [

{

"id": 1,

"code": "toilets\_available",

"label": "Toilets Available", // Primary language (English)

"description": "Publicly accessible restrooms.", // Primary language (English)

"icon\_identifier": "icon-toilets",

"category": "basic\_needs"

},

{

"id": 77,

"code": "ticket\_office\_staffed",

"label": "Ticket Office (Staffed)", // Primary language (English)

"description": "Staffed ticket counter for assistance.", // Primary language (English)

"icon\_identifier": "icon-ticket-office",

"category": "ticketing"

}

// ... other facility details

],

"platform\_track\_bay\_information\_notes": "Platform 1 for southbound trains (Rome), Platform 2 for northbound trains (Florence).", // Primary language (English)

"frequency\_of\_service\_general\_notes": "Frequent regional trains; Intercity services to major destinations.", // Primary language (English)

"is\_major\_interchange\_node": true,

"accessibility\_notes\_transport\_stop": "Disabled access assistance available, contact station in advance.", // Primary language (English)

"bicycle\_transport\_on\_service\_notes": "Bicycle transport permitted on regional trains with a supplement.", // Primary language (English)

"notes\_for\_pilgrims\_at\_stop": "Exit station and follow signs for town center (bus or taxi).", // Primary language (English)

"data\_last\_verified\_at": "2025-04-10T10:00:00Z",

"details\_created\_at": "2024-11-15T09:30:00Z",

"details\_updated\_at": "2025-04-10T10:05:00Z",

"details\_created\_by\_profile\_id": "user-uuid-creator",

"details\_updated\_by\_profile\_id": "user-uuid-updater"

}

```

5. Relationships & Dependencies

- This view depends on the following base tables:

- `public.transport\_stops\_details`

- `public.waypoints`

- `public.transport\_stop\_types\_master`

- `public.transport\_stop\_facilities\_master` (via subquery for `facilities\_details`)

- `public.content\_statuses\_master`

- Join Conditions:

- `tsd.waypoint\_id = w.id`

- `tsd.stop\_type\_id = tstm.id`

- `w.content\_visibility\_status\_id = csm.id`

- `tsfm.id = ANY(tsd.stop\_facility\_ids)` (within subquery)

- Filters in View Definition:

- `w.deleted\_at IS NULL`

- `tstm.is\_active = true`

- `tsfm.is\_active = true` (within subquery for `facilities\_details`)

6. Multilingual Strategy

- The view provides all textual content (`waypoint\_name`, `stop\_type\_label`, `stop\_type\_description`, details notes, facility labels/descriptions within `facilities\_details`) in the primary reference language (English).

- For displaying content in other languages, the application layer should use the codes (`stop\_type\_code`, facility `code` from `facilities\_details`), IDs (`waypoint\_id` combined with field identifiers for notes), or the English text as keys to query the `public.translations` table for the equivalent text in the user's selected language.

7. Role-Based Workflow & RLS Notes

- RLS Application: Row-Level Security must be enabled on this view.

SQL

```

ALTER VIEW public.view\_transport\_stops\_enriched ENABLE ROW LEVEL SECURITY;

```

- Public Access Policy: Public users should only see details for waypoints that are published.

SQL

```

CREATE POLICY "select\_published\_enriched\_transport\_stops"

ON public.view\_transport\_stops\_enriched

FOR SELECT

USING (waypoint\_content\_status\_code = 'published\_live'); -- Assumes 'published\_live' is the code for published & visible

```

- Authenticated User/Admin Access Policy: Privileged roles may have broader access, but this is typically managed by their permissions on the underlying base tables. If a separate policy is needed for the view for these roles:

SQL

```

CREATE POLICY "select\_all\_enriched\_transport\_stops\_for\_authorized\_roles"

ON public.view\_transport\_stops\_enriched

FOR SELECT -- This policy is for SELECT, actual management is on base tables

USING (public.has\_role('admin\_platform') OR public.has\_role('regional\_content\_manager'));

```

- RLS policies on the view interact with RLS policies on the base tables. The most restrictive set of permissions will apply.

8. (ENUM vs Lookup Discussion - N/A for Views)

9. UI/UX Enablement

- Provides a single, comprehensive data source for client applications to display detailed transport stop information.

- Column names are clear and directly usable for mapping to UI components.

- The `facilities\_details` JSONB array allows easy iteration to display available amenities with their names and icons.

- Supports filtering and sorting at the API level based on the view's columns.

10. Auditing & Lifecycle Management

- This view is read-only. Auditing and lifecycle (`created\_at`, `updated\_at`, `deleted\_at`, `is\_active`) are managed on the underlying base tables.

- Data freshness in the view reflects the freshness of the underlying tables. The `data\_last\_verified\_at` column from `transport\_stops\_details` is exposed.

11. Performance & Scalability

- Performance depends heavily on appropriate indexing on all joined base tables, especially on PK/FK columns, `is\_active` flags, and `waypoints.geom` (spatial index) if location-based queries are made against this view.

- The subquery for `facilities\_details` involves `jsonb\_agg` and an array lookup (`ANY`). For lists with many items, or very large numbers of facilities per stop, this aggregation could become a performance consideration. Performance testing under load is recommended.

- If performance for complex list queries against this view becomes an issue, a Materialized View could be considered as a future optimization, with an appropriate refresh strategy.

12. Next-Action Checklist

- 🔴 Base Table Prerequisites: Ensure all base tables (`waypoints`, `transport\_stops\_details`, `transport\_stop\_types\_master`, `transport\_stop\_facilities\_master`, `content\_statuses\_master`) are created, populated, and correctly indexed (including spatial index on `waypoints.geom`).

- 🔴 Helper Functions: Ensure `public.has\_role(TEXT)` is defined and operational.

- 🔴 Create View: Execute the `CREATE OR REPLACE VIEW public.view\_transport\_stops\_enriched` DDL.

- 🔴 Apply RLS Policies: Define and apply the RLS policies to the view. Ensure RLS is enabled on the view.

- 🟠 Performance Testing: Test query performance against this view, especially for common API call patterns (single item lookup, filtered lists, lists with facility details).

- 🟢 Documentation: Document this view in the overall database schema documentation, including its purpose, columns, and how to use it for multilingual support.

- 🟢 API Layer Integration: Plan how the API layer will consume this view and handle translation lookups for non-primary languages.

This completes the specification for `public.view\_transport\_stops\_enriched`.