

CONTINENTAL PAVED OR UNPAVED ROAD COVERAGE

96.09% of roads across North America and Europe classified

96.09% of roads across North America and Europe classified as paved or unpaved.

OpenStreetMap supplied usable paved or unpaved source tags for 25.08 million of the 66.40 million production road sections, or 37.8%. Sherpa reclassifies all 66.40 million sections with newer imagery, geographic context, and one consistent system rather than retaining those tags as final answers. Of those roads, 41.32 million, or 62.2%, had no usable OSM surface tag at all.

66.40M

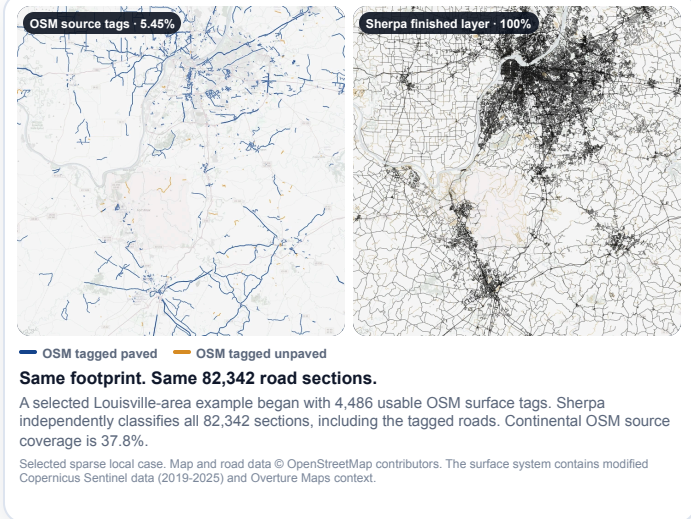
independently
classified road
sections

37.8%

with usable OSM source tags before
Sherpa

41.32M

classified with no usable
OSM surface tag



Three production datasets

ONE GRAPH-MATCHED DELIVERY

01 SURFACE CLASSIFICATION

66.40M road sections classified by surface

Paved or unpaved with confidence. OSM tags provide supervision. Spatially held-out models reclassify tagged roads, while full-model inference classifies roads without usable tags.

02 SCENIC INTELLIGENCE

64.31M road sections covered

1.624 billion eye-height road samples and 97.456 billion terrain- and occlusion-aware sightlines quantify what can be seen from the road.

03 MODELED TRAFFIC

66.22M network-use scores

15.05 billion sampled origin-destination attempts yielded 5.36 billion usable paths with road-level contributions. A relative network-use estimate, not live or observed traffic.

WHAT SITS BENEATH ONE SURFACE CLASSIFICATION

Independent evidence is fused, checked, and returned with confidence.

No single input determines the result. Different sources reinforce one another or expose uncertainty when imagery, tags, or surroundings are ambiguous.

1 · Image the road

115.71M road-centered RGB and near-infrared chips; red/NIR indices, masks, line samples, and spectral statistics.

23.22 trillion

channel-level values across $224 \times 224 \times 4$ model tensors

2 · Read visual evidence

Specialized supervised, self-supervised, and vision-language models produce road-level probabilities, uncertainty measures, and embeddings.

3 · Add geographic context

OSM geometry and attributes, Overture buildings and land context, road-name embeddings, terrain, water, climate, soil, night lights, and modeled exposure.

4 · Fuse and deliver

The two production CatBoost matrices contain 8,401 active feature columns in total. This is a summed column count across two models, not 8,401 unique concepts. They assign paved or unpaved plus confidence, then export to partner identifiers.

PROVEN IMAGERY CLASSIFICATION

94.4%

ROC-AUC

94.4%

PR-AUC

86.9%

accuracy

Evidence: 1,947,588 balanced out-of-fold road predictions across five spatial folds. Roads in the same H3 cell remained in the same fold. ROC-AUC measures ranking quality across possible thresholds; Sherpa achieved 94.4%. At the strictest reported confidence tier (≥ 0.90), 48.1% of predictions were retained at 97.9% accuracy.

This clean benchmark isolates the imagery stage; the production surface system also incorporates the contextual inputs above.

PARTNER EVALUATION

Test the data on your graph.

Scope

Choose one product question and representative geography.

Match

Sherpa maps road-level outputs and confidence fields to your identifiers.

Measure

Compare coverage, quality, and product impact to an agreed baseline.

Delivery: Parquet, CSV, GeoPackage, vector tiles, graph-keyed tables, hosted access, or a tailored integration.

What partners can build

USE ONE LAYER OR COMBINE ALL THREE

Route choice

Optimize for surface, scenery, likely road use, or a weighted combination.

Map enrichment

Standardize surface attributes, style roads, and expose confidence.

Discovery

Rank scenic corridors, quiet alternatives, and mixed-surface experiences.

Network QA

Compare coverage, flag contradictions, and prioritize human review.

Bring one representative test area.

The same data already supports Route Studio and Sherpa Map; a partner evaluation starts with a curated data sample and explicit acceptance criteria. Commercial delivery uses a source and model profile cleared for the agreed package.

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