National Collaboration

Bicycle, Pedestrian, and Accessibility Infrastructure Data

January 30, 2025

U.S. Department of Transportation
Office of the Secretary of Transportation

Bureau of Transportation Statistics

FGDC.GOV
FEDERAL GEOGRAPHIC DATA COMMITTEE

Facilitators

Co-Chairs

- **Anat Caspi**, University of Washington
- **Bahar Dadashova**, Texas A&M Transportation Institute
- **Jeff Whitfield**, Centers for Disease Control and Prevention

Bureau of Transportation Statistics Admin Team

- **Jay Davis**, Presidential Innovation Fellow
- **Carl Fredlund**, MobilityData
- **Justyna Goworowska**, Spatial Transportation Data Analyst
- **Allison Liu**, Data Scientist
- **Sara Secunda**, Volpe Center

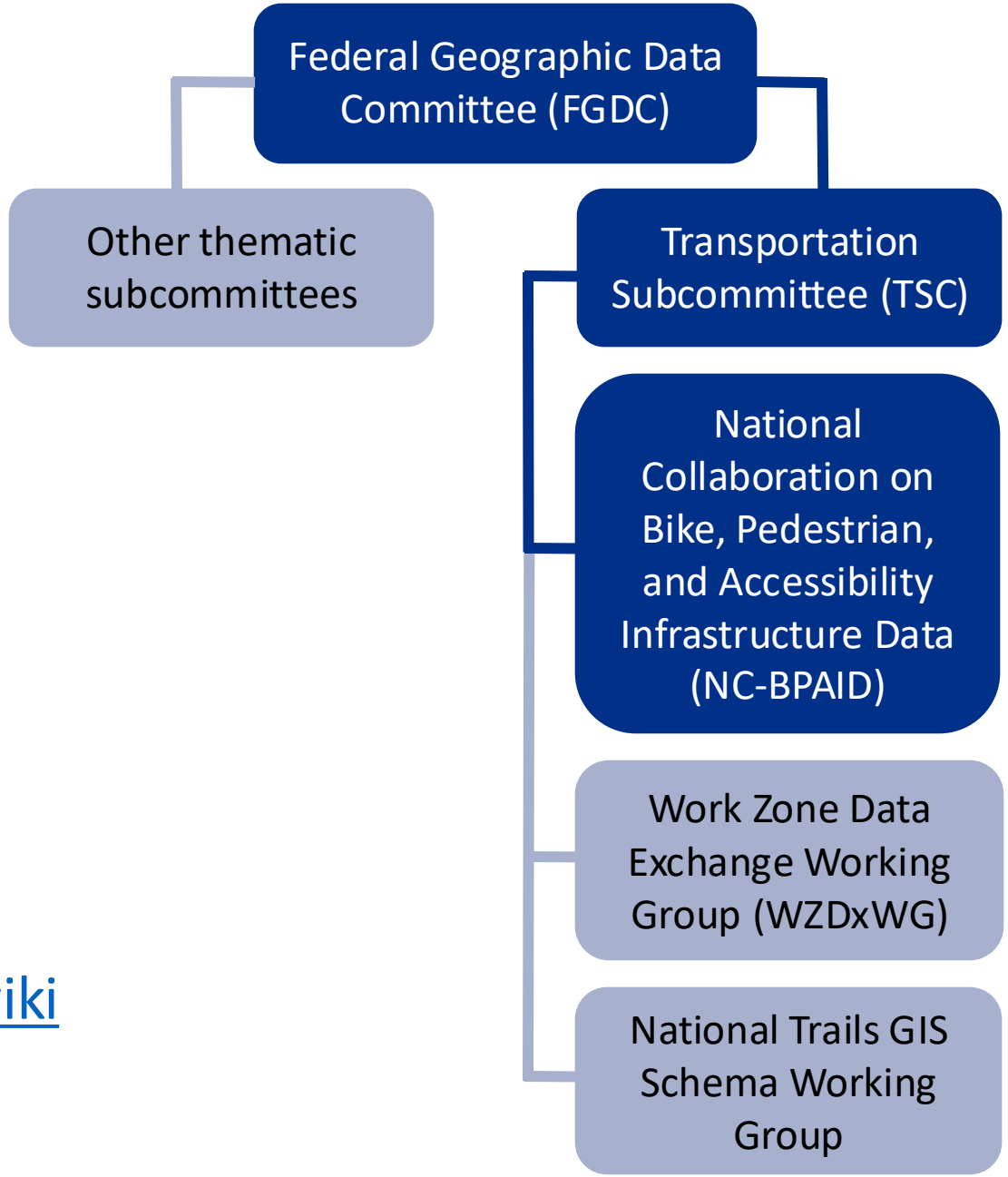
Housekeeping

- **This meeting will be recorded.**
- Please stay muted to reduce background noise. If you would like to speak or ask a question, please raise your hand and unmute when acknowledged.
- Type any questions you have into the chat. We will be monitoring the chat and will respond or raise your questions.
- Slides, recording, and notes will be available within about a week at: https://github.com/dotbts/BPA/wiki

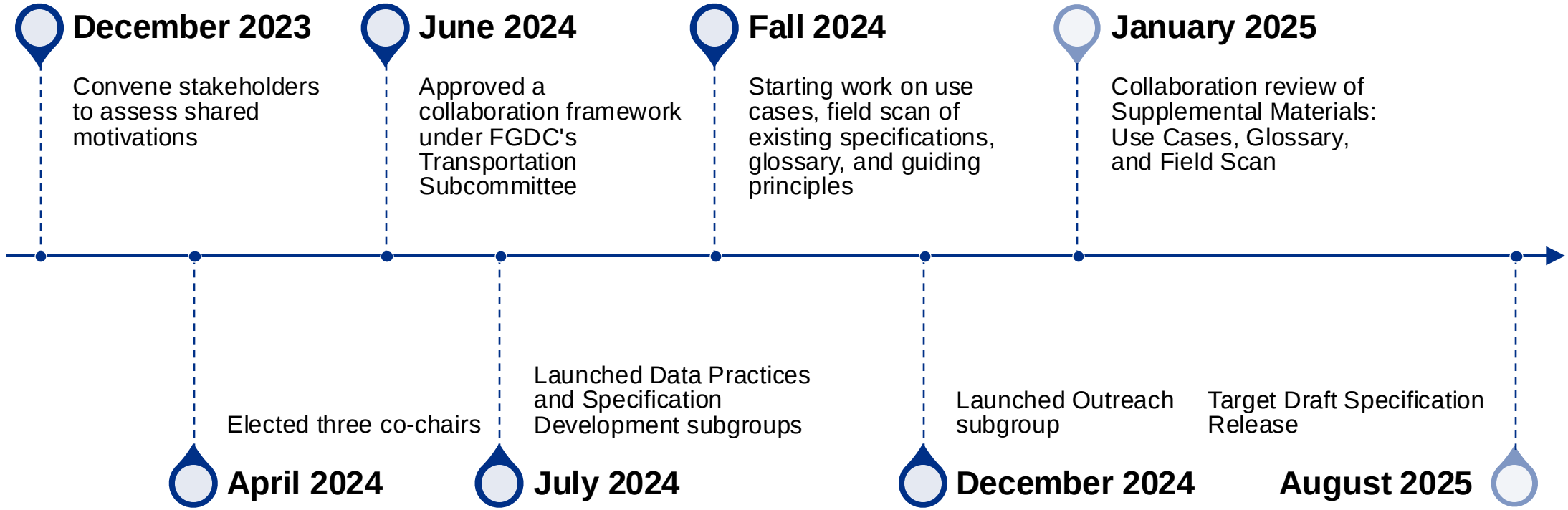
Context

- Why are we here?
- Why is the Bureau of Transportation Statistics (BTS) facilitating?
- What happened at the last meeting?

Details: https://github.com/dotbts/BPA/wiki



Milestones


December 2023
Convene stakeholders to assess shared motivations
April 2024
Elected three co-chairs
June 2024
Approved a collaboration framework under FGDC's Transportation Subcommittee
July 2024
Launched Data Practices and Specification Development subgroups
Fall 2024
Starting work on use cases, field scan of existing specifications, glossary, and guiding principles
December 2024
Launched Outreach subgroup
January 2025
Collaboration review of Supplemental Materials: Use Cases, Glossary, and Field Scan
August 2025
Target Draft Specification Release

Objectives of Today's Meeting

1. TRB Recap
2. Discuss subgroup changes and opportunities
3. Highlight initial Collaboration products

Agenda

Welcome	5 minutes
NC-BPAID status updates and actions	5 minutes
Open floor for announcements	5 minutes
Discuss subgroup leadership changes	10 minutes
Subgroup updates	5 minutes
Present four products	55 minutes
Closing	<1 minutes

NC-BPAID Updates

- Transportation Research Board recap
  - Provided updates in six committee meetings
    - Pedestrian and Bicycle Safety Analysis Joint Subcommittee
    - Accessible Transportation and Mobility Committee
    - Geographic Information Science Committee
    - Bicycle and Pedestrian Data Joint Subcommittee
    - Bicycle Transportation Committee
    - Pedestrians Committee
  - Presented at a lectern session on Enhancing Mobility for All: Updates on U.S. Department of Transportation Accessibility Initiatives and Innovative Mobility Strategies
  - Held a meet and greet

Open Floor for Announcements

Subgroup Changes

Update from Specification Development Subgroup

Update from Data Practices Subgroup

Update from Outreach Subgroup

Subgroup Meetings

- Outreach
  - First Thursday of each month, 4-5p ET
- Specification Development
  - Every other Wednesday, 4-5p ET
- Data Practices
  - First Thursday of each month, 3-4p ET

Email jay.davis@gsa.gov to get the invites if you aren't on them.

Products Presentation

Field Scan

What We Did & Why

We looked at:

- Which specification efforts are most similar to ours?
- Where do we need to design for interoperability and data exchange?
- What specifications have scale we can build on? Where are our target users already gathering, and what are they already using?

We wanted to:

- Better understand the landscape
- Map out intersections for our specifications
- Not duplicate the work already done by Polly / ITS-JPO and others

Interoperability

Interoperable data can be exchanged easily between systems because it is similarly organized and formatted.

The ideal: Our specifications classify and express geographic features and attributes in the same way other major specifications do, so the mapping from one to another is very easy.

Example—consider a mapping between our spec and another:

- Surface condition are scales from 1-5 in both
- Surface type categories are the same in both (e.g. asphalt or concrete or unknown)
- Geographic features are expressed as GeoJSON in both

Specs with Some Overlap

No specification has perfect overlap. These were deemed the most similar or most related:

- Indoor Mapping Data Format: mapping inside venues
- OpenStreetMap: crowdsourced global map
- Overture Maps: major consumer apps, bike paths & footpaths
- OpenSidewalks: sidewalks with accessibility focus
- General Modeling Network Specification: multimodal urban networks

More Specs with Potential for Interoperability

These specifications have some attributes that may also appear in our specification:

- General Bike Feed Specification: shared micromobility, including locations of infrastructure
- Mobility Data Specification: shared micromobility & other mobility
- GTFS-Pathways: layout and accessibility of transit stations
- Indoor Mapping Data Format: mapping inside venues
- Curb Data Specification: dynamic curb zones

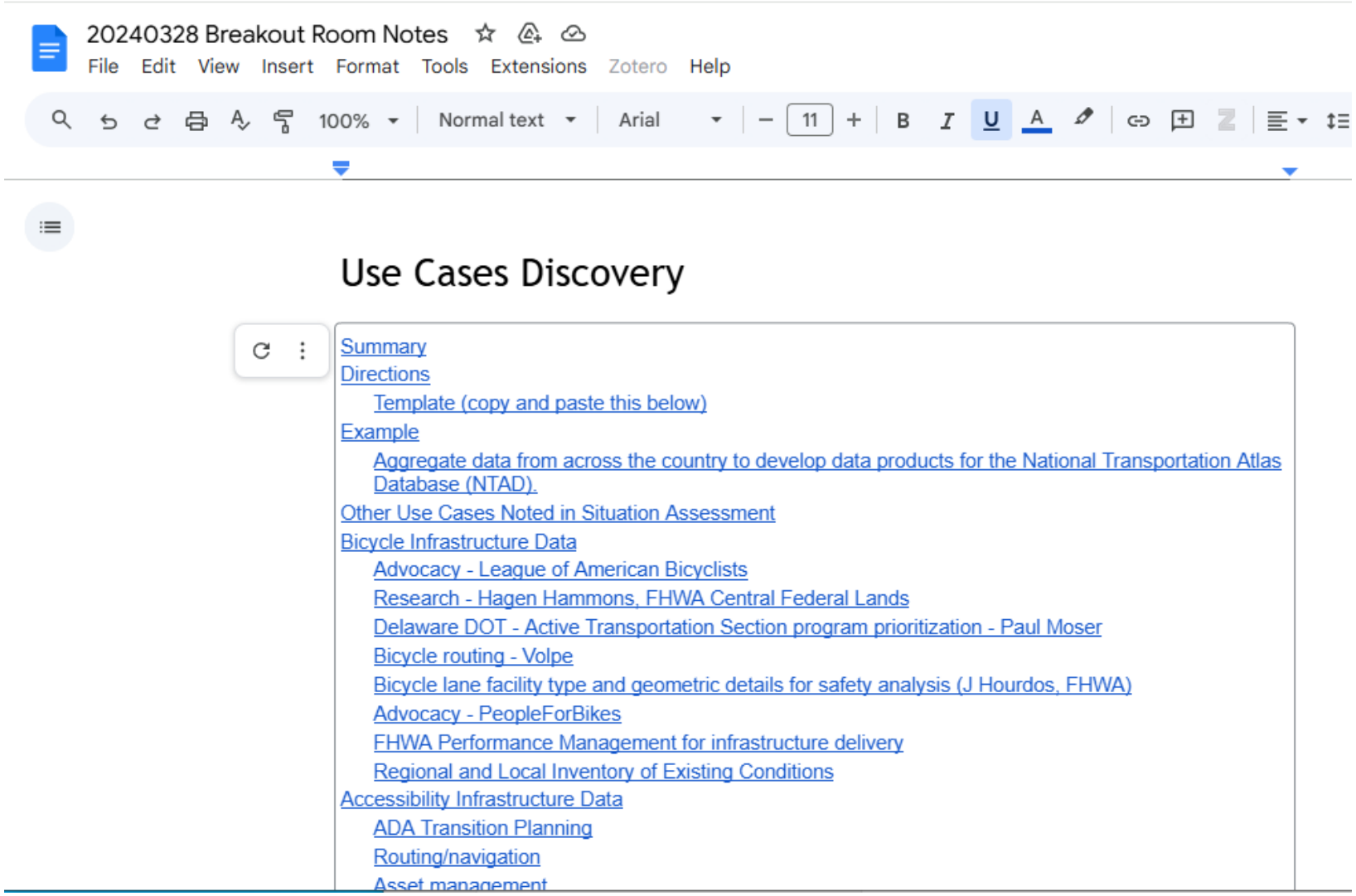
Notes & Next Steps

- ***This is preliminary. Please share feedback!***
  - Specifications we missed
  - Incorrect or missing info about a specification
  - Feedback on how we're prioritizing
- This draft will be posted to GitHub. Comments may be shared there or via email to jay.davis@dot.gov.
- After review and clean-up, the scan will go to the Specifications Development Subgroup to inform drafts.

Use Cases

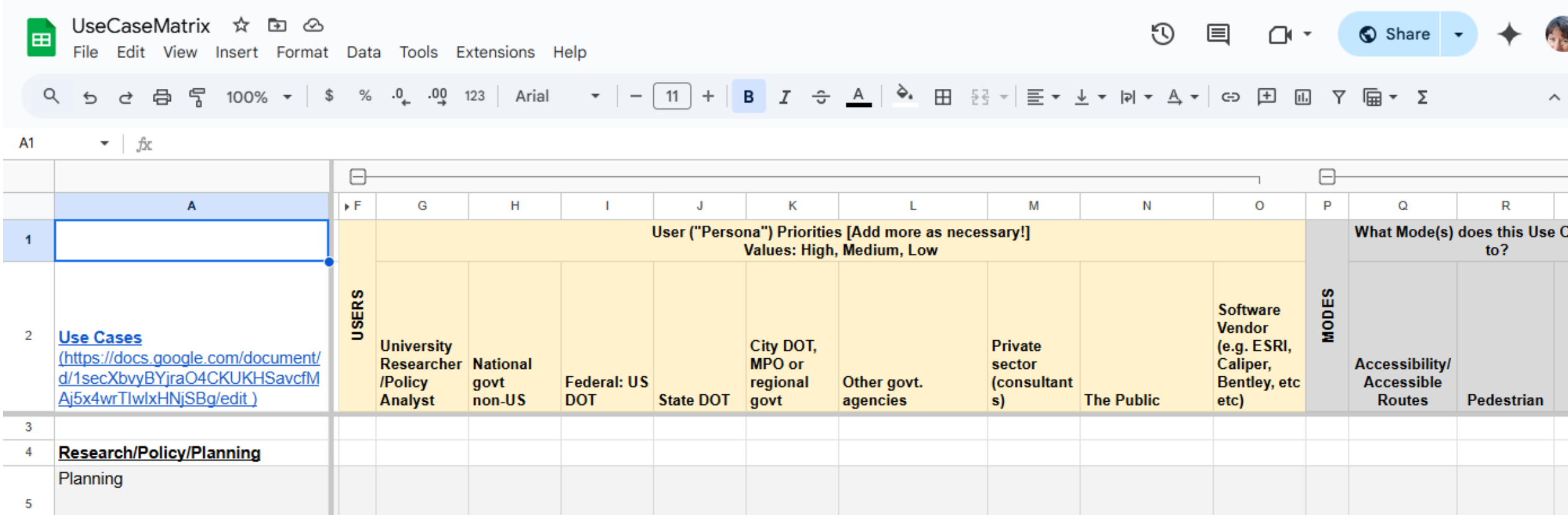
Use Cases

- NC-BPAID group March 2024 meeting Word Doc (24 use cases) grouped by mode
  - Bicycle: 8
  - Pedestrian: 12
  - Accessibility: 4



Use Cases

- Data practices subgroup matrix: 31 use cases grouped by type
  - Research/Policy/Planning: 19
  - Public-Facing Tools: 4
  - Operations: 8



Use Cases

- Further grouped by category (Yes, Maybe, No)
  - routing - analyzes O/D or results of O/D calculations
  - visualization - can require a geometrically accurate visual
  - asset tracking - identify assets or count presence, potential projects, conditions, costs etc.
  - engineering - precise spatial and material parameters

			Criteria for Success		use case category			
Use Cases (https://docs.google.com/document/d/1secXbvyBYjraO4CKUKHSavcfMAj5x4wrTlwlxHNjSBg/edit)	**Is there an existing Standard for this? If so, list**	**What motivates a user to choose to use this standard?**	**Standard is adopted by one or more organization**	**Data are used by one or more organization**	routing - analyzes O/D or results of O/D calculations	visualization - can require a geometrically accurate visual	asset tracking - identify assets or count presence, potential projects, conditions, costs etc	engineering - precise spatial and material parameters
Research/Policy/Planning								
Planning								
Access/ reachability/ walksheds								

Two main categories of use cases

- Routing
  - Routing/Navigation/Wayfinding (all modes)
  - Access/ reachability/ walksheds
  - Paratransit pathway review / eligibility
  - Advocacy for people with disabilities
- Asset inventory
  - Asset Management (condition and maintenance)
  - Project Prioritization
  - Public Health Planning (e.g. funding allocations, resources citing decisions)
  - Public Health Research (e.g. built environment and health outcomes research)
  - Safety Analysis
  - Planning
  - Inventory (Safety Analysis Related)
  - Advocacy

Guiding Principles

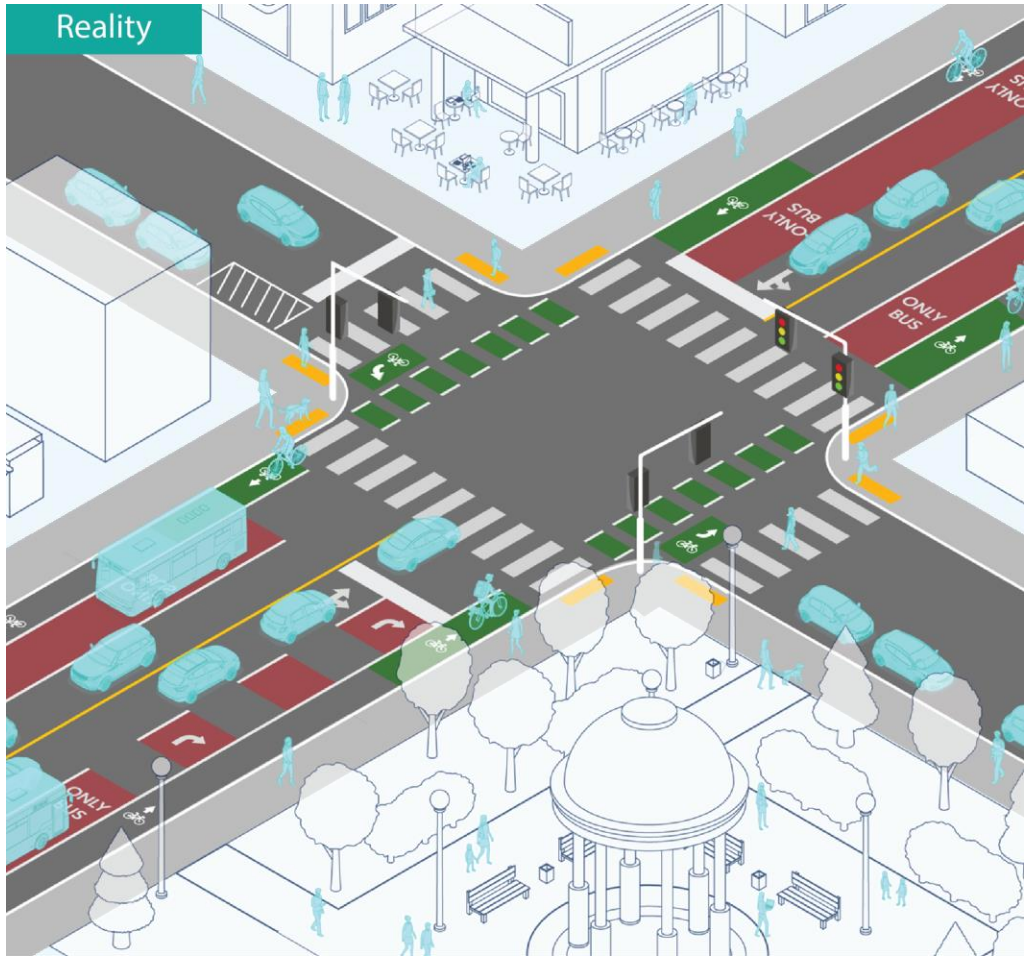
Glossary

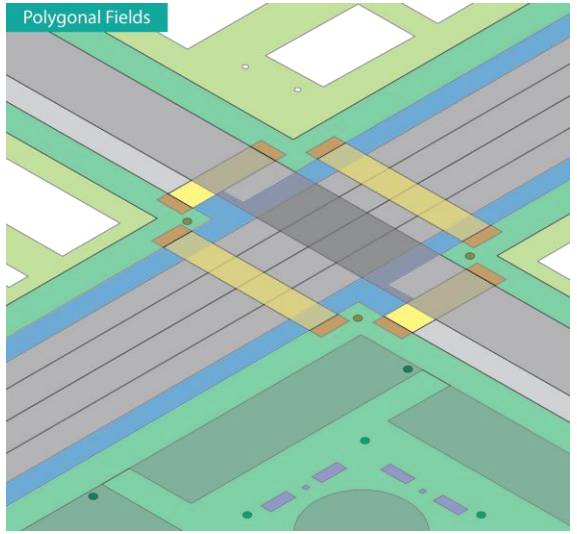
NC-BPAID
Glossary: What's in a Name?

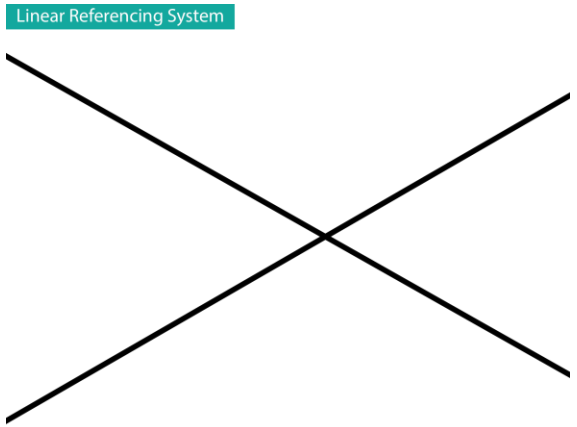
Data Practices and Specifications Development Subcommittee Mash-up

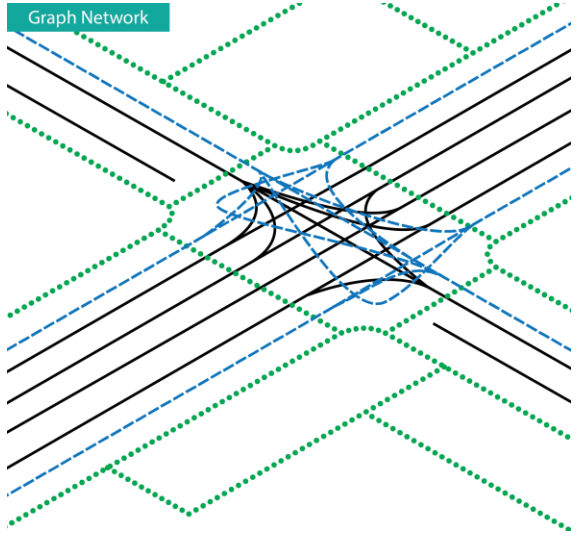
January 2025

From Literal Things …to Digital Things









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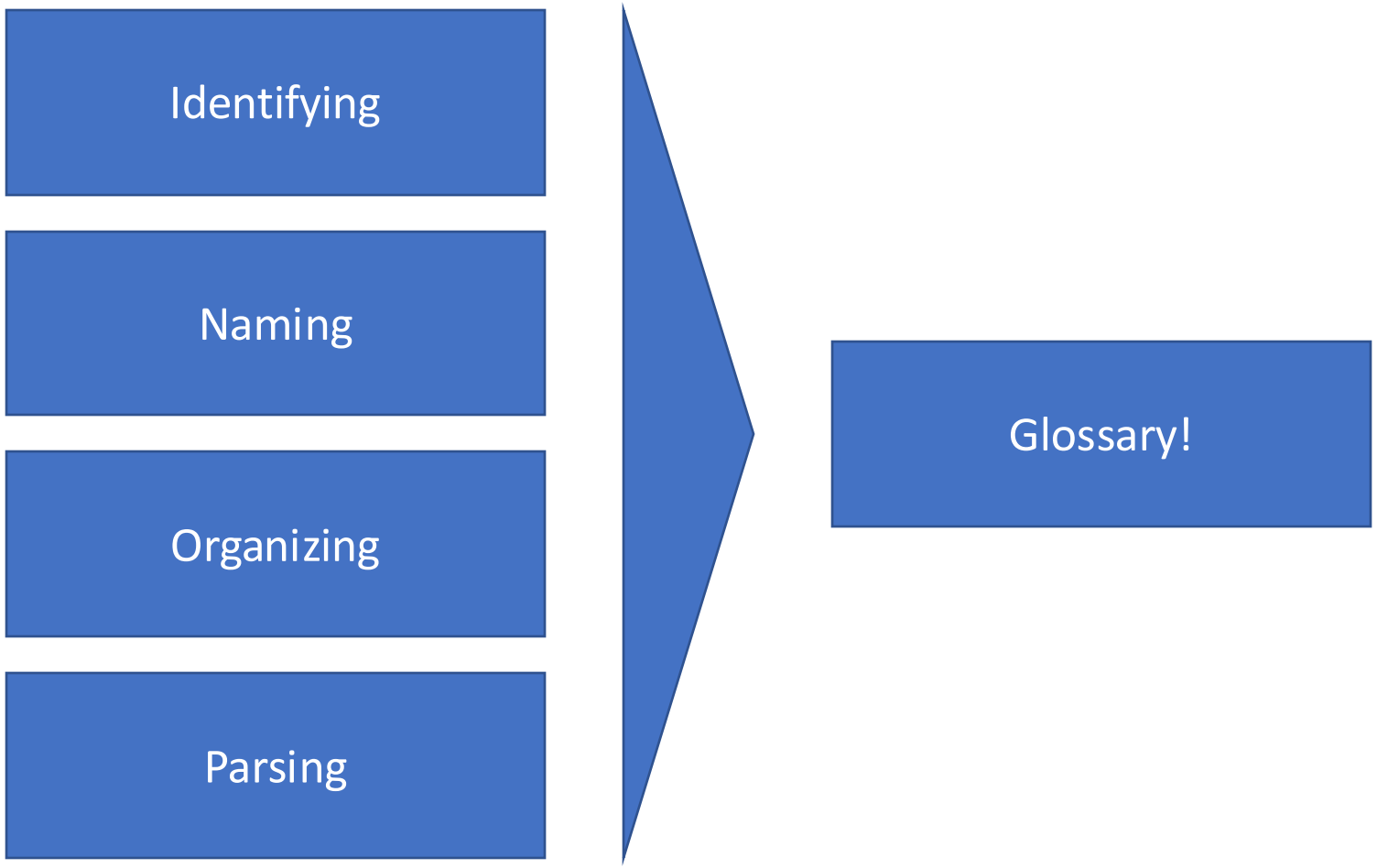

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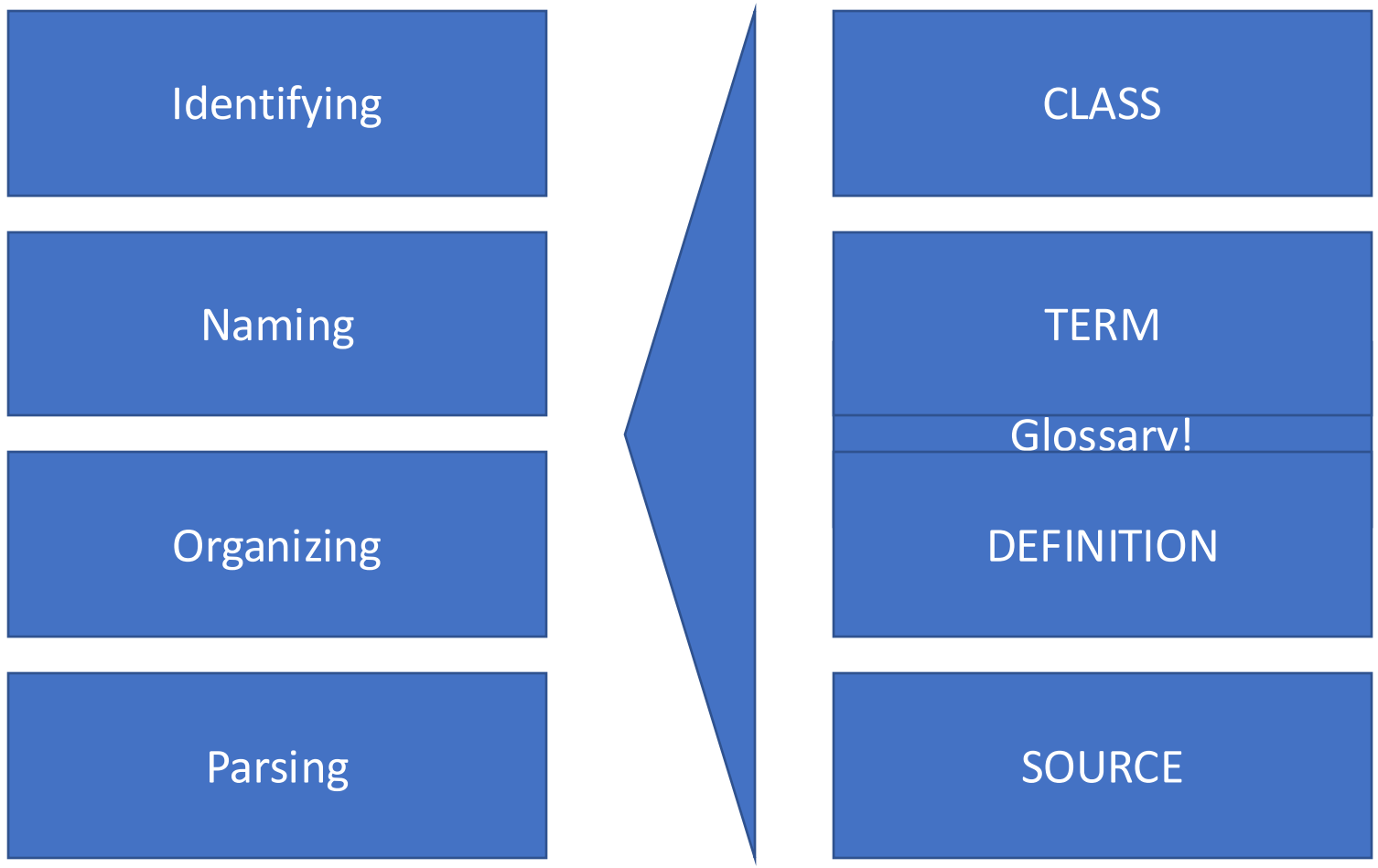

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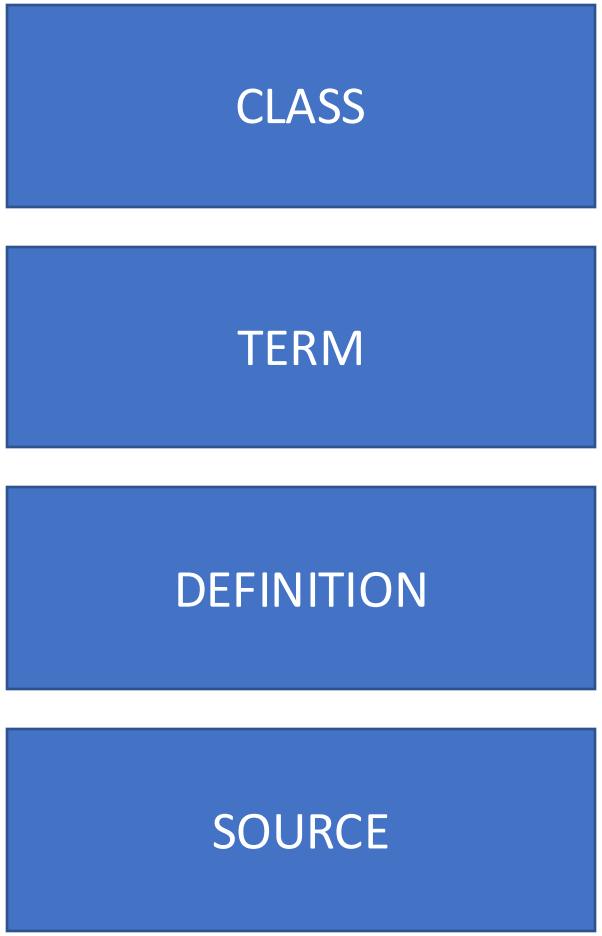

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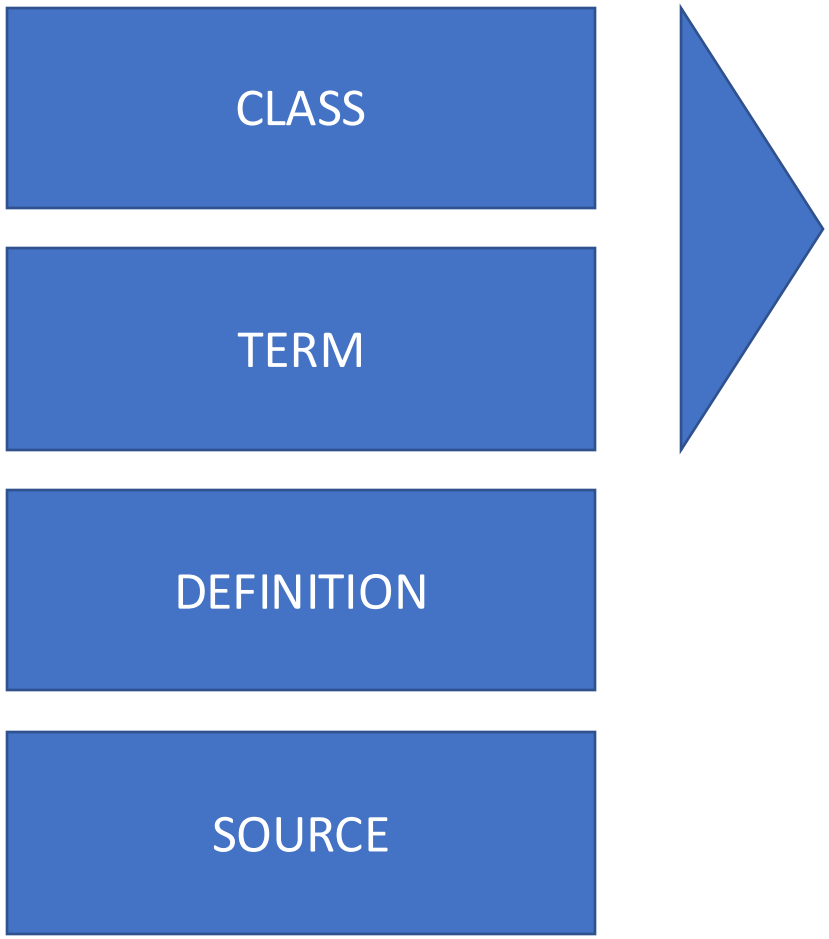
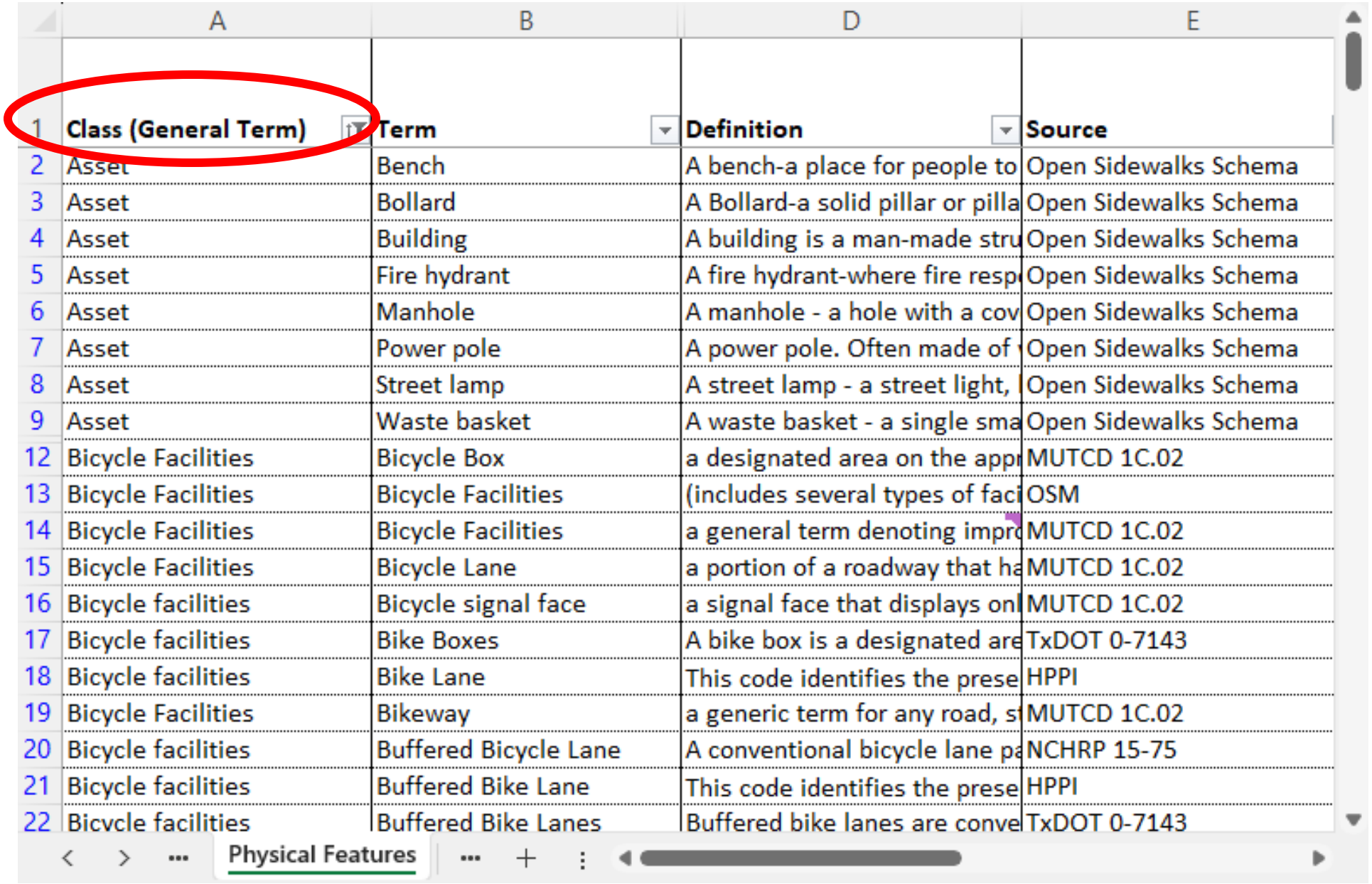


Are these glossary entries:

- Mutually exclusive?
- Flexible?
- Fundamental?



	A	B	D	E
1	**Class (General Term)**	**Term**	**Definition**	**Source**
2	Asset	Bench	A bench-a place for people to	Open Sidewalks Schema
3	Asset	Bollard	A Bollard-a solid pillar or pilla	Open Sidewalks Schema
4	Asset	Building	A building is a man-made stru	Open Sidewalks Schema
5	Asset	Fire hydrant	A fire hydrant-where fire resp	Open Sidewalks Schema
6	Asset	Manhole	A manhole - a hole with a cov	Open Sidewalks Schema
7	Asset	Power pole	A power pole. Often made of	Open Sidewalks Schema
8	Asset	Street lamp	A street lamp - a street light,	Open Sidewalks Schema
9	Asset	Waste basket	A waste basket - a single sma	Open Sidewalks Schema
12	Bicycle Facilities	Bicycle Box	a designated area on the appr	MUTCD 1C.02
13	Bicycle Facilities	Bicycle Facilities	(includes several types of faci	OSM
14	Bicycle Facilities	Bicycle Facilities	a general term denoting impr	MUTCD 1C.02
15	Bicycle Facilities	Bicycle Lane	a portion of a roadway that ha	MUTCD 1C.02
16	Bicycle facilities	Bicycle signal face	a signal face that displays onl	MUTCD 1C.02
17	Bicycle facilities	Bike Boxes	A bike box is a designated are	TxDOT 0-7143
18	Bicycle facilities	Bike Lane	This code identifies the prese	HPPI
19	Bicycle Facilities	Bikeway	a generic term for any road, st	MUTCD 1C.02
20	Bicycle facilities	Buffered Bicycle Lane	A conventional bicycle lane pa	NCHRP 15-75
21	Bicycle facilities	Buffered Bike Lane	This code identifies the prese	HPPI
22	Bicycle facilities	Buffered Bike Lanes	Buffered bike lanes are conve	TxDOT 0-7143

Physical Features

Classes:

- Assets
- Barriers
- Bicycle Facilities
- Crossing
- Footpaths
- Junctions

- Multi-use Facilities
- Roads
- Signals
- Signs
- Users

“Bicycle Facilities” Terms:

- Bicycle Facilities (generally)
- Bicycle Lane
- Buffered Bicycle Lane
- Separated Bicycle Lane
- Counter-Flow Bicycle Lane
- Bikeway
- Designated Bicycle Route
- Bicycle Box
- Two-Stage Bicycle Turn Box
- Bicycle Signal

Questions to Tackle

- Are *Classes* like “Bicycle Facilities” mutually exclusive?
- Are Bicycle Facilities *Terms* flexible enough?
- Could we seek more fundamental “things” to name?
- Does labeling demonstrate applicability across multiple use cases?

Developing the Entities of the Specification

1. What are the **Entities** (physical things) we want to describe in the walking, cycling, and accessibility environment.

1. How are these represented as **features** (spatial representations) and **attributes** (tabular data) in order to develop a **meaningful, user-centric** representation of the infrastructure.

“Buffered Bike Lane”

“Asphalt road with some pavement markings on it”

An example of attributes for crude, physical description of the **Bicycle Facility**

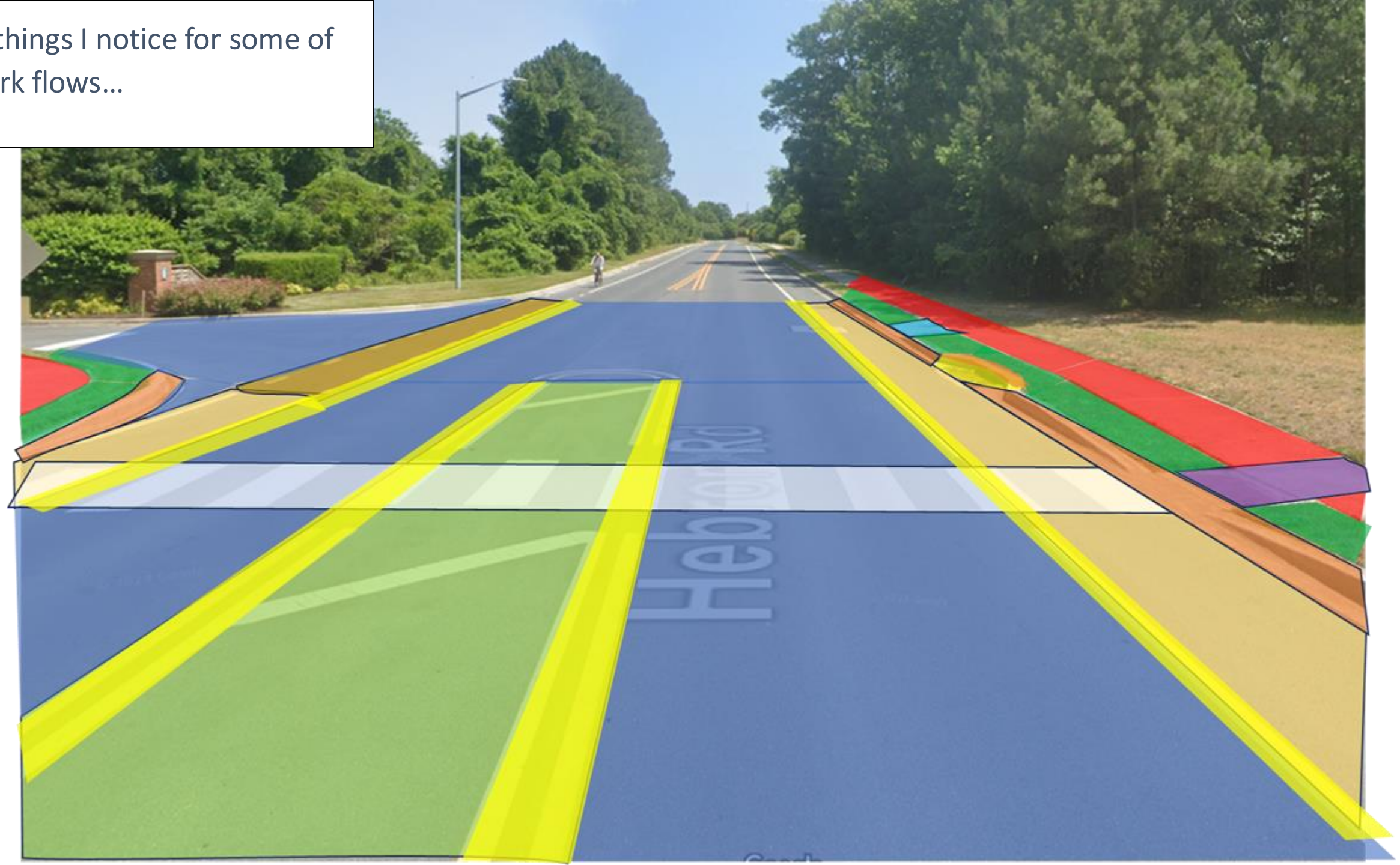
Link Type	Bikelane_Width	Bikelane_Delineator_Type	Bikelane_Delineator_Buffer_Type	Bikelane_Delineator_Buffer_Width	Bikelane_elevation
Roadway	5	pavement_marking	pavement_marking_hatched	5	road

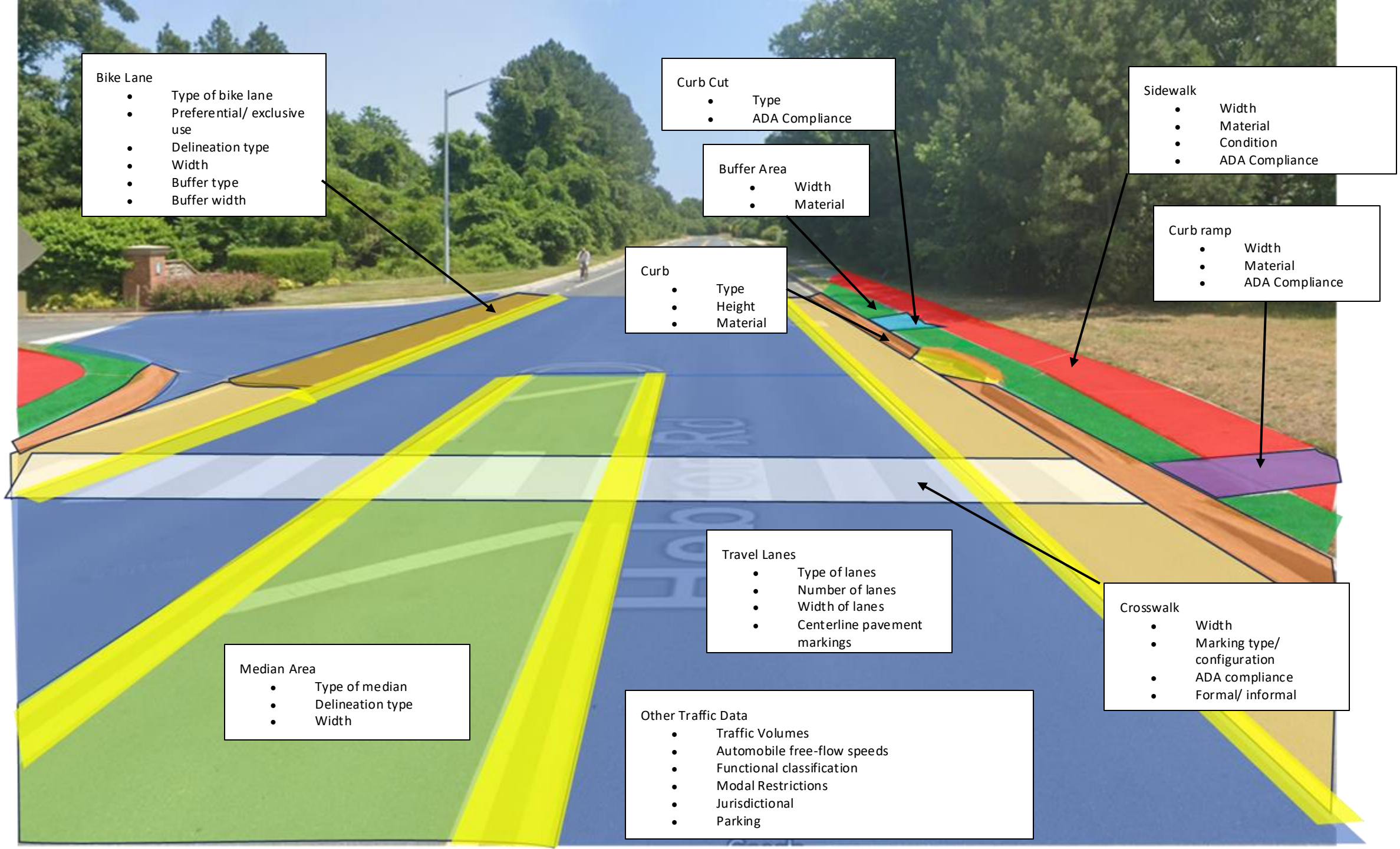
An example of attributes for crude, physical description of the **Footpath**

Link Type	Sidewalk_width	Sidewalk_material	Sidewalk_Delineation_Type	Sidewalk_Buffer_Width	Sidewalk_Buffer_Type
Sidewalk	4	concrete	Curb and gutter	0	

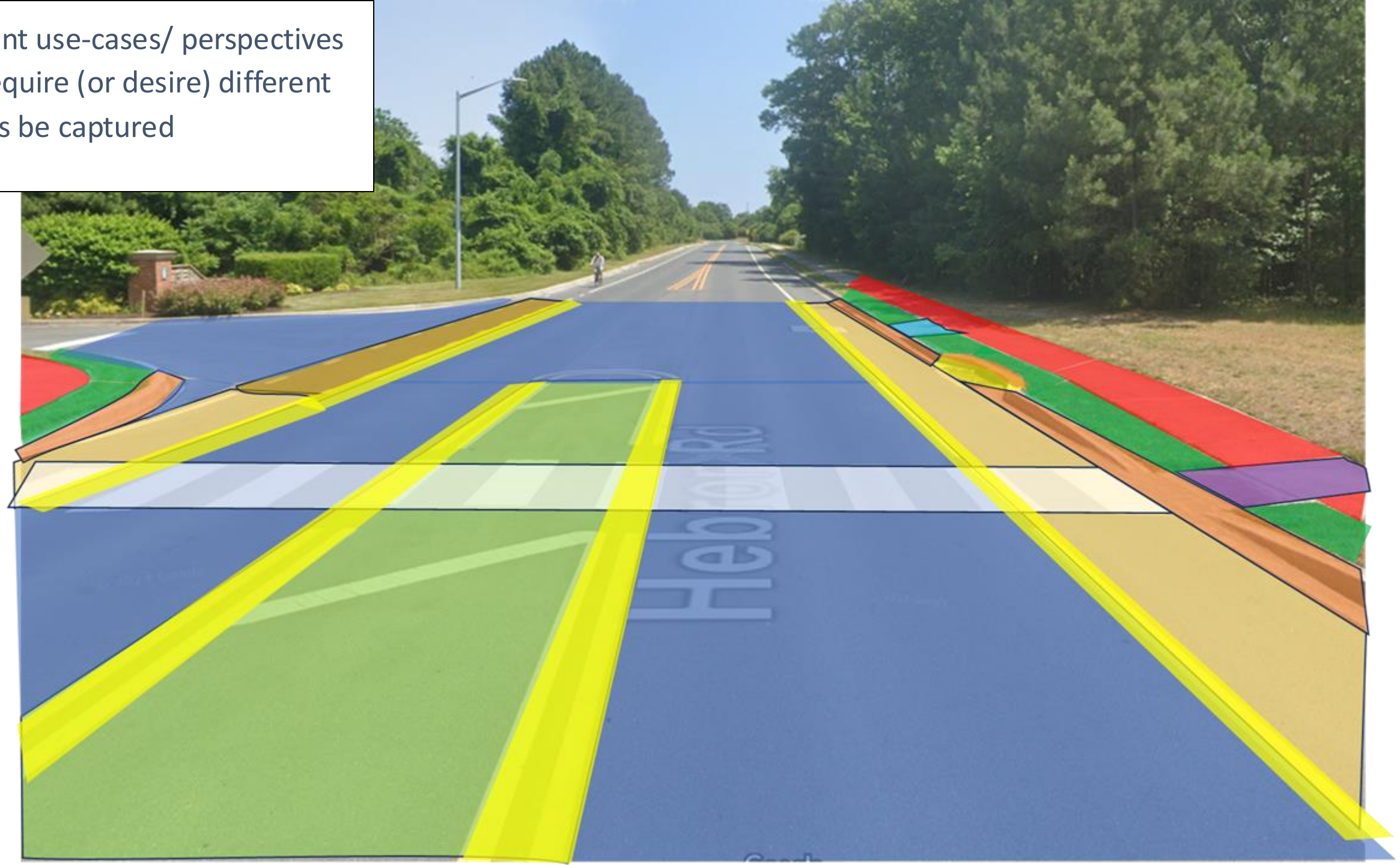
1. What are the **Entities** (physical things) we want to describe in the walking, cycling, and accessibility environment.

A few things I notice for some of my work flows…




Bike Lane
Type of bike lane
Preferential/ exclusive use
Delineation type
Width
Buffer type
Buffer width
Curb Cut
Type
ADA Compliance
Buffer Area
Width
Material
Curb
Type
Height
Material
Sidewalk
Width
Material
Condition
ADA Compliance
Curb ramp
Width
Material
ADA Compliance
Travel Lanes
Type of lanes
Number of lanes
Width of lanes
Centerline pavement markings
Crosswalk
Width
Marking type/ configuration
ADA compliance
Formal/ informal
Median Area
Type of median
Delineation type
Width
Other Traffic Data
Traffic Volumes
Automobile free-flow speeds
Functional classification
Modal Restrictions
Jurisdictional
Parking

Different use-cases/ perspectives may require (or desire) different entities be captured

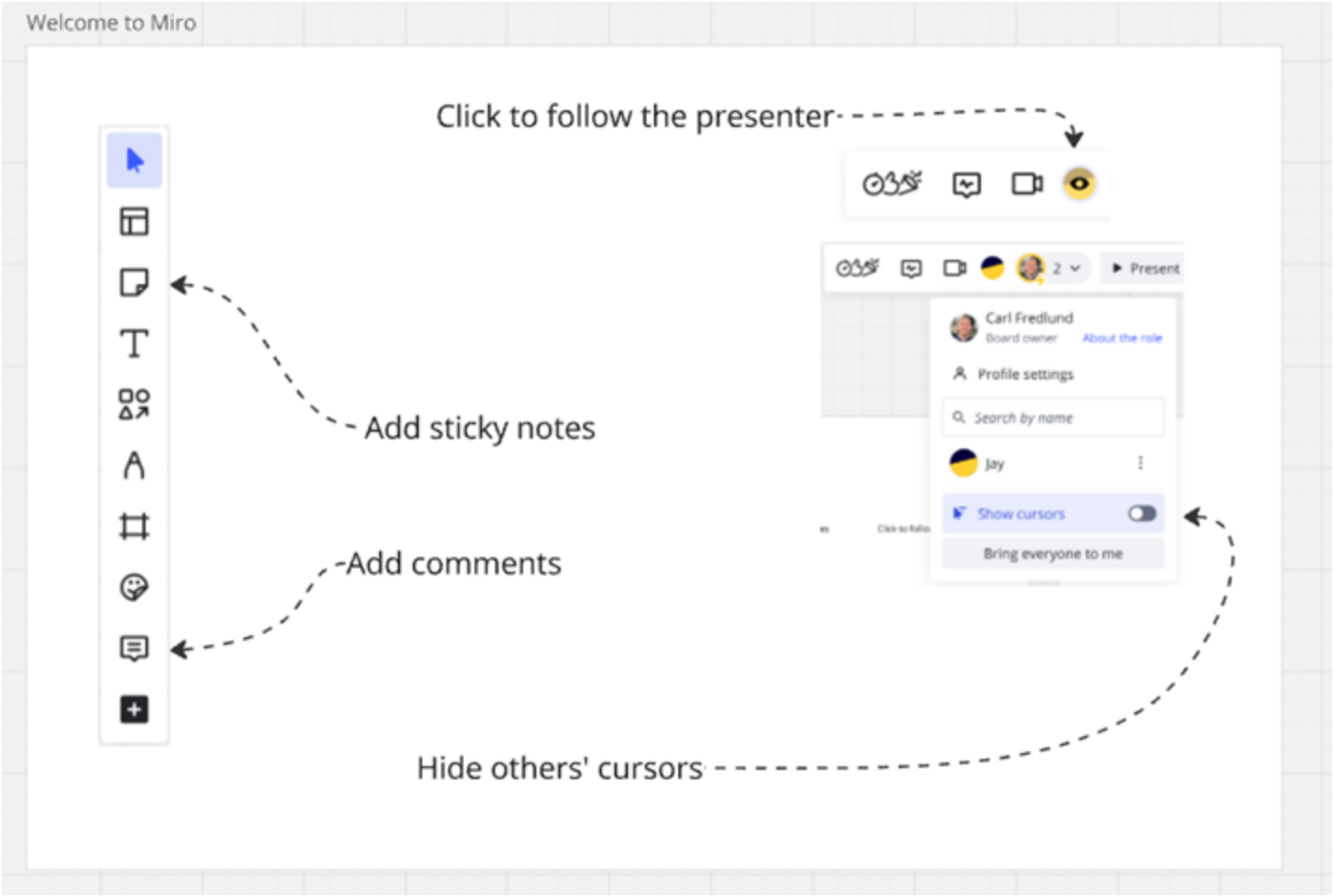


Help us determine what fundamental components our spec needs!

Join us for another fun exercise with Miro!!:

[Join the Public NC_BPAID Miro board using this link]

A taste of focus-group sessions to come



Join us for more focused, spirited working sessions

- **2/5/25 (Wednesday) @ 3:30-5 pm**
  Bicycle Facilities Discussion & Annotation Exercise
  - Same day as the scheduled Bi-weekly Standards Development Subgroup meeting, but starting 30 mins earlier
- **2/12/25 (Wednesday) @ 3:30-5 pm**
  Pedestrian Facilities/ Accessibility Discussion & Annotation Exercise
  - Separately scheduled meeting

Join the Specifications Development Sub-group to get the calendar invitations!!

Thank you!

Next full meeting: Thursday, February 27th @ 3pm ET