Model Inventory of Roadway Elements (MIRE)
MIRE

MIRE, the Model Inventory of Roadway Elements, is a recommended listing of roadway inventory and traffic elements critical to safety management.

But HDSB is not part of Traffic Safety and Mobility
But we are a part of DOT
Luckily for us, some of these overlap, and that is what we are here to talk about. Most are not needed/required until 2026, some may be as early as 2020. Some of the MIRE Elements are already delivered to FHWA through the HPMS reporting process. As of the last discussions I’ve heard about the HPMS reassessment, some of the MIRE items may start to get reported as “optional items” in our HPMS report.
Speed Limit – 38 miles of State Owned Missing – 70,600 Local Miles missing – we searched out state routes in HDSB
Shoulder Width – Come in with the LHI – 40 miles of State Owned Missing – 4,200 Local Miles missing
Even though it may say Full Extent, it is not the full extent of the roadway network – but only defined Functional Classes

Luckily Most FE items and the FC that are asked for are already covered in the state inventory

Some Sample items are unique to HPMS and are not used by the state or have a slight enough difference from our inventory to require a unique field
MIRE has a total of 205 elements, luckily the FDE only makes up 37. *38 if you consider Federal Aid and Route type are separate in MIRE 2.0. This throws all the numbers off in MIRE 2.0 Charts

The FDE are tiered based on functional class and surface type. This tiered system has three categories: non-local paved roads, local paved roads, and unpaved roads. The States must have access to all 37 FDE for non-local paved roads, a smaller subset of nine of the FDE for paved local roads, and an even smaller subset of five FDE for unpaved roads. Under certain conditions, States may elect not to collect the FDE on gravel or otherwise unpaved roads. The FDE for non-local paved roads are further categorized into data elements for roadway segments, intersections and interchanges/ramps.

Not the same FC breakdowns between HPMS and MIRE. Local and Non-Local is somewhat different than the HPMS definitions of Federal Aid Eligible and Non-FAE

MIRE uses Arterial, Collector, and Local – So this local definition considers NYS FC 8 as Non-Local

HPMS considers NYS FC 8 as NON-FAE

This could lead to collection differences
Broken into 3 subcategories – Segment, Intersection, Interchange/Ramp
Broken into 3 subcategories – Segment, Intersection, Interchange/Ramp

AADT/Year are the same as segment
Broken into 3 subcategories – Segment, Intersection, Interchange/Ramp
2,500 CL mile without pavement type
38,778 CL Miles Paved non-local roadways
<table>
<thead>
<tr>
<th>ROADWAY SEGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segment Identifier</td>
</tr>
<tr>
<td>Rural/Urbam Designation</td>
</tr>
<tr>
<td>Surface Type</td>
</tr>
<tr>
<td>Begin Point Segment Descriptor</td>
</tr>
<tr>
<td>End Point Segment Descriptor</td>
</tr>
<tr>
<td>Functional Class</td>
</tr>
<tr>
<td>Number of Through Lanes</td>
</tr>
<tr>
<td>Average Annual Daily Traffic</td>
</tr>
<tr>
<td>Type of Governmental Ownership</td>
</tr>
</tbody>
</table>

Segment Only
65,997 CL Miles Paved Local roadways
Segment Only
72 CL Miles non-paved non-local roadways that we’ll be looking into – Coding issue on our part, maybe stone and tar is considered unpaved by some muni’s?
10,133 CL Miles non-paved local roadways
Labels the section of Roadway from Point A to B.

Cross walk table suggests using HPMS Route ID – unfortunately Route ID is for the entire length of the route, not the interested segment of roadway

Mire segmentation may not be the same as HPMS sections.
8. Route Number
Definition: The signed route number
Recommended Attributes:
Signed numeric value for the roadway segment.

Same as Route number in HPMS item 17
9. Route/Street Name

Definition: The route or street name, where different from Element 8. Route Number.

Recommended Attributes:
The alphanumerical route or street name.

Same as Alternate Route Name in HPMS Item 20
All this data is captured in State Inventory, just needs to be scripted to work for MIRE reporting
Not sure on the MIRE Coding (1,2,3?)
22. Route Type
Definition: Federal-aid/NHS route type.
Recommended Attributes:
1. Non Connector NHS.
2. Major Airport.
4. Major Amtrak Station.
5. Major Rail/Truck Terminal.
6. Major Inter City Bus Terminal.
7. Major Public Transportation or Multi-Modal Passenger Terminal.
8. Major Pipeline Terminal.
9. Major Ferry Terminal.

Same as HPMS item 64 – NHS

Trivia Question – Which NHS Connectors does NYS not have?
  #8 – No Major Pipeline Terminals – Yet?
20. Rural/Urbam Designation
Definition: The rural or urban designation based on Census urban boundary and population.
Recommended Attributes:
1. Rural
2. Urban (population > 5,000)

Similar enough to HPMS Item 2 – Urban Code – Just needs to be scripted to work
Similar enough to HPMS Item 49 – Surface Type

This element has been changed since MIRE 1.0. To facilitate safety analyses, it is recommended that the type of surface for unpaved roads be more specifically identified.
MIRE crosswalks this to the BMP/EMP of the sections files for HPMS.

Not sure MIRE segments will be the same as HPMS sections.

What is the MIRE recommended homogeneity?

As long as CLEAR uses the ELRS we can map our data elements to MIRE
13. Segment Length
Definition: The length of the segment.
Recommended Attributes: Miles.

MIRE crosswalks this to the section length for HPMS.

Not sure MIRE segments will be the same as HPMS sections.
18. Direction of Inventory

**Definition:** Direction of inventory if divided roads are inventoried in each direction.

**Recommended Attributes:**
1. Predominate compass direction (N,S,E,W) - if roads are inventoried in each direction usually due to different characteristics on each roadway.
2. Both - if inventoried in only one direction (e.g. the inventory applies to both directions of a single-carriageway roadway).

Currently Non-Existent
19. Functional Class
Definition: The FHWA approved Functional Classification System.

Recommended Attributes:
1. Interstate
2. Principal arterial other freeways and expressways
3. Principal arterial other
4. Minor arterial
5. Major collector
6. Minor collector
7. Local

Same as HPMS Item 1 – Functional System
Cross walk claims to be the same as HPMS Item Same as HPMS Item 35 – Median Type

Currently not collected in this manner in either State or HPMS inventory

HPMS calls two-way left-turn lanes a “continuous turning lane” and specifically says it is not a median.
Same as HPMS Item 5 – Access Control
Similar to HPMS Item 3 – Facility Type

#3 is not used in HPMS so it could be scripted to show One Direction based on our “Direction” coding in state inventory
Similar to HPMS Item 7 – Through Lanes

Would need to be scripted differently then HPMS, which currently only allows for directional lanes if other attributes are delivered.

HOV, HOT and Express Toll Lanes are considered as travel lanes for HPMS purposes

We currently do not have an inventory of these auxiliary lanes, but are working on it for State owned roadways only.
MIRE 32. Number of Through Lanes

Route A (e.g., US 10)

Route A number of through lanes = 4

Route A (e.g., US 10 Northbound)

Route B (e.g., US 10 Southbound)

Route A number of through lanes = 2

Route B number of through lanes = 2
Similar to HPMS Item 21 – AADT

HPMS allows for a growth factor for AADT not derived from current year counts
AADTs for the NHS and NYS FC 1, 11, 2, 12, 3, and 13 (Principal Arterials) are based on traffic counts taken every 3 years
AADTs for the NYS FC 6, 16, 7, 17, and 18 (Minor Arterials, Major Collectors, and Minor Urban Collectors) are based on traffic counts taken every 6 years

Both direction is interpreted as bidirectional as in HPMS and not an AADT for both directions
82. AADT Year
Definition: Year of AADT.
Recommended Attributes:
Year

This is in the State Inventory

Year the AADT count was actually taken?
Same as HPMS Item 6 – Ownership – Different beginning Codes

Just need to be cross walked correctly
Currently not in any HDSB inventory

Could not create them all in HDSB if we wanted to.

Nodes currently created by TS&M To be moved/stored in the CLEAR application
Not an HDSB inventory Item

Not sure on the guidance for multi tiered intersections.

Note that if the Junction File is a spatial data file, this would be the coordinates and would be the same for all crossing roads. Not applicable if intersecting route is not an inventoried road (i.e., a railroad or bicycle path).

This becomes an issue with inventorying the intersection of none public roads such as large shopping centers.
MIRE 116. Intersection/Junction Geometry

Definition: The type of geometric configuration that best describes the intersection/junction.

Recommended Attributes:

<table>
<thead>
<tr>
<th>Item</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>T-Intersection</td>
</tr>
<tr>
<td>2.</td>
<td>Y-Intersection</td>
</tr>
<tr>
<td>3.</td>
<td>Cross-Intersection (four legs)</td>
</tr>
<tr>
<td>4.</td>
<td>Five or more legs and not circular</td>
</tr>
<tr>
<td>5.</td>
<td>Roundabout</td>
</tr>
<tr>
<td>6.</td>
<td>Other circular intersection (e.g., rotaries, neighborhood traffic circles)</td>
</tr>
<tr>
<td>7.</td>
<td>Midblock pedestrian crossing (i.e., RCUT, J-turn, Superstreet)</td>
</tr>
<tr>
<td>8.</td>
<td>Restricted crossing U-turn (i.e., MUT, Michigan Left, Thru-turn) intersection</td>
</tr>
<tr>
<td>9.</td>
<td>Median U-turn (i.e., MUT, Michigan Left, Thru-turn)</td>
</tr>
<tr>
<td>10.</td>
<td>Displaced left-turn (i.e., DLT, continuous flow, CFI)</td>
</tr>
<tr>
<td>11.</td>
<td>New Jersey Jughandle intersection</td>
</tr>
<tr>
<td>12.</td>
<td>Continuous green T intersection</td>
</tr>
<tr>
<td>13.</td>
<td>Quadrant (i.e., quadrant roadway)</td>
</tr>
<tr>
<td>14.</td>
<td>Other</td>
</tr>
</tbody>
</table>

Not an HDSB inventory Item

Intersection Type to be stored in CLEAR
MIRE

116. Intersection/Junction Geometry

- T-intersection
- Y-intersection
- Cross-intersection (four legs)
- Five or more legs and not circular
- Roundabout
- Other circular intersections (e.g., rotaries, neighborhood traffic circles)

Midblock pedestrian crossing
MIRE

116. Intersection/Junction Geometry

- Restricted Crossing U-Turn
- Median U-Turn
- Four-legged Displaced Left Turn intersection with displaced lefts on a major street
- Jug-handle Intersection
- Continuous Green T Intersection
- Quadrant Roadway Intersection
Not an HDSB inventory Item

Intersection Control Type to be stored in CLEAR

Could be used to populate HPMS data items 31 – Number of Signalized Intersections, 32 - Number of Stop Sign-Controlled Intersections and 33 - Number of Intersections, Type – Other

Again leads to an issues with intersection of non-public roads
129. Unique Approach Identifier
Definition: A unique identifier for each approach of an intersection.
Recommended Attributes: Any identifier that is unique for each approach within a single intersection (e.g., sequential numbers or letters, compass directions, “clock hours”).

Not an HDSB inventory Item
May be derived from inventory attributes
Approach Identifier to be stored in CLEAR
Intersections in CLEAR

<table>
<thead>
<tr>
<th>Intersection Id</th>
<th>Street</th>
<th>Cross Street</th>
<th>County</th>
<th>Muni</th>
<th>Muni Type</th>
<th>From Date</th>
<th>Geometry</th>
<th>Crosswalk</th>
</tr>
</thead>
<tbody>
<tr>
<td>881</td>
<td>Western Ave</td>
<td>Clermont</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>902</td>
<td>Western Ave</td>
<td>Miller Ave</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>903</td>
<td>Western Ave</td>
<td>Lisbon Ave</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>904</td>
<td>Western Ave</td>
<td>Bower St</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>905</td>
<td>Western Ave</td>
<td>Euclid Ave</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>906</td>
<td>Western Ave</td>
<td>Terrace Ave</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>907</td>
<td>Western Ave</td>
<td>Broad Ave</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
<tr>
<td>908</td>
<td>Western Ave</td>
<td>Memel Ave</td>
<td>Albany</td>
<td>City</td>
<td>City</td>
<td>1/1/1970</td>
<td>T-intersection</td>
<td>Marked crosswalk</td>
</tr>
</tbody>
</table>

- **T-intersection**: Town intersection
- **Marked crosswalk**: Marked crosswalk
Currently have an interchange code in the state inventory

Each Ramp is captured separate from the interchange with the unique identifier in the Segments sections

Interchange Identifier to be moved to CLEAR
Must be consistent with other MIRE files for linkage.

Currently exists in Statewide inventory

Moving to Clear, could use simple GIS intersections to find.
Currently need to rebuild most ramps in the network to conform to taper to taper length.

Conversion from miles to feet – easy enough
Not a direct HDSB Attribute

Could be developed using GIS and a better definition of Attribution type for scripting

What is a freeway?

**FHWA - Freeway**: A divided highway facility with full control of access and two or more lanes for the exclusive use of through traffic in each direction. Could be coded using FC 1 & 2?

**FHWA - Expressway**: A divided highway facility with partial control of access and two or more lanes for the exclusive use of through traffic in each direction; includes grade separations at most major intersections.

FC 2 get foggy for expressways

Frontage Road vs Service Road
172. Interchange Type

Definition: Type of interchange.

Recommended Attributes:

1. Diamond
2. Full cloverleaf
3. Partial cloverleaf
4. Trumpet
5. Three-leg directional
6. Four-leg all-directional
7. Semi-directional
8. Single entrances and/or exits (partial interchange)
9. Single point interchange (SPI)
10. Diverging diamond (i.e., DDI, double-crossover diamond, DCD) interchange
11. Double roundabout (i.e., double raindrop) interchange
12. Single roundabout (i.e., single raindrop) interchange
13. Quadrant
14. Other

Not an HDSB inventory item

Intersection Type to be stored in CLEAR
Not an HDSB inventory item

Intersection Type to be stored in CLEAR
Not an HDSB inventory Item

Intersection Type to be stored in CLEAR
Not an HDSB inventory item

Intersection Type to be stored in CLEAR
181. Ramp AADT
Definition: AADT on ramp.
Recommended Attributes: Numeric

182. Year of Ramp AADT
Definition: Year of AADT on ramp.
Recommended Attributes: Year

HDSB responsibility
Questions?