**VTrans Data Gap Analysis for Safety Analysis – Mapping Section Comments:**

1. agencyID (roadway segment) – it might make sense to follow a similar schema for this ID as what is used by Reid Kiniry with the pavement inventory and leverage the LRS code, plus the from and to mileposts, providing a unique field that gives detail to the route and location.
2. Route Type can be derived from the LRS Code in ARNOLD:

Route\_ID like ‘I%’ = I - Interstate - Route category interstate

Route\_ID like ‘U%’ = US - US route - Route category US route

Route\_ID like ‘V%’ = SR - State route - Route category state route

Route\_ID like ‘N%’ = SR - State route - Route category state route

Route\_ID like ‘A%’ = SR - State route - Route category state route

Route\_ID like ‘B%’ = BR - Business route - Route category business route

Not assigned BL - Business loop - Route category business loop

Not assigned SP - Spur route - Route category spur route

Not used in Vermont CR - County road - Route category county road

Route\_ID like ‘S%’ = TR - Township road - Route category township road

Route\_ID like ‘L%’ = L - Local road - Route category local road

O - Other - Route category other

X - Unknown - Route category unknown

1. startOffset and endOffset can be calculated from the linear referenced geometry or event table used to port to Safety Analyst and should be easily derived through a GIS process
2. segmentLength should be derived from the delta of the endOffset and startOffset and calculated for the unique segments
3. areaType should be derived from the Urban\_Code field in the functional class table or TransRoad\_RDS data

Urban\_Code <> 99999 = U - Urban - Urban area type

Urban\_Code = 99999 = R - Rural - Rural area type

X - Unknown - Unknown area type \*

1. segmentLength should be derived from the delta of the endOffset and startOffset and calculated for the unique segments
2. accessControl can be leveraged from the Limited Access event table that includes all the sections of full control and partial controlled limited access highways on the state highway system. This data is in the town-based LRS and can be merged with the other event data as needed.
3. travelDirection can be leveraged from the master route definition table (MRDTable) with the “Direction” field. Each routes primary direction is defined as, EB, WB, NB or SB, matching the Safety Analyst schema.
4. city – this can be derived from multiple datasets at VTrans and can leverage the CTCODE, being the county-town code and linked to the town-lookup table, providing both town and county names.
5. terrain – may be extracted from HPMS for sample sections using Terrain\_Type field
6. increasingMilesposts can be derived from the same field as travelDirection.
7. agencyID (roadway segment) – it might make sense to follow a similar schema for this ID as what is used by Reid Kiniry with the pavement inventory and leverage the LRS code, plus the from and to mileposts, providing a unique field that gives detail to the route and location.
8. agencyID (roadway segment traffic) – it might make sense to follow a similar schema for this ID as what is used by Reid Kiniry with the pavement inventory and leverage the LRS code, plus the from and to mileposts, providing a unique field that gives detail to the route and location.
9. There needs to be the development of intersection data. Points can be generated from the intersections in the road centerline data layer, TransRoad\_RDS. This is a fairly simple process and the complexity comes in maintaining the relationship between the intersection point and the associated connecting arcs. These are the legs of the intersection and it is thought that Esri Roads & Highways can provide a means to build and maintain the intersections as part of a routable network. If there is topological connectivity of the intersection point to the arcs, there should be the ability to pull attributes from the arcs to build out the data for each leg of the intersection. It would be beneficial for VHB to provide some guidance to the best practices for building intersection data and what their experience has been. This also interleaves with Mario’s upcoming intersection data project.
10. majorRoadOffset – can be defined from the linear reference system and mile post for the intersection. The route log points data layer can also provide insight to LRS code and mile post for the intersections, as this data layer already has points for intersections that are used by the Route Log System.
11. minorRoadOffset – similar method to locate and assign the mile post as above
12. intersectionType1 has not been defined, but there might be a method to leverage the number of legs and angle between legs to assign a type for the bulk of the intersections, then review of the remainder through manual assignment would be necessary.
13. district - can be derived from the town lookup table for VTrans districts
14. agencyID (ramp site characteristics) – can be assigned in a similar manner as the road segments
15. Some ramp characteristic fields match fields in the roadway segments and have similar sources and approaches as noted above.
16. I will leave the crash data fields for Mandy to weigh in on.