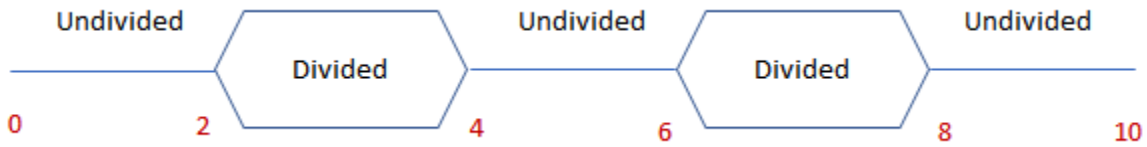


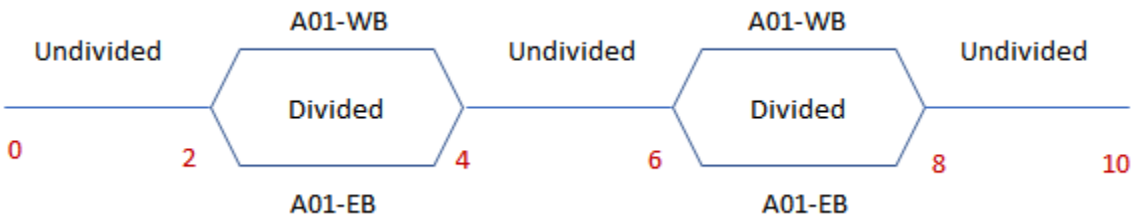
Complex Scenario: Divided Highway

Divided highway (a.k.a. Dual carriageway) is very common in road world. It is when traffic travelling on roadways of opposite directions are separated by a central reservation. In common LRS setup, each direction is modeled as a separate route in the network. However, this often does not happen for the entirety of the route. In such case we have partially divided highway. Below is an example.

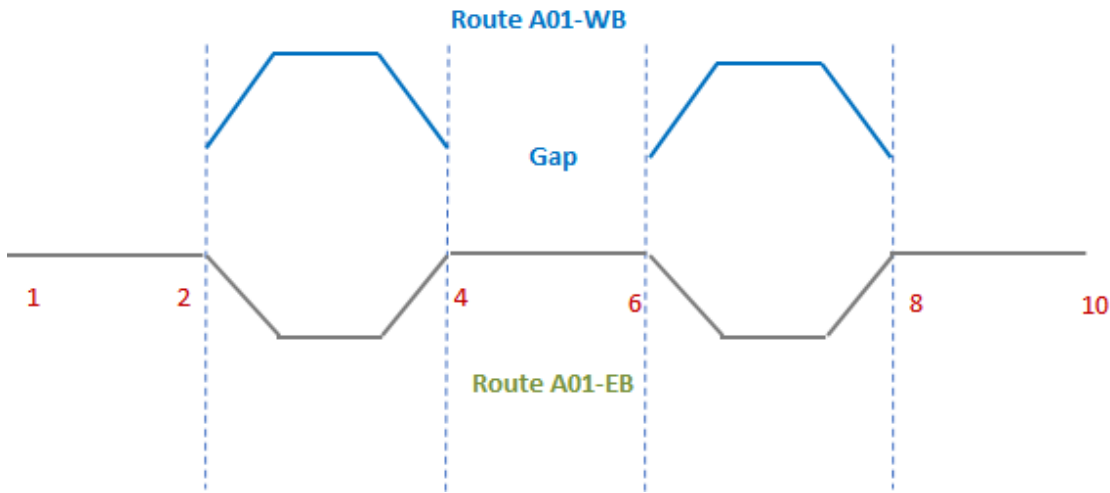


There are two data models to model partially divided highway in AgileAssets system. They are explained below.

- Gaps Mode:** In this model, a separate route is built to represent each direction. The **cardinal** (or **primary**) direction route (usually East or North Bound) is continuous throughout the entirety of the route, whereas the non-cardinal (or **reverse/non-primary**) direction route (usually West or South Bound) has **gaps** when the route is undivided. This step is commonly used for agencies that do not use concurrency in the LRS. An example of this setup is shown: A01-EB is the cardinal direction route, and A01-WB is the non-cardinal direction route.



Under this model, this is what two routes look like (distance between routes is exaggerated for displaying purpose):



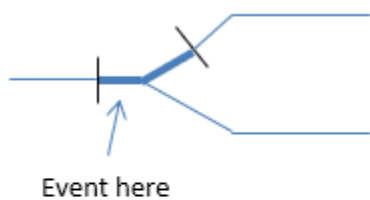
The LRS database tables NETWORK_GAPS, CONCURRENT_LOCATION_DOM, CONCURRENT_LOCATION_SIB, NETWORK_LINE_DIRECTIONS and SETUP_LOC_IDENT are filled as follows, to represent the above route network.

NETWORK_LINE_DIRECTIONS		SETUP_LOC_IDENT					
LOC_IDENT		LOC_IDENT	ROUTE	LANE_DIR	FROM	TO	LANE_ID
101		601	A01-EB	1	1	10	0
202		602	A01-EB	2	1	2	0
303		603	A01-EB	2	4	6	0
404		604	A01-EB	2	8	10	0
505		605	A01-WB	2	2	4	0
606		606	A01-WB	2	6	8	0
CONCURRENT_LOCATION_DOM							
Empty							
CONCURRENT_LOCATION_SIB							
Empty							

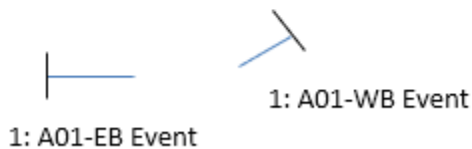
NETWORK_GAPS		SETUP_LOC_IDENT						
LOC_IDENT	ALLOW SPANNING	LOC_IDENT	ROUTE	LANE_DIR	FROM	TO	LANE_ID	
701*	0	701	A01-WB	0	1	2	0	
702	0	702	A01-WB	0	4	6	0	
703*	0	703	A01-WB	0	8	10	0	

*NOTE: If it's the beginning / end of the route, then these gap records are not needed. In other words, if the route starts at Milepoint 1, it is not needed to record milepoint 0 to 1 as a gap. Because that part of the route is automatically considered outside the route. Similarly, if the route ends at milepoint 8, milepoints 8 to 10 don't need to be recorded as gap.

This setup will result in the following issue when recording line events when the roadways diverge or converge.

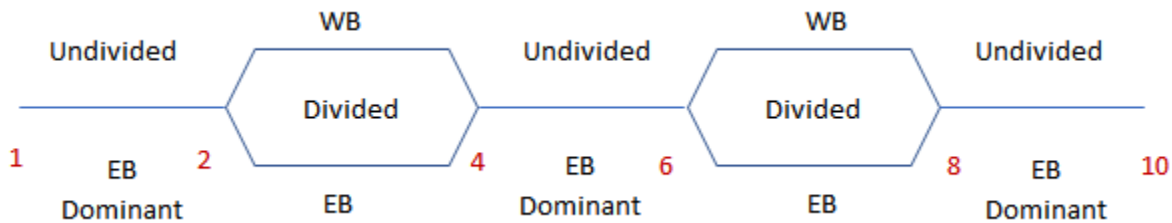


System error message: Event overlaps gap on Route A01-EB.

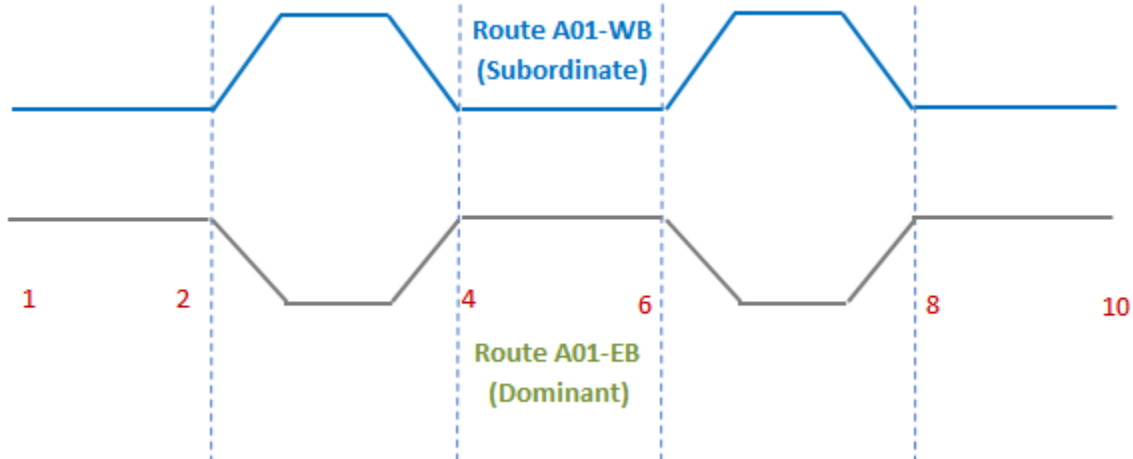


To prevent the above situation, two records need to be entered in the system: one on each route.

- Concurrency Model:** In this model, a separate route is built to represent each direction. Both the **cardinal** (or **primary**) direction route and **non-cardinal** (or **reverse/non-primary**) direction route are continuous throughout the entirety of the route. At the portion of the roadway where it is undivided, the two routes are **concurrent**. A dominance rule is normally built into the network when there is concurrency. So, at the undivided portion of the roadway, the cardinal direction route is **dominant**, and non-cardinal direction route is **subordinate**.



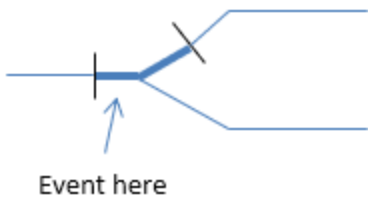
Under this model, this is what two routes look like (distance between routes is exaggerated for displaying purpose):



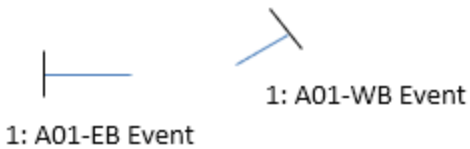
The LRS database tables NETWORK_GAPS, CONCURRENT_LOCATION_DOM, CONCURRENT_LOCATION_SIB, NETWORK_LINE_DIRECTIONS and SETUP_LOC_IDENT are filled as follows, to represent the above route network.

NETWORK_LINE_DIRECTIONS		SETUP_LOC_IDENT					
LOC_IDENT		LOC_IDENT	ROUTE	LANE_DIR	FROM	TO	LANE_ID
601		601	A01-EB	1	1	10	0
602		602	A01-EB	2	1	2	0
603		603	A01-EB	2	4	6	0
604		604	A01-EB	2	8	10	0
605		605	A01-WB	2	2	4	0
606		606	A01-WB	2	6	8	0
NOTE: NETWORK_LINE_DIRECTIONS table does not contain subordinate section data.							
CONCURRENT_LOCATION_DOM		SETUP_LOC_IDENT					
DOM_LOCATION_ID	LOC_IDENT	LOC_IDENT	ROUTE	LANE_DIR	FROM	TO	LANE_ID
501	50101	50101	A01-EB	0	1	2	0
502	50202	50202	A01-EB	0	4	6	0
503	50303	50303	A01-EB	0	8	10	0
CONCURRENT_LOCATION_SUB		SETUP_LOC_IDENT					
DOM_LOCATION_ID	LOC_IDENT	LOC_IDENT	ROUTE	LANE_DIR	FROM	TO	LANE_ID
501	50104	50104	A01-WB	0	1	2	0
502	50105	50205	A01-WB	0	4	6	0
503	50106	50306	A01-WB	0	8	10	0
NETWORK_GAPS							
Empty							

This setup will result in the following issue when recording line events when the roadways diverge or converge.



System error message: Partially subordinated event cannot be converted to dominant route.



To prevent the above situation, two records need to be entered in the system: one on each route.