I-69 at SR 1/Dupont Road: Diverging Diamond Interchange
Original Interchange at I-69 at SR1/DuPont Rd
Research shows that compared to a normal diamond interchange, the DDI:

- Reduces intersection delay 15% - 60%
- Increases intersection through traffic 10% - 30%
- Increases intersection capacity 15% - 25%

Simple two phase signal operation

Increased capacity for the left-turning movements to/from the ramps.

Left-turn vehicles only go through one signal

Traffic is better spread out entering a freeway

Oversized loads can make left turns to freeway

U-turns from/to freeway are easier
The increased capacity and unique configuration of the DDI provides the potential to reduce the number of lanes on the crossroad, eliminating the need to widen the bridge.

Small footprint of the DDI minimizes the right-of-way needed for the interchange compared to other traditional interchange types.

- Within interchange area
- On arterial approaches
DDI Disadvantages

- Not intended for heavy through movements, but can be accommodated.
- Can’t travel from off-ramp to on-ramp.
- Nearby intersections need modeled with interchange
- DDI violates driver expectations by placing traffic left of center.
- Myths:
  - Not suitable for high-speed arterials.
  - DDI’s are confusing to drive through.
How Traffic Flows

Signal Phases for DDI

Legend
- Blue: Signal Phase 1
- Red: Signal Phase 2
- Green: Continuous Free-Flow Movement
INDOT’S GOALS

21st Century, One INDOT Results

- On-time and On-budget
- Take Care of What We Have
- Customer Satisfaction
  - Improve internal and external customer satisfaction.
  - Take an outside in view to ensure the highest level of customer service.
Public Information

I-69 and SR 1/DuPont Road
Diverging Diamond Interchange

An Educational Guide
Construction of a diverging diamond interchange at I-69 and Dupont Road is expected to start this month and continue through mid-November. Although both east- and westbound lanes will remain open during construction, delays — especially during peak hours — are anticipated. Drivers traveling to Dupont Hospital are encouraged to consider utilizing alternate routes, such as Auburn, Coldwater and Union Chapel roads.

For additional information, visit TheDupontDifference.com.
Construction on Dupont/SR1 to begin April 14

Many of you cross I-69 on Dupont Road to travel to church services and activities. Many of you also follow this route to school and work. Please be aware that beginning this weekend, a work zone will be set up around the entire Dupont/SR1 interchange at I-69. Then on Monday, April 14, the speed limit will be reduced to 35 mph on SR 1/Dupont Road, from the Dupont Commerce Court entrance to Parkview Plaza. The northbound I-69 off ramp to Dupont Road will also be restricted.

- You can read more about this project at the Indiana Department of Transportation.
- You can also read a summary of the plans at the Journal Gazette.
**Design Considerations**

- **Design Speed**
  - 25-40 mph
  - Design reverse curves to allow for 25 mph for through traffic

- **Crossover Geometrics**
  - 35-55 degrees
    - *The higher the better*
  - Curve Radii should be 150’ to 300’
  - Eyebrow (sight line)

- **Lane Width**
  - Width can vary from 12’ up to 18’
  - WB-67 typically needs 14’ lanes for side-by-side through movements to navigate the reverse curves

- **On-ramps**
  - Signalized Stop control to avoid crashes due to possible driver confusion.
Crossover Design

55 degrees, 15’ lanes
Crossover Design
Crossover Design
Design Challenges

- Pedestrian Protection/Concrete Railing vs. Sight Distance in Median
- Signal Design
- Maintenance of Traffic
Pedestrian Walkway and Railing
Pedestrian Walkway and Railing
Signal Head Placement

3-Head Signals on Mast Arm

3-Head Signal on Pedestal
Signal Head Placement
2 Weekend Closures
Construction Issues

- Guardrail at Bridge corners
- Ornamental Railing
- Maintenance of Traffic
Plan View Model
Aerial Video
New Diverging Diamond Interchange
Lessons Learned

Missouri’s Experience with a Diverging Diamond Interchange

Lessons Learned

Missouri DOT - 2010

DDI Guideline
A UDOT Guide to Diverging Diamond Interchanges

June 2014

Utah DOT - 2014
Judy Hampson: I drive over this twice a day, and it's a HUGE improvement over the previous configuration. Traffic flows much, much better. I love it!

Gary Pulis: I've driven this confusing piece of engineering crap. There will be fatal crashes here......many of them.