



**NORTH CAROLINA**  
Department of Transportation

# Roundabout Drainage Design

October 17, 2024



Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

# Design Guidelines

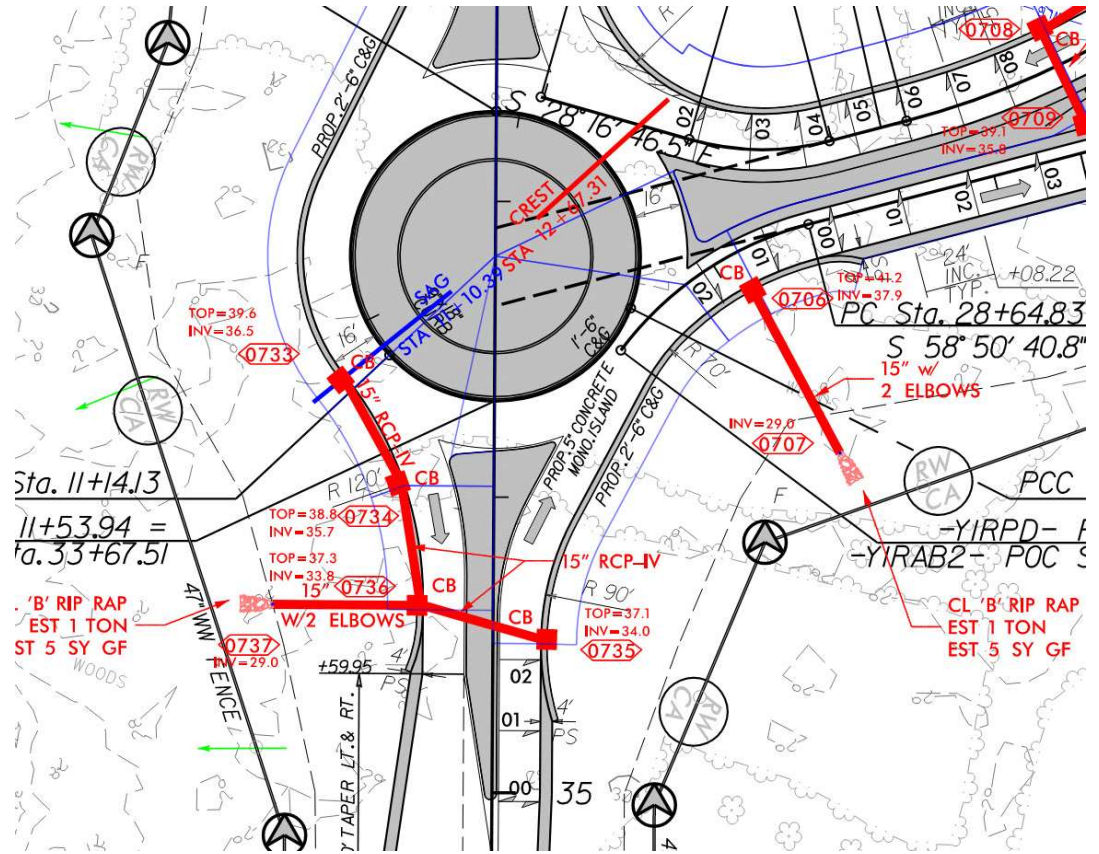
1. Roadway Engineers: Design profiles to allow circle to drain naturally – let the water flow out the approaches for Curb and Gutter roundabouts.
2. Don't design for spread. However, don't allow water depth exceed 5" in depth at the gutterline.
3. If sags are needed in the roundabout profile, place them at the approaches.
4. Design approaches with Normal Crown to negate the need for inlets in splitter islands. When the pavement has to rotate to meet the inscribed circle pavement, keep the superelevation runout/runoff tight.
5. Don't use Catch Basins in the inscribed circle. Trucks can roll over the hoods and damage them.
6. If a grated inlet is required, use TB-2GI with bike and pedestrian-safe grates.

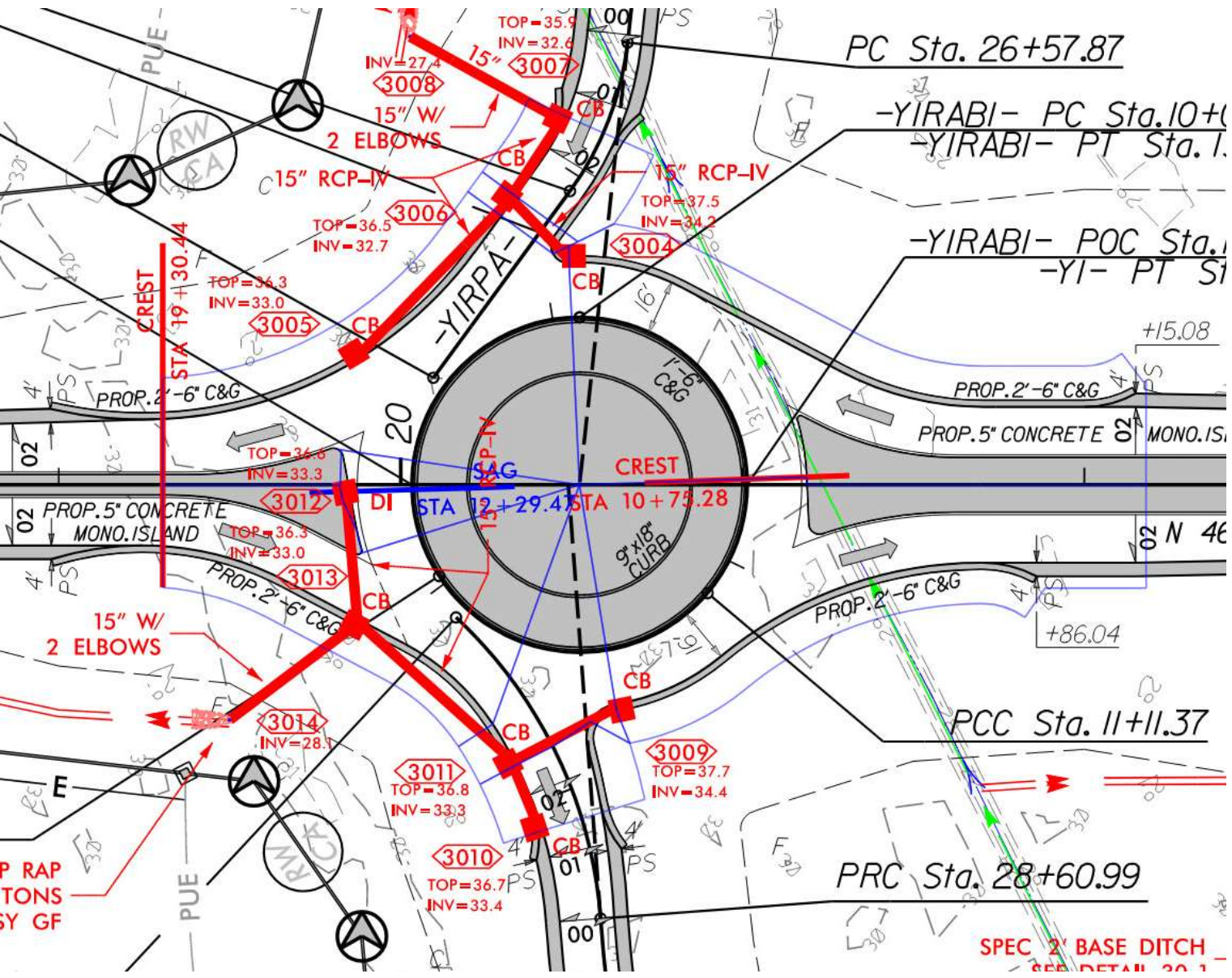
TB-2GI: 840.36

Steel Grate and Frame, Bicycle Safe: 840.39



# Design Circle to Drain out the Approaches





**Don't  
design for  
spread  
and don't  
use catch  
basins**

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**Consider  
using a flume**



## Issues with Flumes: Concentrated flow which can freeze and clogging

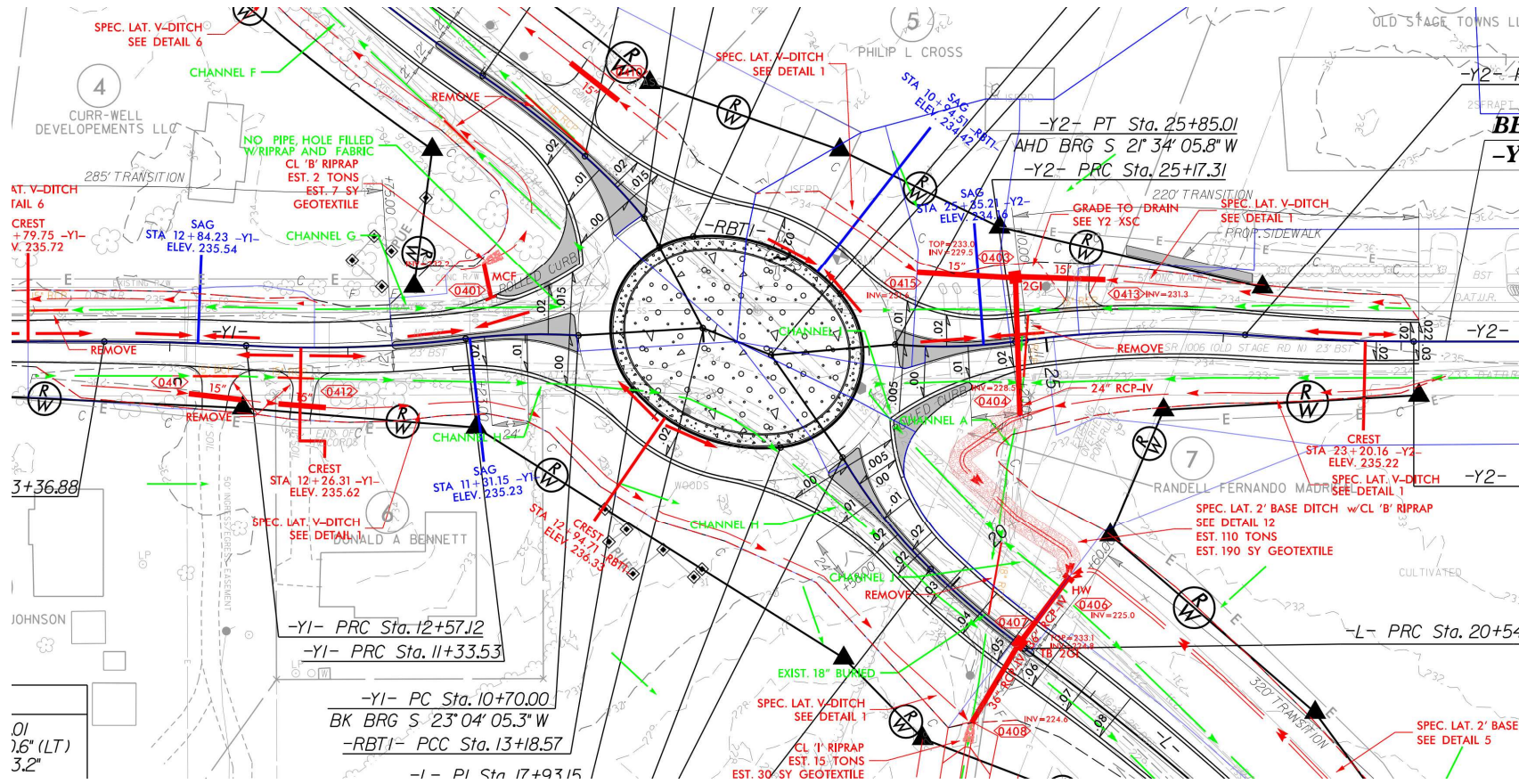


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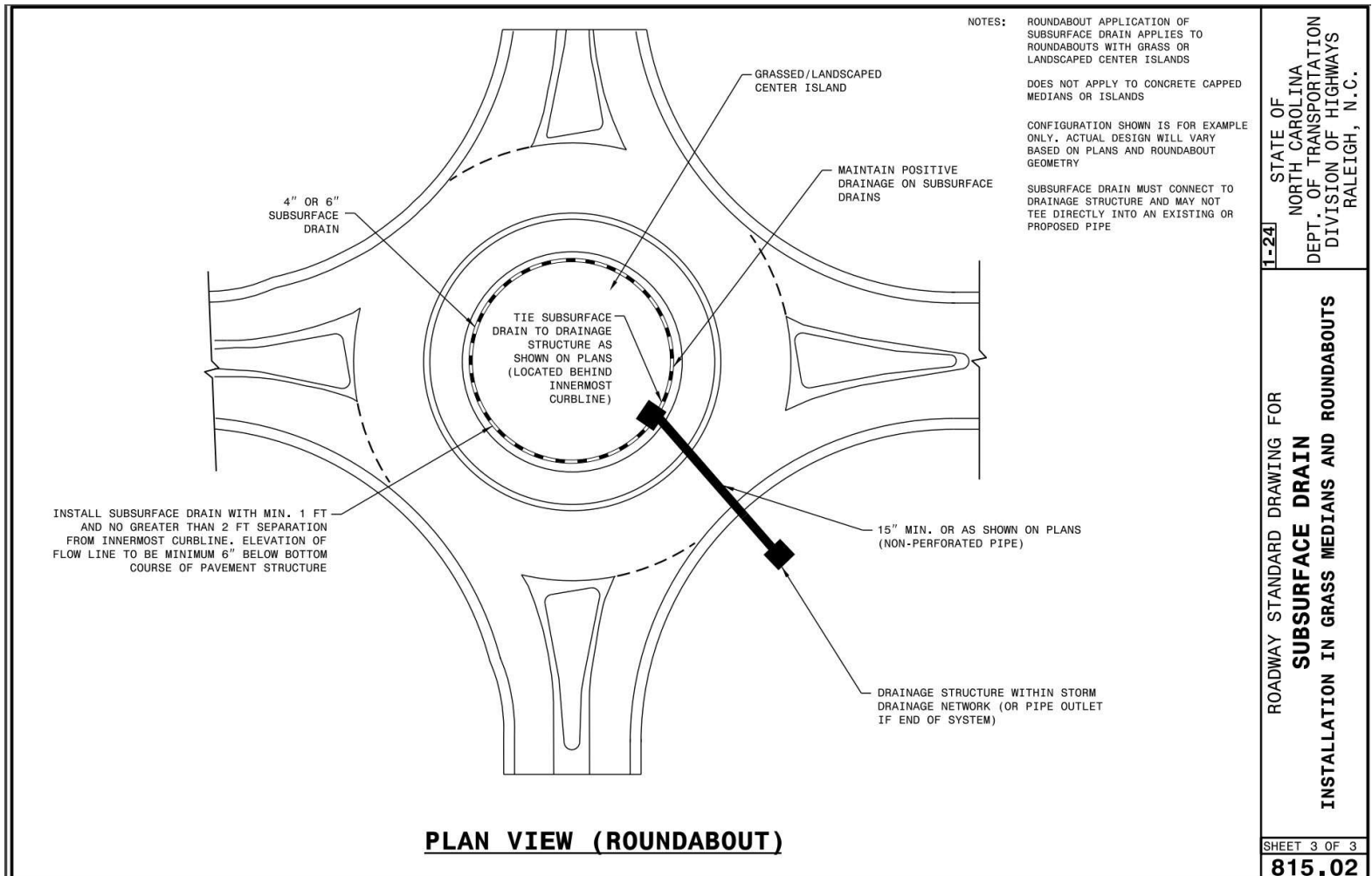






# Minimal drainage

## Be aware of Roadway Standard 815.02 for subsurface drainage for Raised Grass Medians and Grass Central Islands in Roundabouts



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## The Ultimate Drainage System for a Roundabout



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