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## Appendix J NC Route Designation Memo

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To: Mr. Jeff Jaeger, PE, MESH  
 From: Mrs. Randi Gates, AICP, GCLMPO  
 Date: April 20, 2021  
 Subject: NC Route Designation, Catawba Crossings Feasibility Study

The Catawba Crossings Project is proposing a new alignment Boulevard between NC 279 (S. New Hope Road) in southeast Gaston County and NC 160 (Steel Creek Road) in western Mecklenburg County, a total length of approximately 6.5 miles (**Figure 1**). The project would introduce a bridge crossing of the Catawba River in the 10-mile gap between US 29/74 (Wilkinson Boulevard) and NC/SC 49 (York Street). This short memorandum is intended to facilitate a discussion with the NCDOT Transportation Mobility and Safety Unit regarding an NC Route designation.

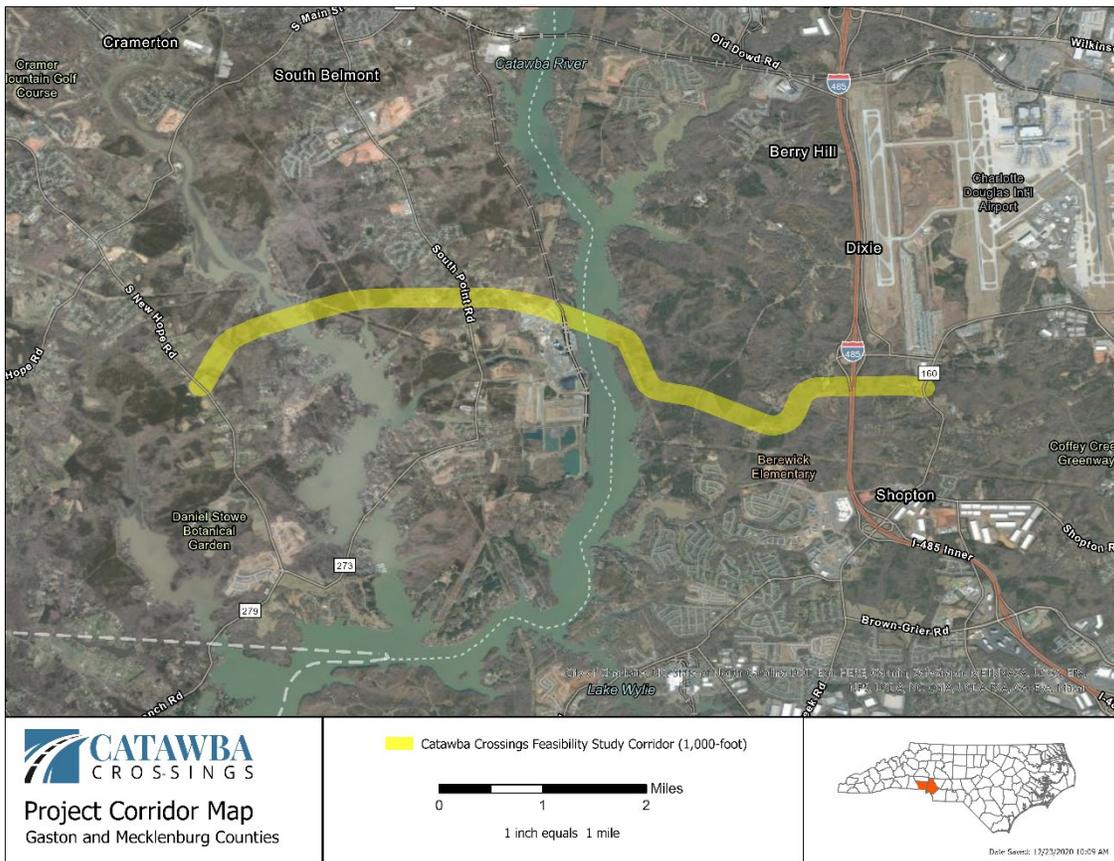


Figure 1

The Gaston-Cleveland-Lincoln MPO (GCLMPO) is the lead planning agency (LPA) for the preparation of a feasibility study for the Catawba Crossings Project at the direction of NCDOT. Among other topics, this feasibility study will fully evaluate the applicability of a primary NC Route designation to the Catawba Crossings. **Table 1** summarizes the current project status as it relates to several criteria (TE-PR-3 c.1–5) outlined in NCDOT’s Route Designation Standard Practice Document (TEPPL N-8 2011).

Table 1. Summary of NC Route Number Criteria applied to Catawba Crossings

NC Route Criteria	Catawba Crossings
The proposed N.C. route must be adequately designed and constructed in terms of its pavement structure such that it can carry the statutory 18,000-pound axle load.	This would be achieved in design.
The proposed route must meet minimum accepted operational standards of a minimum of a 20-foot paved width and with adequate shoulders.	Proposed 4-lane divided Boulevard would meet this standard.
The horizontal and vertical alignment of the route must be such that it can safely handle traffic at the statutory speed limit of 55 miles per hour for the majority of its length. In extreme mountainous areas, consideration may be given to an average operating speed of 45 miles per hour.	60 mph design speed is achievable though 45 mph posted speed.
The desired minimum length of any N.C. route is established at 50 miles.	The proposed alignment is approximately 6.5 miles from NC 279 to NC 160. To reassign NC 279 to the Catawba Crossings would result in an approximate 36-mile length from NC 274 in Cherryville to NC 160 in the Steele Creek area of Charlotte. NC 279 is currently approximately 29.5 miles in length.
N.C. routes shall not overlap existing N.C. or U.S. routes already established unless the duplication is for a short distance and the routes then diverge, ending in different terminal points.	There would be no overlaps.

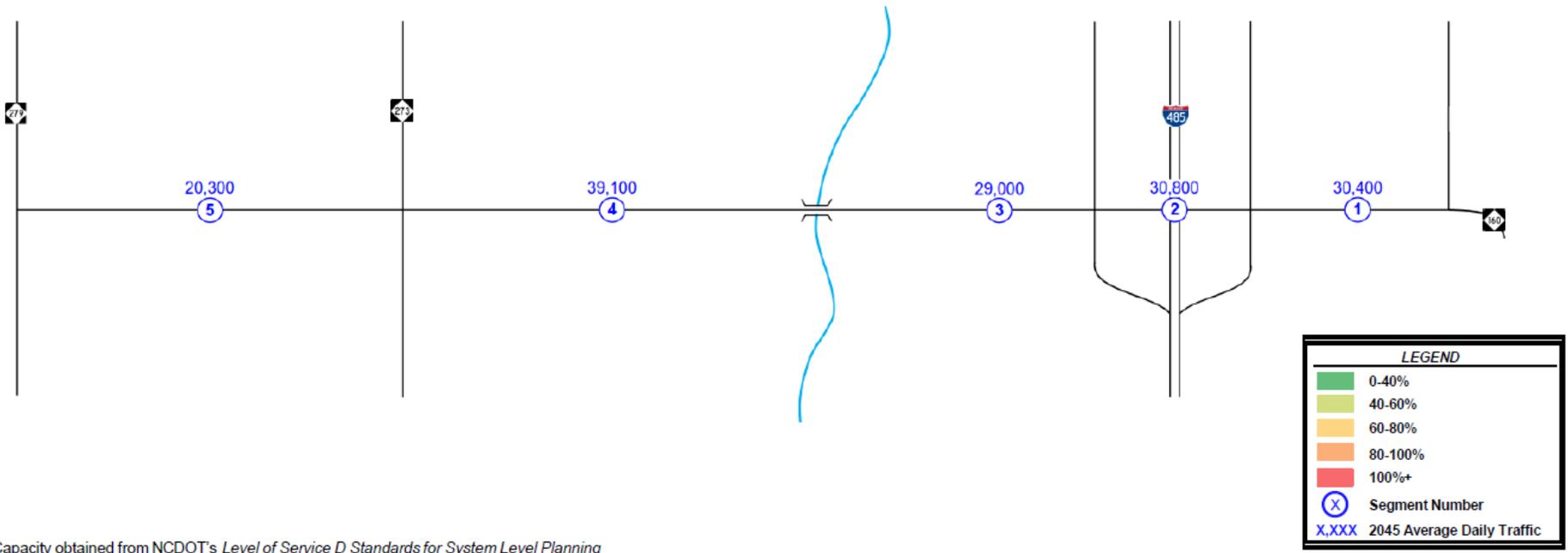
Further, the GCLMPO has undertaken traffic analyses for the Catawba Crossings, including an approved traffic forecast (September 2020) and a draft traffic capacity analysis (February 2021; Final pending). The traffic forecast indicates that the Catawba Crossings Project would attract between 20,000 and 39,000 vehicles per day (vpd) in a 2045 Build scenario. The traffic forecast indicates that the US 29/74 corridor would benefit from the addition of the Catawba Crossings to the transportation network, reducing daily volumes on the US highway by up to 20% or about 7,000 vpd in the 2045 Build scenario. Other traffic diversion rates for regional facilities in the 2045 Build scenario were recorded as:

- ~6,000 vpd decrease (1–3%) on I-85 Catawba River crossing
- ~5,000 vpd decrease (10%) on NC/SC 49 Catawba River crossing
- ~5,000–10,000 vpd decrease in the Belmont downtown/commercial district

The forecast noted high directional pull (70%), split AM / PM between Gaston and Mecklenburg Counties, an indication of the routes function as a commuter corridor.

A four-lane boulevard would support the future projected traffic. However, the project team will recommend a six-lane section for the Catawba River bridge due to higher volumes east of NC 273 (**Figure 2**).

Roadway	Segment No.	From	To	Speed	Facility Type	Area Type	No. of Lanes	Config. (Divided/Undivided)	LOS STANDARD	BASE CAPACITY*	2045 VOLUME	% CAPACITY USED (2045)
<b>4-Lane Section</b>												
Catawba Crossings	1	NC 160 (Steele Creek Road)	I-485 Inner Loop Ramp	45	Boulevard	Suburban	4	D	D	36,600	30,400	83%
	2	I-485 Inner Loop Ramp	I-485 Outer Loop Ramp	45	Boulevard	Suburban	4	D	D	36,600	30,800	84%
	3	I-485 Outer Loop Ramp	West of I-485 Outer Loop	45	Boulevard	Suburban	4	D	D	36,600	29,000	79%
	4	Catawba River	NC 273 (S Point Road)	45	Boulevard	Suburban	4	D	D	36,600	39,100	107%
	5	NC 273 (S Point Road)	NC 279 (S New Hope Road)	45	Boulevard	Suburban	4	D	D	36,600	20,300	55%
<b>6-Lane Section</b>												
Catawba Crossings	1	NC 160 (Steele Creek Road)	I-485 Inner Loop Ramp	45	Boulevard	Suburban	6	D	D	55,000	30,400	55%
	2	I-485 Inner Loop Ramp	I-485 Outer Loop Ramp	45	Boulevard	Suburban	6	D	D	55,000	30,800	56%
	3	I-485 Outer Loop Ramp	West of I-485 Outer Loop	45	Boulevard	Suburban	6	D	D	55,000	29,000	53%
	4	Catawba River	NC 273 (S Point Road)	45	Boulevard	Suburban	6	D	D	55,000	39,100	71%
	5	NC 273 (S Point Road)	NC 279 (S New Hope Road)	45	Boulevard	Suburban	6	D	D	55,000	20,300	37%



\*Base Capacity obtained from NCDOT's *Level of Service D Standards for System Level Planning*

Figure 2

The traffic capacity analyses indicate that providing an additional crossing over the Catawba River between NC 279 (S New Hope Road) in Gaston County and NC 160 (Steele Creek Road) in Mecklenburg County would be expected to:

- Reduce travel time for commuters traveling between southern Gaston County, northern York County and I-485 in Mecklenburg County during the peak hours (Tables 2 and 3).
- Improve the resiliency of the US 29/74 corridor within the study area by decreasing traffic volumes and improving traffic operations along the corridor.
- Reduce congestion within the study area by reducing delay at study area intersections along US 29/74, NC 160, N Main Street, and NC 273 north of the Catawba Crossings corridor
- Increase mobility options by providing an alternate route between southern Gaston/northern York County and Mecklenburg County
- Reduce the frequency of crashes by reducing traffic volumes along portions of US 29/74, I-85, and NC 273 north of the Catawba Crossings corridor.

Table 2. Travel time between NC 279 (NC/SC State Line) and I-485\*

Scenario	Routes	Average Travel Time			
		Eastbound (NC 279 State Line → I-485)		Westbound (NC 279 State Line ← I-485)	
		AM Peak	PM Peak	AM Peak	PM Peak
2045 No Build	1 & 2	30.1 min	29.6 min	24.3 min	33.0 min
2045 Build	3 & 4	13.4 min	13.0 min	13.8 min	13.5 min
<b>Travel Time Savings</b>		<b>16.7 min</b>	<b>16.6 min</b>	<b>10.5 min</b>	<b>19.5 min</b>

Table 3. Travel time between Southern Gaston County and US 29-74\*

Scenario	Routes	Average Travel Time	
		Northbound (Teakwood Ln/Boat Club Rd → US 29/74)	Southbound (Teakwood Ln/Boat Club Rd ← US 29/74)
		AM Peak	PM Peak
2045 No Build	A & B	16.3 min	20.2 min
2045 Build	A & B	13.7 min	14.9 min
<b>Travel Time Savings</b>		<b>2.6 min</b>	<b>5.3 min</b>

\*Tables excerpted from draft Transportation Technical Memorandum (Kimley Horn, February 12, 2021); “Routes” column refers to figures not included in this memo.

**NCDOT ROUTE DESIGNATION  
STANDARD PRACTICE DOCUMENT  
TEPPL N-8 2011**

North Carolina Department of Transportation  
Division of Highways  
Transportation Mobility and Safety Division

**Standard Practice  
for  
NC Route Designations**

The purpose of this standard practice is to establish guidelines for NC Routes Designation. The procedure set forth in the Standard Practice for NC Routes Designation shall be utilized in the engineering investigation and evaluation for a requested route:

- 1) A review should be completed by the Regional Traffic Engineer and/or staff (RTE) for any anticipated route modifications. If review determines that a route modification is required and meets the appropriate criteria as listed below in the portion of this practice under NOTE, the RTE will hold discussions concerning the potential route modification with the Signing and Delineation Unit, Division Staff and any additional group or agency directly affected by the possible modification.
- 2) If a proposed NC route is developed through a STIP (State Transportation Improvement Program) process, a plan review meeting for the TIP Project is held with the Signing and Delineation Unit, Division Staff, RTE, Transportation Planning Branch, Program Development Branch, and Highway Design Branch. The proposed plans are presented for comments, to include but not limited to route designation changes and/or additions.
- 3) All formal requests for designation, addition, relocation or deletion of NC routes shall be submitted to the Transportation Mobility and Safety Division (TMSD) Staff Engineer with a copy to the Traffic Ordinance Program Coordinator on the [Route Change Request Form](#) with a map indicating location for initial approval from State Traffic Engineer.
- 4) Once the State Traffic Engineer has signed the [Route Change Request Form](#), the TMSD Staff Engineer will notify the RTE and Traffic Ordinance Program Coordinator of approval by providing the signed copy of the Route Change Request Form. If request is denied, the Route Change Request Form will be returned with an explanation attached.
- 5) Once receiving initial approval, RTE will compile and complete the information on the [Segment Worksheet](#) for route change requests. A map will accompany the worksheet. The segments located on the labeled map will correspond with the segments listed in the work sheet. (Ex A, B, C). This worksheet is to be submitted to the TMSD Staff Engineer with a copy to the Traffic Ordinance Program Coordinator.
- 6) The NCDOT (RTE or Division) must obtain a resolution from municipal officials, county commissions, Rural Planning Organizations and Metropolitan Planning Organizations approving NC route modification, as appropriate. The resolution(s) is to be submitted to the TMSD Staff Engineer. (Note: RTE may incorporate any required municipal concurrence speed zone ordinances within the resolutions at this time.)

- 7) NC Routes are not required to be approved by FHWA or AASHTO; however, will be processed through Interstate/ US Route Committee. Please see “Review of Policy, Procedure, and AASHTO Applications for Interstate and US Routes” for details concerning the AASHTO Interstate/ US Route Committees referenced in this document. Once the Segment Worksheet is completed, the AASHTO Interstate/ US Oversight (NCDOT) Committee reviews the route from a statewide perspective to ensure the route follows all necessary guidelines and the addition or modification is in the best interest of North Carolina.
- 8) If State Traffic Engineer and Route Committees approve the route modification, the TMS Staff Engineer will notify the Traffic Ordinance Program Coordinator of route approval. The Traffic Ordinance Program Coordinator will update the North Carolina Truck Network (NCTN) map, TEAAS, the Route Change webpage and notify the appropriate personnel.
- 9) RTE is responsible for writing any appropriate ordinances for the route modification utilizing the TEPPL Practice H-11 (Highway Ordinances). The only ordinances the RTE will not be responsible for are the Route Change and STAA ordinances (Ordinance Type 22 and Ordinance Type 40-46). The Route Change and STAA ordinances will be written by the Traffic Ordinance Program Coordinator.

NOTE: For NC routes follow

### **[TE-PR-3] N.C. ROUTE NUMBERS**

- a. The NCDOT has full responsibility for establishing N.C. routes. Normally this relates to removing a road from the secondary road system and placing it on the primary road system.
- b. N.C. numbered routes shall have numbers not to exceed 999. N.C. route numbers shall not be in conflict with interstate numbers or U.S. numbers.
- c. Requests for the addition, modification, or deletion of N.C. route numbers shall be submitted to the Traffic Engineering Branch who shall make recommendations relative to the request based upon the following criteria:
  1. The proposed N.C. route must be adequately designed and constructed in terms of its pavement structure such that it can carry the statutory 18,000 pound axle load.
  2. The proposed route must meet minimum accepted operational standards of a minimum of a 20-foot paved width and with adequate shoulders.
  3. The horizontal and vertical alignment of the route must be such that it can safely handle traffic at the statutory speed limit of 55 miles per hour for the majority of its length. In extreme mountainous areas, consideration may be given to an average operating speed of 45 miles per hour.
  4. The desired minimum length of any N.C. route is established at 50 miles.
  5. N.C. routes shall not overlap existing N.C. or U.S. routes already established unless the duplication is for a short distance and the routes then diverge, ending in different terminal points.
- d. No additional N.C. route shall be added to the primary highway system or extended except where there is a definite showing of an adequately improved highway carrying an established and necessary line of intrastate traffic not otherwise provided for by existing U.S. or N.C. routes.
- e. The use of an N.C. route number, such as N.C. 42, and another route numbered as N.C. 42A is prohibited.