Revised 11/9/17

COMBINED FIELD INSPECTION

Construction WBS#: **48416.3.1**

County: **Surry**

T.I.P. #: **R-5901**

Team Lead: **Donald Nance**

Management Group: **Division Managed**

Instructions

An answer must be provided for **all** questions. If the question is not relevant to the project, then check N/A. Where needed, reply to the requests for additional information with complete statements so that there is not the possibility of a misunderstanding or confusion.

General

Does this project contain any new or unique construction techniques, processes, and/or products that are unfamiliar to the Department, Division, or the assigned Resident Engineer? If "Yes", a draft project special provision, details along with a Technical Bulletin (if available) of this unique construction technique, process, and/or product should be supplied to you for review and comment during this field inspection. Does this project have any constructability issues that should be addressed? If "Yes", briefly describe the issue(s) in the space below: **Possible Yes to both of the above: see CFI Additional discussion document (for example the use of lower height temporary concrete barrier to assist with sight distance at the intersection during the traffic control)**	☐Yes ☐ No ☒Yes ☐ No
Based on your answers above, do you recommend: • An internal constructability review? • An external constructability review with representation from contractors affiliated with the Association of General Contractors (AGC)? • A Technical Bulletin to be prepared? • Training to be provided for the Resident Engineer and staff?	 ☐Yes ☒ No ☐Yes ☒ No ☐Yes ☒ No ☐Yes ☒ No
Are there any buildings on this project that would be candidates for deconstruction by the local Habitat for Humanity? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☒ No
Recommend completion date for project based on a tentative letting date of **April 15, 2025**.	**March 31, 2027**
Recommend the contract method felt most suitable for this project: conventional, A & B, or incentive/disincentive.	**Conventional**
Should a floating date of availability be used for this project? If "Yes", provide any recommendations in the space below: Click here to provide additional information.	☐Yes ☒ No

Are there any issues with the beginning and end of project and construction? If "Yes", list the locations in the space below: **Begin construction limit will need to be verified after TMP concept is reviewed since proposed temporary widening begins prior to Begin Project station on -L1-.**	☒Yes ☐ No
Are there any locations on this project that you believe may have potential for hydroplaning? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☒ No
Are there any issues with the street returns for width and radii? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☒ No
Are any roads along this project used for OVERSIZE VEHICLES? If "Yes", does the OVERSIZE VEHICLE ROUTE affect the proposed design? If "Yes", provide specifics in the space below: **Project is located just west of NC 89/I-77 interchange. The design vehicle WB-67 for the proposed roundabout was selected by the Division and is documented in a memo dated 12/12/2023.** Note: ordinance 1059394 prohibits through trucks on NC 89 between the Virginia State line and I-77.	☒Yes ☐ No ☐N/A ☒Yes ☐ No ☐N/A
Should cul-de-sacs or turnaround areas be constructed on existing roads which are terminated? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☐ No ☒N/A
Are any new walls, steps and/or house walks required? If "Yes", provide the location, type of construction required and quantities in the space below: **Note: It appears that there is an existing wheelchair ramp at the front of the home on Parcel 9. Recommend that this be coordinated with the property owner during ROW acquisition to ensure access is maintained to the ramp or alternate accommodations provided as needed.**	☒Yes ☐ No ☐N/A
Will the construction surveying on this project be handled by the Department or the Contractor?	**Contractor**
Is the project survey line identified on the ground so it can be found and located by the prospective contractors? If "No", provide the location(s) where issues exist in the space below: **This can be places closer to let by request to Locations and Surveys**	☐Yes ☒ No
Are there any existing hazardous waste sites or possible existing contaminated properties located within or immediately adjacent to the project right of way? If "Yes", list the locations in the space below: **See the geoenvironmental report for the locations)**	☒Yes ☐ No
Are any monitoring wells within project limits? If "Yes", provide locations in the space below so that abandoning work may be coordinated by the Geoenvironmental Section before construction. Click here to provide additional information.	☐Yes ☒ No
Do you have any suggestions for consideration that would reduce the future maintenance costs of this project? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☒ No

Should emergency crossovers be constructed as a part of this project? If "Yes", recommend the type of construction and locations in the space below: Click here to provide additional information.	☐Yes ☐ No ☒N/A

Barriers

The Roadway Standard Drawing, Std. 846.03 (Sheet 1 of 2), shows guardrail spanning an object that requires a post to be omitted. Does this project require this standard? If "Yes", list each location and the required standard in the space below: Click here to provide additional information.	☐Yes ☒ No
Will any additional, temporary guardrail or permanent guardrail be required? If "Yes", list locations and estimate quantity in the space below: **Temporary guardrail may be required on -L1- near the begin construction limits adjacent to temporary widening (say 200 LF)**	☒Yes ☐ No ☐N/A
Will removed existing guardrail be stockpiled? Click here to provide additional information.	☐Yes ☒ No ☐N/A
Will any guardrail barricades be required on existing roads which are to be terminated or should earth berms be constructed? If "Yes", list the locations in the space below: Click here to provide additional information. If guardrail, are terminal sections to be used? If additional information required, please provide it in the space below: Click here to provide additional information.	☐Yes ☐ No ☒N/A ☐Yes ☐ No ☒N/A
Do you have any suggestion(s) for reducing the future vegetative maintenance around existing and / or proposed guardrail on this project? If "Yes", provide more detail on the suggestion(s) in the space below: Click here to provide additional information.	☐Yes ☒ No
Will the Division be able to furnish the temporary concrete barrier to the contractor for his use during construction of the project? If "Yes", designate the location from which the contractor must take delivery of the barrier and the location to which the contractor must return the barrier at the conclusion of the project in the space below: Click here to provide additional information.	☐Yes ☒ No ☐N/A
If the Contractor is to furnish the temporary concrete barrier, should barrier revert to the Contractor at the conclusion of the project? NOTE: If the Division wants to take possession of the barrier, it must reimburse the project for the salvage value of the barrier, this reimbursement must come from 100% State funds.	☒Yes ☐ No ☐N/A

Berms, Gutters and Curbing

Are there any recommended changes for curb type and cover for raised islands? If "Yes", provide more detail on the suggestion(s) in the space below:	☐Yes ☒ No

Need to discuss the surface of roundabout central island (grass vs concrete) and if a transition concrete section is needed for the median on L2 near the roundabout, or leave the median on L2 as grass only.	
Are additional shoulder berms, expressway gutters, or gutters and curbing on the outside edge of fill shoulder required? If "Yes", provide the location(s) on the plans or in the space below: Click here to provide additional information.	☐Yes ☒ No
Truncated domes are required on all existing wheel chair ramps. Are there any existing wheel chair ramps which need to be retrofitted with truncated domes? If "Yes", provide how many in the space below: Click here to provide additional information.	☐Yes ☒ No ☐N/A
Are pedestrian mitigation measures incorporated into the Design Plans? If "Yes", Are mitigation measures Americans with Disabilities Act (ADA) compliant? Provide an explanation below: Click here to provide additional information.	☐Yes ☒ No

Drainage

Are there any pipe installations requiring **trenchless** construction? If "Yes", provide an estimated length and location of pipe requiring this type installation in soil in the space below: **Specific locations and lengths to be determined by designers based on conversation at the CFI** Note: A separate length of pipe is needed at each location, for installation, in materials other than soil.	☒Yes ☐ No
Are there any recommended changes for berm ditches? If "Yes", provide more detail on the suggestion(s) in the space below: **To be discussed at CFI – should a berm ditch be added on LT side of L1 near begin project limits? See additions cfi questions for more information.**	☐Yes ☐ No ☐N/A
Are there any recommended changes for type of paved ditches and ditch liner? If "Yes", provide more detail on the suggestion(s) in the space below: Click here to provide additional information.	☐Yes ☒ No ☐N/A
Are any additional drainage easements required? If "Yes", show location, limits and specify whether it is temporary or permanent in the space below: Click here to provide additional information.	☐Yes ☒ No
Are there any catch basins, drop inlets, manholes, meter boxes and valve boxes to be adjusted? (Article 858-1) If "Yes", Provide the location and number in the space below: Click here to provide additional information.	☐Yes ☒ No

Constructability/Permitting/Commitments

Has the method of construction for proposed bridges and / or culverts been addressed? (See CFI Checklist attached to field inspection letter.) If "Yes", provide more detail in the space below: Click here to provide additional information.	☐Yes ☐ No ☒N/A

Has the method of removal for bridge superstructure and substructure been discussed? (See CFI Checklist attached to field inspection letter.) If "Yes", provide more detail in the space below: Click here to provide additional information.	☐Yes ☐ No ☒N/A
Are any additional right of way, permanent easements and/or temporary construction easements required other than those shown on the plans for the issues discussed above? If "Yes", show location, limits and specify whether it is temporary or permanent in the space below: **Verify at CFI if additional easements are needed for pipe construction**	☐Yes ☒ No
Does the proposed design take into consideration the constructability issues associated with constructing the roadway, drainage, structures, utilities, and maintaining traffic so that the right of way limits and permit application can be developed accordingly? If "No", provide more detail in space below: Click here to provide additional information.	☒Yes ☐ No
Have all environmental commitments been reviewed and can they be implemented? If "No", provide more detail below in the space below: Click here to provide additional information.	☒Yes ☐ No ☐N/A
Are any plan changes or modifications required that may jeopardize the status of the permit? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☒ No ☐N/A
Are historic properties and / or archeological sites clearly identified on the plans? If "No", provide the location(s) where issues exist in the space below: Click here to provide additional information. Do the commitments clearly explain how the impacts to these sites will be avoided or minimized? If "No", provide suggestions on how the comments could be clarified below: Click here to provide additional information.	☐Yes ☐ No ☒N/A ☐Yes ☐ No
Are there any temporary pedestrian impacts listed on the list of environmental commitments (green sheets)? Click here to provide additional information.	☐Yes ☒ No

Driveways

Are any changes needed for the location or width of driveways? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☒ No ☐N/A
Will any driveway pavement be required for existing unpaved drives (due to steep grades caused by project construction)? If "Yes", provide location, type of construction required and quantities in the space below: **See plans (typical sections) for locations**	☒Yes ☐ No ☐N/A
Recommend radius or drop type curb for driveway turnouts. Select N/A if there are none on the project.	**N/A**
Do you have any recommendations for channelization of commercial drives? If "Yes", provide more information in the space below: **Sheetz driveway on NC 89 will be replaced-in-kind as right-in right-out with a channelizing island**	☒Yes ☐ No ☐N/A
Will high strength or quick cure concrete be required for driveway during construction of replacement operations?	☐Yes ☒ No

Click here to provide additional information.	

Earthwork

Are there any ways which project generated debris (i.e. removed concrete/asphalt pavement: clearing and grubbing-mulch; native planting) can be safely and economically incorporated into the construction of the project? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☒ No
Are there any approved alternative sources of fill material located in close proximity to the project (coal flyash generator, concrete pavement removal, recycle glass, steel slag, etc.)? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☒ No
Can earthwork be utilized (as shown on the Earthwork Summary) during construction phasing of this project? For widening projects, this includes the ability of the contractor to haul earth material across traffic. If "No", provide more information in the space below: Click here to provide additional information.	☒Yes ☐ No ☐N/A
Is any pavement removal, breaking of existing pavements or obliteration required beyond what is shown in the plans? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☒ No
If this project fits within the guidelines, would you rather it go to contract under "Lump sum grading" or an individual item basis? Click here to provide additional information.	☒Yes ☐ No
Is this project a good candidate for earthwork quantity determination using photogrammetric methods? Click here to provide additional information.	☐Yes ☒ No

Fencing

If access is to be controlled on the project, recommend the height and type of fence (woven wire or chain link) and if any gates are required in the space below: **Woven Wire**	☒Yes ☐ No ☐N/A
Is temporary fence required on the project? If "Yes", provide the height, type and recommended locations below: Click here to provide additional information.	☐Yes ☒ No
Is any security fence required (reset or replacement) on this project? If "Yes, furnish sketch showing size, post spacing, gates, etc. or provide this information in the space below: Click here to provide additional information.	☐Yes ☒ No

Geotechnical (Must answer if sub-surface information is not available.)

Are any underdrains anticipated? If "Yes", estimate total length below: Click here to provide additional information.	☐Yes ☒ No

Is additional undercut excavation needed beyond what is shown in the geotech recommendations. If so, provide an estimate of that quantity. (Article 225-4) Click here to enter quantity.	☐Yes ☒ No

Grading

Should grading be done in order to allow for vegetation removal and erosion on the future paving contract? If "Yes", provide the height above final subgrade below: Click here to provide additional information.	☐Yes ☒ No
Has any grading occurred since field surveys and contour mapping were made? If "Yes", have these areas been identified and taken into account? Provide additional information in the space below: **Sheetz development was still partially under construction at the time the Final Surveys were completed; the areas which were still under construction are not anticipated to affect the construction of this project.**	☒Yes ☐ No
Is a grading detail needed for the interchanges on this project? Click here to provide additional information.	☐Yes ☒ No

Lighting

Will the project require lighting and/or future lighting? If "Yes", provide locations in the space below: **TBD – future lighting at the NC 89/I-77 interchange is being discussed; it will be done within a separate project if added.**	☐Yes ☐ No

Noise Walls

Should NCDOT approved, alternative noise wall materials be considered for use in lieu of the standard pile and panel wall materials? Click here to provide additional information.	☐Yes ☐ No ☒N/A

Load Restrictions

Are there load limit restrictions on roads and/or bridges in the project vicinity which will limit the contractor in the hauling equipment and materials? If "Yes", will this be covered by Section 105-15 of the Standard Specifications? **Bridge 850251 (SR 1345 over Beaverdam Creek) posted SV 21, TTST 27**	☒Yes ☐ No ☒Yes ☐ No

Material Usage and Measurement

Specify how borrow material will be measured. In place measurement, or truck measurement. (Article 230-5)	**In Place Measurement**
On Federal Aid projects, are materials furnished by the contractor or salvaged from the project to become the property of the department? If yes, the salvage value must be reimbursed from State funds for the material as part of the Federal Aid Agreement if the salvage value exceeds $5,000.00 except where the salvaged item will be reused in future projects eligible under Title 23 USC until its useful life is expended.	☐Yes ☒ No ☐N/A

Pavement

Will incidental stone base be required? (Article 545-1) If "Yes", estimate quantity in the space below: **100 ton**	☒Yes ☐ No
Will asphalt plant mix pavement repair be required for repairing existing pavement? (Exclude pipe installations) If "Yes", estimate quantity in the space below: Click here to provide additional information.	☐Yes ☒ No
Do you have any recommendations for mobile string line or fixed string line for the asphalt plant mix paver? (Article 610-8) If "Yes", provide further details in the space below: Click here to provide additional information.	☐Yes ☒ No
Is milling of asphalt pavement feasible on this project? (A) If "No", explain in the space below. (B) If "Yes", provide recommended depths, widths, and locations in the space below. **Incidental milling at pavement tie-in locations, see typical sections**	☒Yes ☐ No
Highway Design Guidelines specify that trench sections be used on pavement designs that are 10" or less in depth. Is there any justification for deviating from these guidelines? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☒ No
Has the method of rumble strip construction for concrete shoulders been clearly show in the plans? Click here to provide additional information. Do you agree with the method as shown? Click here to provide additional information. Is there another approved method more suitable for this project? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☐ No ☒N/A ☐Yes ☐ No ☐Yes ☐ No
Are there any resurfacing areas where incidental milling will be required to make a suitable tie back to the existing pavement? If "Yes", estimate quantity in the space below: **900 SY**	☒Yes ☐ No
Do you want Final Surface Testing performed on this project? Click here to provide additional information.	☐Yes ☒ No

Right of Way

Which method of clearing is to be used? If "Other", please specify in the space below: Click here to provide additional information.	**Method III**
Are there trees which are to be preserved on field inspection prints. (Article 200-3) If "Yes", show on field inspection prints or provide locations in the space below: Click here to provide additional information.	☐Yes ☒ No
Are there areas in the Right-of-Way that are not to be cleared? If "Yes", show on field inspection prints or provide locations below: **Clearing to be performed in accordance with Method III**	☒Yes ☐ No
What type of Right of Way marker installation is recommended for this project? NOTE: State forces place iron pin and caps as right of way markers. Placement of concrete/granite right of way markers shall be placed by contract. Click here to provide additional information.	**Markers by State forces**

Traffic Operations

Is the Division aware of any traffic generating events that would require special design considerations and traffic control planning? If "Yes", provide the events below: Click here to provide additional information.	☐Yes ☒ No
Are there any locations where a non-gating impact attenuator should be specified (temporary detours, temporary traffic pattern, etc.) that the completed project would only require a gating device? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☒ No ☐N/A
Have traffic maintenance and constructability issues been reviewed to ensure they will have no bearings on the permit status? If there are any potential conflicts with the permit status, list them in the space below: **Continue to review as the TMPs are finalized and CFI changes implemented.**	☒Yes ☐ No
Are any street signs and markers to be removed and stockpiled by the Contractor? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☐ No
Are there any signing and/or pavement marking to be performed by force account? If "Yes", notify the Division Traffic Engineer who will furnish a cost estimate to the Roadway Design Unit. Click here to provide additional information.	☐Yes ☒ No
Is the existing pavement adequate on proposed detours? If "No," provide any areas of concerns in the space below: **Streets used for detour routes include SR 1345, SR 1396, SR 1397, SR 1613, W. Pine St, Palmer Rd.**	☒Yes ☐ No
Are any contract signs needed on the project? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☐ No
Is a $250 penalty ordinance and/or speed reduction ordinance recommended?	☒Yes ☐ No

Posted speed to be clarified at field inspection; see additional questions for comments on posted speed limits.	
Are any route/name changes necessary on the project? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☒ No
Is a towing ordinance recommended? If "Yes", provide areas of concern in the space below: Click here to provide additional information.	☐Yes ☒ No
Is Right-of-Way adequate for sign/signal installation? If "No", provide the area(s) of concern below in the space: Click here to provide additional information.	☒Yes ☐ No
Has any development occurred recently to influence the project traffic volumes? If "Yes", advise what the impact is so that geometrics and pavement design can reflect the change in the space below: **Sheetz development was recently completed; this development has already been accounted for in the project traffic forecast and proposed pavement design.**	☒Yes ☐ No
What will be the probable posted speed limit for this project? **Need to discuss posted speed limits at CFI/verify with Regional Traffic Engineer.**	45
In addition to portable changeable message signs (per each), is there a need for *short term* portable changeable message signs (for road closures, girder delivery, etc.)? If "Yes", estimate the number of days in the space below: **Depends on TMP for offsite detour and final determination of timeframe for offsite detour.**	☐Yes ☐ No ☐N/A

Typical Sections

Will full width usable paved shoulders be required at the interchange ramps? Click here to provide additional information.	☐Yes ☒ No ☐N/A

Temporary Shoring

Is Temporary Shoring for the maintenance of traffic required on this project? (Shoring required to maintain traffic is defined as shoring necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 or steeper slope from the bottom of the excavation or embankment intersects the existing ground line closer than 5 feet (1.5m) from the edge of pavement of the open travelway.) List probable locations of this temporary shoring: Click here to provide additional information.	☐Yes ☒ No

Miscellaneous Comments

See CFI Additional Questions for other items discussed at the CFI.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

MEMO TO: Michael L. Poe, PE
Division Engineer

FROM: Donald Nance
Assistant Division Design Engineer

DATE: July 12, 2024

SUBJECT: Project: R-5901 [Intersection Improvements at NC 89 (W. Pine St.) and SR 1397 (Round Peak Church Rd./Oak Grove Church Rd.)] Surry County
WBS: 48416.1.1

Request for Design Exception

This is a request for a design exception for *stopping sight distance for crest vertical curves and maximum grade*. See attachment for pertinent information.

If you have any questions, please contact Donald Nance, NCDOT Project Manager, at (336) 903-9205 or Deborah Barbour, PE, Consultant Project Manager, at (919) 882-7839.

DocuSigned by:
Deborah M. Barbour 7/12/2024
1EAD961A77DF4C0...
Deborah M. Barbour, PE
Consultant Project Manager

DocuSigned by:
Ramie A. Shaw 7/15/2024
C56DB73B487E4E6...
Ramie A. Shaw, PE
Division Project Development Engineer

DocuSigned by:
Andrea B. Gordon 7/11/2024
3A7A836647154C1...
Andrea B. Gordon, PE
Project Engineer of Record

Attachment
ec: Project Manager

APPROVED: DocuSigned by: M. L. Poe
761E124BED8040A...
Michael L. Poe, PE

DATE: 07/16/2024

ec: Chris Brown
Scott M. Collier, PE w/Attachment

NCDOT DESIGN EXCEPTION REQUEST

F.A. Project No.: State Project No.: 48416.1.1

TIP No.: R-5901 County: Surry

Design Exception Requested for: *stopping sight distance (SSD) for crest vertical curves and maximum grade*

Location of Design Feature in Question:

Location #1: *(maximum grade)* -L1- (NC 89) Sta. 12+00.00 to 15+30.00, varies +6.5443% to +5.0000%
Location #2: *(maximum grade)* -L2- (NC 89) Sta. 15+14.53 to 20+10.00, varies -5.0000% to -6.0000%
Location #3: *(stopping sight distance for crest vertical curve)* -Y1- SSD=320' (meets 40 mph)
Location #4: *(stopping sight distance for crest vertical curve)* -Y2- SSD=324' (meets 40 mph)

PROJECT DATA

-L1- and -L2- NC 89
Current ADT (2023): 11,400 vpd Design ADT (2050): 13,000 vpd
% Trucks: 6% Design Speed: 50 mph Posted Speed: 45 (proposed)
Functional Classification: Minor Arterial

-Y1- SR 1397 (Round Peak Church Rd)
Current ADT (2023): 2,100 vpd Design ADT (2050): 2,700 vpd,
% Trucks: 2.5% Design Speed: 50 mph Posted Speed: 55 (statutory)
Functional Classification: Local

-Y2- SR 1397 (Oak Grove Church Rd)
Current ADT (2023): 4,700 vpd Design ADT (2050): 6,500 vpd
% Trucks: 27% Design Speed: 50 mph Posted Speed: 55 (statutory)
Functional Classification: Local

Minimum AASHTO Dimensions:	Dimensions Proposed:
Maximum Grade for -L1- and -L2-	
AASHTO: 5.0000%	Proposed: (varies) 5.7000% to 6.5443%
The proposed maximum grades on -L1- and -L2- meet 35-45 mph criteria in rolling terrain or 50 mph in mountainous terrain.	
Stopping Sight Distance for -Y1- and -Y2-	
AASHTO: 425'	Proposed: -Y1- 320' /-Y2- 324'
The proposed SSD on -Y1- and -Y2- meet 40 mph design speed.	

PROJECT DATA (cont'd)

Total Estimated Cost of Project:
Right-of-Way: $370,000 Construction $7,700,000 Utilities: $410,000

Additional Cost to Meet Minimum AASHTO Requirements: *See Basis for Exception below.*

BASIS FOR EXCEPTION

1. *Describe the cross-section, geometrics, access control, etc. of the existing roadway inside and outside the project limits.*
   General project context: the project is located in a rural area with rolling terrain approximately 9 miles west of Mt. Airy, NC. Within the immediate project limits there are several businesses including Davis Automotives, Sheetz gas station, and White's International Trucks. Just outside the project limits on SR 1397 (Oak Grove Church Rd) are additional farming or trucking-related operations including various farmland, Bottomley Enterprises, Hollar & Greene Produce, Mayberry Chrome Shop, Bottomley Evergreens & Farms. On NC 89 to the east of the NC 89/I-77 interchange there is a Flying J Dealer, Circle K, and Surry Rural Health Center among other developments.

   -L- NC 89: The existing facility to the west of the project limits consists of 2 lanes (approx. 10' lanes) with 4' or less turf shoulders and has no control of access. The existing facility to the east of the project limits consists of a 4-lane grass median-divided section with 10' lanes and 4' paved shoulders (approx. 10' total). NC 89 at the I-77 interchange has full control of access; to the east of the interchange, NC 89 appears to have partial control of access. Within the project limits, NC 89 transitions from the previously described existing 2-lane facility with no control of access to the 4-lane median-divided facility with full control of access at the interchange. The existing statutory speed limit on NC 89 is 55 mph.

   -Y1-/-Y2- SR 1397 (Round Peak Church Rd/Oak Grove Church Rd): The existing facility to the north of the intersection consists of a 2-lane roadway (9' lanes) with turf shoulders and no control of access. To the south of the intersection, the facility consists of a similar 2-lane roadway (9'-10' lanes) with turf shoulders and no control of access. The existing statutory speed limit on SR 1397 is 55 mph.

2. *Describe any future plans for upgrading this roadway either at or in the vicinity of the project.*
   Within the R-5901 project limits there are no known future plans for additional upgrades of the roadway. To the west of the project limits, the NC 89/Beulah Rd (SR 1345) intersection is proposed to be converted from a two-way stop-controlled intersection to a single-lane roundabout (HS-2011G, Anticipated Let date: 2026). Additionally, in conjunction with HS-2011G and R-5901, the posted speed limit on NC 89 from the NC 89/Beulah Rd intersection through the R-5901 project limits will be lowered from 55 mph (statutory) to a 45 mph posted speed.

3. *Justify why it is not reasonable or feasible to meet safety and operational performance characteristics defined by the minimum AASHTO requirements. (Compare impacts such as community, cost, environmental, usability by all modes and/or ROW constraints.). Describe other alternatives that were considered before making the decision to pursue a design exception.*

Maximum grade on L1 and L2:

The existing maximum grade at the west tie-in on L1 is approximately 6.15% which exceeds the AASHTO maximum grade of 5.00% for arterials with a 50 mph design speed. Further to the west, the roadway grade continues at approximately 5% or more for at least 1,000 ft. Similarly, the maximum grade at the east terminus of the project is approximately 6.00% which also exceeds the AASHTO maximum grade for 50 mph design speed. The roadway grade continues to the east at approximately 6% for at least 1,000 ft. Therefore, to adjust the grade on NC 89 to meet AASHTO criteria for 50 mph design speed (rolling terrain), the grade would need to be adjusted thousands of feet to the west and east of the proposed project tie-ins.

The grade adjustment would not only be beyond the scope of the intersection improvement proposed by this project, but it would also impact the adjacent NC 89/I-77 interchange. This would involve changing multiple ramp grades and potentially the I-77 bridge over NC 89 (depending on vertical clearance infringement). Although it is not within the scope of the intersection improvements to meet the AASHTO maximum grade of 5.00% for arterials in rolling terrain, the proposed maximum grades do fall within an acceptable range for mountainous terrain at a 50-mph design speed. Therefore, considering the existing conditions and variable terrain in the surrounding areas, the proposed design maximum grades are not anticipated to adversely affect operations of NC 89 within the project limits.

Stopping sight distance on Y1 and Y2:

In order to improve the stopping sight distance on Y1 to meet the proposed 50 mph design speed within the project limits, several hundred additional feet of regrading for Y1 would be required. The current design proposes to avoid relocations of the homes located just to the west and east of Y1 within the project limits. If Y1 were regraded to accommodate SSD that meets a 50-mph design speed, it is likely that at least two of these residences (on the west side of Y1) would be relocated. Furthermore, the project limits would extend further to the north and require additional regrading of the Richards Rd intersection with Y1. Since Richards Rd is a dead-end facility, there is no offsite detour available. Temporary widening and additional shoring could be required to maintain traffic while regrading this additional intersection, further contributing to increased impacts.

Similar to Y1, in order to improve the stopping sight distance on Y2 to meet the proposed 50-mph design speed within the project limits, more impactful regrading of Y2 would be required. The current design proposes to minimize impacts to the Sheetz (recently constructed) and White's Trucking facilities on the east side of Y2. If Y2 were adjusted to accommodate SSD that meets a 50-mph design speed, impacts to the Sheetz could include: loss of the drive-thru circulating lane, loss of several parking spaces and relocating or substantially altering one of the entrances. The shared driveway used by Sheetz and White's Trucking would also need to be relocated or regraded. Furthermore, additional temporary widening and shoring would likely be needed to maintain traffic on Y2, further contributing to increased impacts. Therefore, due to the additional impacts, it is not feasible to accommodate the minimum SSD for 50 mph on Y1 and Y2 as part of the improvements for this project.

Although it is not feasible to accommodate SSD for 50 mph on Y1 and Y2 as part of the improvements for this project, the existing SSD is maintained and other design upgrades proposed within the intersection vicinity are anticipated to offer various safety benefits for users. See mitigation measures in Section 5 for further discussion.

4. *Describe how the crash history relates to the proposed design exception. See current 3-year crash history, attached (number, severity, cause, comparison to statewide average, etc.).*
There were 18 total crashes recorded at the intersection of NC 89 and SR 1397 in the 5-year period from September 2018 through August 2023. The total crash rate for the study period was 112.02 which is lower than the 5-year (2018-2022) statewide average crash rate of 237.07 for NC routes. Of the 18 crashes identified, 1 involved a fatality, 4 involved injuries, and 13 involved property damage only. 10 of the 18 crashes involved a turning or crossing maneuver/attempt with a vehicle coming from the Y-line (either Oak Grove Church Rd or Round Peak Church Rd), with speeds of the vehicle travelling on NC 89 ranging anywhere from 30 to 60+ mph. There were two rear-end type crashes each on Oak Grove Church Rd and Round Peak Church Rd, respectively.

5. *Describe any measures proposed to mitigate the design elements that are below standards.*
First to describe mitigation that applies more globally for the intersection relative to crash history, the proposed design includes the conversion of the existing two-way stop controlled (TWSC) intersection to a single lane roundabout. Based on current guidance from NCDOT and the total entering traffic volume, the Safest Feasible Intersection Design (SAFID) for this location is a single lane roundabout. Similarly, the single lane roundabout is also the most feasible intersection design for pedestrians and bicyclists (POFID, BOFID). Changing from a TWSC intersection to a full-size one-lane roundabout offers an average crash modification factor (CMF) of 0.51 for all crashes or 0.16 for injury crashes (see NCDOT SAFID charts).

With regards to the maximum grades on NC 89, the steeper (uphill) grades approaching the proposed roundabout on the west and east legs are anticipated to work in tandem with the new roundabout design to encourage vehicles to decelerate as they approach. Although the grades exceed the AASHTO maximum to tie into the existing grades on NC 89, the proposed grades will be lessened within the immediate roundabout approach (2.5% on L1, 1.77% on L2) to provide a flatter slope for vehicles as they come to a yield/stop condition. As part of the proposed improvements, the posted speed limit on NC 89 is also planned to be lowered to 45 mph from west of the proposed roundabout at NC 89 and Beulah Rd to the east side of the NC 89/I-77 interchange.

To mitigate the lower available stopping sight distance on Y1 and Y2, the following actions are proposed. For Y1, an advisory speed panel will be added, and the appropriate advisory speed will be determined once the project is placed in its final alignment. For Y2, the speed limit will be lowered to 45 mph and the sign will be posted in advance of the lessened sight distance area. Additional advanced signage will also be provided on each approach to Y1 and Y2 in conjunction with the conversion of the intersection to a roundabout. The extents of the proposed speed limit change, advisory speed panel signage, and other additional signage will need to be further coordinated with the Regional Traffic Engineer as the plans are developed. A field review may also be completed after project construction is completed to evaluate the operation of the facility and identify if other mitigation measures are needed.

Attachments

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 06/07/2024 Design Engineer: Andrea B. Gordon, P.E.

TIP No: R-5901 Functional Classification: Minor Arterial

Posted Speed: (Proposed) 45 mph Terrain: Rolling

Note: ***For projects with a design speed of less than 50 mph, a design exception request will only be required for items A and B. However, all 10 controlling criteria shall be completed. In the Exception Req'd column, indicate Yes or No as to whether an exception is needed.***

-L1- NC 89

Controlling Criteria requiring review for Design Exception	Prop Design	AASHTO Std	Exception Req'd
A) Design Speed (1)	50	50	NO
B) Structural Capacity	N/A	N/A	N/A
C) Lane Width	12'	12'	NO
D) Shoulder Width	10'	8' (usable)	NO
E) Maximum Grade	6.5443% (2)	5.00%	YES
F) Min. Horizontal Curve Radius	350' (3)	833'	NO
G) Horizontal SSD	>425'	425'	NO
H) Vertical SSD (Crest Only)	>425'	425'	NO
I) Pavement Cross Slope	0.02	0.02	NO
J) Superelevation	0.06	0.06	NO
K) Vertical Clearance	N/A	N/A	N/A

Listed below are the known non-complying items not requiring an approved design exception.

(1) The design speed should be the greater of the minimum design speed for the facility type or the anticipated posted speed plus 5 mph. An element may not require a design exception if the element meets the posted speed limit. Coordinate with the roadway design team lead or Division designee to confirm that a design exception is not needed.

(2) Meets 35-40 mph design speed in rolling terrain or 50 mph design speed in mountainous terrain.

(3) The proposed horizontal radius of 350' is located within the yield approach vicinity of the roundabout, where vehicle approach speeds are low. A design exception is not needed for this element.

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 06/07/2024 Design Engineer: Andrea B. Gordon, P.E.

TIP No: R-5901 Functional Classification: Minor Arterial

Posted Speed: (Proposed) 45 mph Terrain: Rolling

Note: ***For projects with a design speed of less than 50 mph, a design exception request will only be required for items A and B. However, all 10 controlling criteria shall be completed. In the Exception Req'd column, indicate Yes or No as to whether an exception is needed.***

-L2- NC 89

Controlling Criteria requiring review for Design Exception	**Prop Design**	**AASHTO Std**	**Exception Req'd**
A) Design Speed (1)	50	50	NO
B) Structural Capacity	N/A	N/A	N/A
C) Lane Width	12'	12'	NO
D) Shoulder Width	10'	8' (usable)	NO
E) Maximum Grade	6.00% (2)	5.00%	YES
F) Min. Horizontal Curve Radius	350', 409' (3)	833'	NO
G) Horizontal SSD	>425'	425'	NO
H) Vertical SSD (Crest Only)	>425'	425'	NO
I) Pavement Cross Slope	0.02	0.02	NO
J) Superelevation	0.06	0.06	NO
K) Vertical Clearance	N/A	N/A	N/A

Listed below are the known non-complying items not requiring an approved design exception.

(1) The design speed should be the greater of the minimum design speed for the facility type or the anticipated posted speed plus 5 mph. An element may not require a design exception if the element meets the posted speed limit. Coordinate with the roadway design team lead or Division designee to confirm that a design exception is not needed.

(2) Meets 45 mph design speed in rolling terrain or 50 mph design speed in mountainous terrain.

(3) The proposed horizontal radii of 350' and 409' are located within the yield approach vicinity of the roundabout, where vehicle approach speeds are low. A design exception is not needed for these elements.

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 06/07/2024 Design Engineer: Andrea B. Gordon, P.E.

TIP No: R-5901 Functional Classification: Local

Posted Speed: 55 mph (statutory)* Terrain: Rolling

Note: ***For projects with a design speed of less than 50 mph, a design exception request will only be required for items A and B. However, all 10 controlling criteria shall be completed. In the Exception Req'd column, indicate Yes or No as to whether an exception is needed.***

-Y1- SR 1397 (Round Peak Church Rd)

Controlling Criteria requiring review for Design Exception	Prop Design	AASHTO Std	Exception Req'd
A) Design Speed (1)	50*	40**	NO
B) Structural Capacity	N/A	N/A	N/A
C) Lane Width	11'-12'	11'	NO
D) Shoulder Width	6'	6'	NO
E) Maximum Grade	6.9026%	8.00%	NO
F) Min. Horizontal Curve Radius	350', 394' (2)	833'	NO
G) Horizontal SSD	>425'	425'	NO
H) Vertical SSD (Crest Only)	320' (3)	425'	YES
I) Pavement Cross Slope	0.02	0.02	NO
J) Superelevation	0.06	0.06	NO
K) Vertical Clearance	N/A	N/A	N/A

*Proposed work is within roundabout intersection vicinity. Design speed of 50 mph is proposed instead of the current statutory speed (55 mph) plus 5 mph (60mph) due to intersection proximity (see design criteria).

**AASHTO Std minimum design speed is 40 mph for the facility type; remaining criteria in the AASHTO Std column are shown for 50 mph as the greater criteria in accordance with the selected design speed.

Listed below are the known non-complying items not requiring an approved design exception.

(1) The design speed should be the greater of the minimum design speed for the facility type or the anticipated posted speed plus 5 mph. An element may not require a design exception if the element meets the posted speed limit. Coordinate with the roadway design team lead or Division designee to confirm that a design exception is not needed.

(2) The proposed horizontal radii of 350' and 394' are located within the yield approach vicinity of the roundabout, where vehicle approach speeds are low. A design exception is not needed for these elements.

(3) Meets 40 mph design speed.

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 06/07/2024 Design Engineer: Andrea B. Gordon, P.E.

TIP No: R-5901 Functional Classification: Local

Posted Speed: 55 mph (statutory)* Terrain: Rolling

Note: ***For projects with a design speed of less than 50 mph, a design exception request will only be required for items A and B. However, all 10 controlling criteria shall be completed. In the Exception Req'd column, indicate Yes or No as to whether an exception is needed.***

-Y2- SR 1397 (Oak Grove Church Rd)

Controlling Criteria requiring review for Design Exception	Prop Design	AASHTO Std	Exception Req'd
A) Design Speed (1)	50*	40**	NO
B) Structural Capacity	N/A	N/A	N/A
C) Lane Width	11'-12'	11'	NO
D) Shoulder Width	6'	6'	NO
E) Maximum Grade	5.25%	8.00%	NO
F) Min. Horizontal Curve Radius	200', 400' (2)	833'	NO
G) Horizontal SSD	>425'	425'	NO
H) Vertical SSD (Crest Only)	324' (3)	425'	YES
I) Pavement Cross Slope	0.02	0.02	NO
J) Superelevation	0.06	0.06	NO
K) Vertical Clearance	N/A	N/A	N/A

*Proposed work is within roundabout intersection vicinity. Design speed of 50 mph is proposed instead of the current statutory speed (55 mph) plus 5 mph (60mph) due to intersection proximity (see design criteria). Reducing the proposed posted speed to 45 mph is currently under consideration.

**AASHTO Std minimum design speed is 40 mph for the facility type; remaining criteria in the AASHTO Std column are shown for 50 mph as the greater criteria in accordance with the selected design speed.

Listed below are the known non-complying items not requiring an approved design exception.

(1) The design speed should be the greater of the minimum design speed for the facility type or the anticipated posted speed plus 5 mph. An element may not require a design exception if the element meets the posted speed limit. Coordinate with the roadway design team lead or Division designee to confirm that a design exception is not needed.

(2) The proposed horizontal radii of 200' and 400' are located within the yield approach vicinity of the roundabout, where vehicle approach speeds are low. A design exception is not needed for these elements.

(3) Meets 40 mph design speed.

10/18/23

-L1-

CUR DATA -L1-	CUR DATA -L1-
PIc 10+32.32	PIc 17+99.62
Δc = 00°11'06.7" (RT)	Δc = 26°10'17.6" (RT)
D = 00°17'11.3"	D = 16°22'12.8"
Lc = 64.64	Lc = 159.87
Tc = 32.32	Tc = 81.36
R = 20,000	R = 350
	SE = NC

-L2-

CUR DATA -L2-	CUR DATA -L2-	CUR DATA -L2-
PIc 10+74.59	PIc 12+04.90	PIc 13+32.71
Δc = 24°03'39.0" (LT)	Δc = 16°07'16.4" (RT)	Δc = 03°02'14.2" (RT)
D = 16°22'12.8"	D = 14°00'31.5"	D = 02°08'59.8"
Lc = 146.98	Lc = 115.08	Lc = 141.27
Tc = 74.59	Tc = 57.92	Tc = 70.65
R = 350	R = 409	R = 2,665
SE = 0.015	SE = 0.040	SE = 0.030

-Y1-

CUR DATA -Y1-	CUR DATA -Y1-
PIc 15+60.03	PIc 16+83.17
Δc = 13°57'15.4" (LT)	Δc = 23°09'32.8" (RT)
D = 16°22'12.8"	D = 14°32'31.5"
Lc = 85.24	Lc = 159.26
Tc = 42.83	Tc = 80.73
R = 350	R = 394
SE = 0.020	SE = 0.020

-RAB Y1-

CUR DATA -RAB-
PIc 10+00.00
Δc = 359°59'59.0" (LT)
D = 92°24'45.2"
Lc = 389.56
Tc = 0.00
R = 62
SE = 0.000

-DRW3-

CUR DATA -DRW3-
PIc 10+53.82
Δc = 28°59'26.5" (RT)
D = 67°24'24.5"
Lc = 43.01
Tc = 21.98
R = 85

-DRW1-

1. -DRW1- POT 10+00.00 = -L1- STA. 15+15.00 N32°53'59.1"W
2. -DRW1- PC 10+37.59
3. -DRW1- PT 10+66.71 N22°42'34.6"E
4. -DRW1- PC 11+04.65
5. -DRW1- PT 11+50.72 N65°16'15.5"W
6. -DRW1- POT 11+67.32

CUR DATA -DRW1-	CUR DATA -DRW1-
PIc 10+53.41	PIc 11+33.61
Δc = 55°36'33.7" (RT)	Δc = 87°58'50.1" (LT)
D = 190°59'09.4"	D = 190°59'09.4"
Lc = 29.12	Lc = 46.07
Tc = 15.82	Tc = 28.96
R = 30	R = 30

-Y2-

CUR DATA -Y2-	CUR DATA -Y2-	CUR DATA -Y2-	CUR DATA -Y2-
PIc 11+01.31	PIc 11+86.81	PIc 13+40.23	PIc 15+14.28
Δc = 22°11'14.8" (LT)	Δc = 13°28'41.1" (RT)	Δc = 07°37'23.9" (LT)	Δc = 04°51'01.8" (RT)
D = 28°38'52.4"	D = 14°19'26.2"	D = 03°34'51.6"	D = 03°34'51.6"
Lc = 77.45	Lc = 94.09	Lc = 212.88	Lc = 135.45
Tc = 39.22	Tc = 47.27	Tc = 106.60	Tc = 67.77
R = 200	R = 400	R = 1,600	R = 1,600
SE = 0.015	SE = NC	SE = 0.020	SE = 0.000

MATCH LINE -Y1- STA 13+50.00 SEE SHEET 06

MATCH LINE -L2- STA 14+50.00 SEE SHEET 05

MATCH LINE -Y2- STA 15+40.00 SEE SHEET 06

BEGIN PROJECT R-5901
-L1- PT STA 12+00.00

TIE TO EXISTING DITCH

-L1- PT 10+64.64

-L1- PC 10+00.00

-DRW3- POT 10+00.00
N81°40'53.7"E
= -Y1- STA. 14+87.00
-Y1- PC 15+17.20

-L1- PC 17+18.27

-DRW2- POT 10+00.00
= -L1- STA. 16+50.00

END CONSTRUCTION
-DRW2- POT 11+31.50
N32°53'59.1"W

END CONSTRUCTION
-DRW1- PT 11+60.00

-DRW5- POT 11+00.00
N58°18'20.1"W

END CONSTRUCTION
-DRW5- POT 10+75.00

-DRW5- POT 10+00.00
= -L1- STA. 14+49.37

-Y2- PRC 11+39.54

-Y2- PRC 12+33.63

-Y2- PRC 14+46.52

-DRW3- PC 10+31.84

END CONSTRUCTION
-DRW3- PT 10+74.85

-RAB- POT 10+00.00
= -RAB- POT 13+89.56

-L1- POT 18+78.14
= -L2- POC 10+00.00
= -Y1- POT 17+61.70
= -Y2- POC 10+00.00

-L2- PRC 11+46.98

-L2- PCC 12+62.06

-L2- PT 14+03.33

-Y2- PC 10+62.09

-DRW4- POE 11+10.00

END CONSTRUCTION
-DRW4- STA. 10+95.00

-DRW4- POT 10+00.00
= -Y2- STA. 14+35.63
N75°35'12.9"E

BEGIN C/A
BEGIN WW FENCE
+10.00 -Y1-
EXIST. R/W
35.00 (LT)

DO NOT DISTURB BUILDING

DO NOT DISTURB WELL
TIE TO EXIST. WW FENCE

DO NOT DISTURB

DO NOT DISTURB
BEGIN C/A
BEGIN WW FENCE

SPECIAL CUT V DITCH SEE DETAIL A
SPECIAL CUT V DITCH SEE DETAIL B
SPECIAL CUT V DITCH SEE DETAIL C
SPECIAL CUT V DITCH SEE DETAIL D
SPECIAL CUT V DITCH SEE DETAIL E
SPECIAL CUT V DITCH SEE DETAIL F
SPECIAL CUT V DITCH SEE DETAIL G
SPECIAL CUT V DITCH SEE DETAIL H
SPECIAL CUT V DITCH SEE DETAIL I
SPECIAL DITCH SEE DETAIL F

CL B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE

CL B RIP RAP
EST 3 TONS
EST 10 SY GEO.

CL B RIP RAPC
EST 5 TONS
EST 14 SY GEO.

CL B RIP RAP
EST 2 TONS
EST 7 SY GEO,

CL. "B" RIP RAP
EST 133 TONS
EST 355 SY GEOTEXTILE

REMOVE EXISTING CONCRETE DITCH

GRADE PAVEMENT REMOVAL AREA TO EXISTING DITCH

PROPOSED MONOLITHIC ISLAND

480' TRANSITION INSIDE LANE DROP

85' TRANSITION TO EXIST.

50' TRANS TO EXIST.

50' LANE WIDTH TRANS.

80' PROP R/W

200' (LT) LANE SHIFT

60' C/A BREAK APPROVED ON 12/31/2021 LOCATION APPROXIMATE

NICHOLAS P REA
DB 1605 PG 1087

WARREN CHANCELLOR SIZEMORE
HAILEY V LITTLE
DB 1743 PG 706

GOLDIE S. SPANGLER
CAROL SPANGER COCKERHAM
CHERYL SPANGER HAWKS
DB 1196 PG 669
DB 1772 PG 491

GEORGE WAYNE HAYES, III
DB 1668 PG 496

THE JEAN C. WRIGHT TRUST 10/21/2005
DB 1500 PG 739
PB 24 PG 42

THE JEAN C. WRIGHT TRUST 10/21/2005
DB 120 PG 277
DB 1105 PG 620

THE RUBY SNOW YORK LIVING TRUST 1/6/2006
DB 1192 PG 581

SHEETZ
DB 1841 PG 234

NAD 83/2011

R-5901
2RD2 | 04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
SURRY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

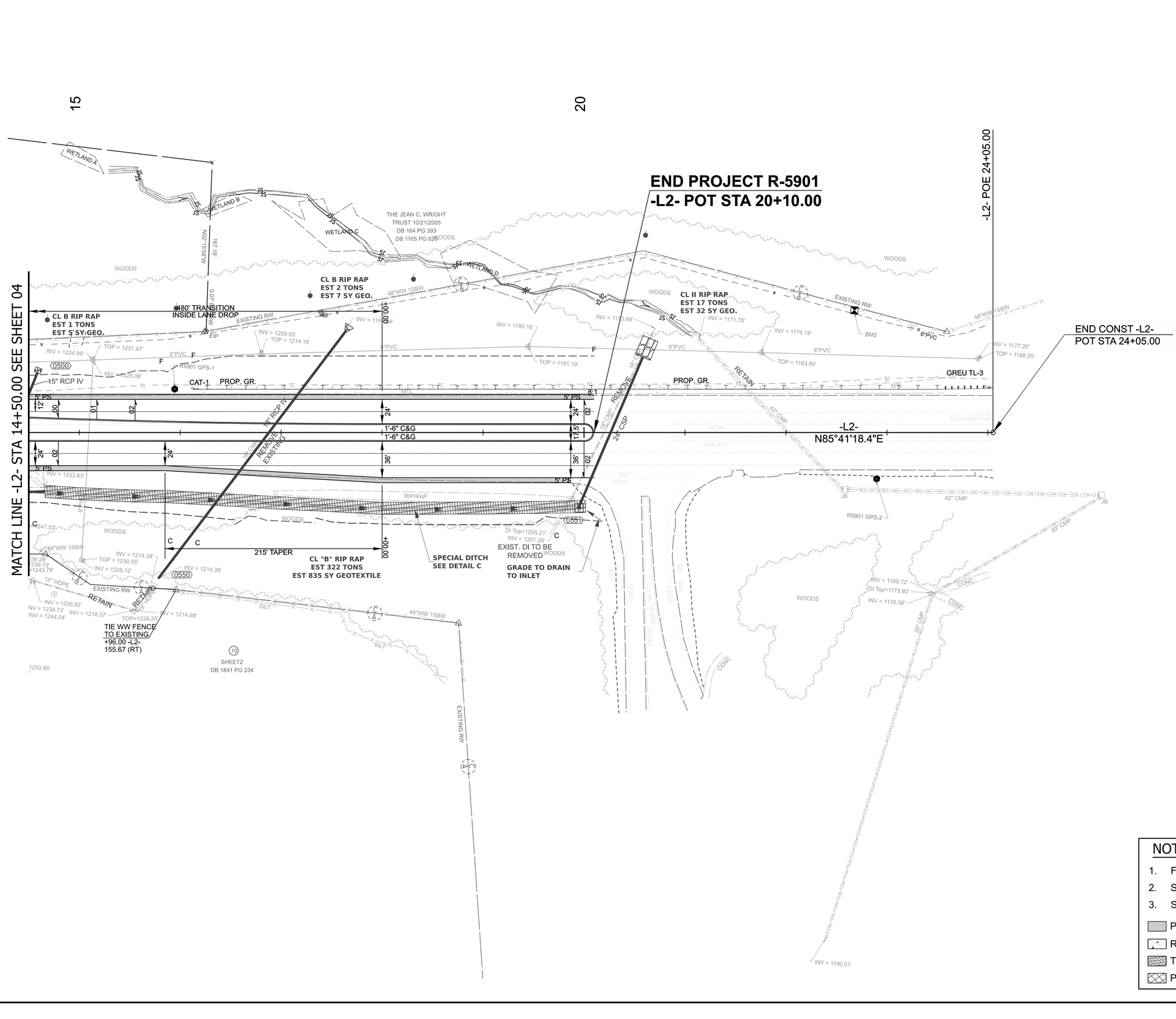
REVISIONS

NOTES:

1. DRIVEWAY RADII = 15' UNLESS OTHERWISE NOTED.
2. FOR -L1- AND -L2- PROFILE, SEE SHEET NO. 7
   FOR -Y1- AND -Y2- PROFILE, SEE SHEET NO. 8
   FOR -RAB- PROFILE, SEE SHEET NO. 8
   FOR -DRW- PROFILES, SEE SHEETS NO. 9 AND 10.
3. SEE SHEET 2-B1 FOR INTERSECTION DETAILS.
4. SEE SHEET 2-D1 FOR DRAINAGE DETAILS.

PAVED SHOULDER
RAISED CONCRETE MONOLITHIC ISLAND
TRUCK APRON
PAVEMENT REMOVAL

10/18/23



NAD 83/2011

R-5901

2RD2 | 05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
SURRY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

REVISIONS

NOTES:

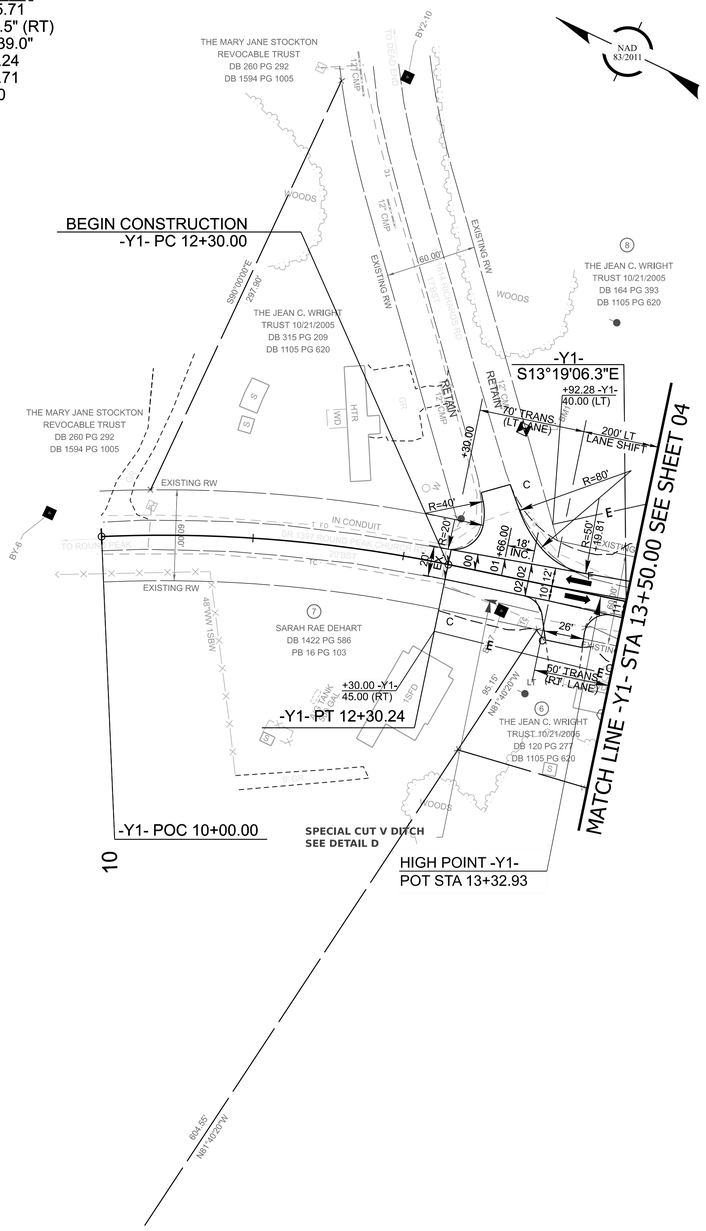
1. FOR -L2- PROFILE, SEE SHEET NO. 7
2. SEE SHEET 2-B1 FOR INTERSECTION DETAILS.
3. SEE SHEET 2-D1 FOR DRAINAGE DETAILS.

PAVED SHOULDER
RAISED CONCRETE MONOLITHIC ISLAND
TRUCK APRON
PAVEMENT REMOVAL

10/18/23

-Y1-

CUR DATA -Y1-
PIc 11+15.71
Δc = 14°11'05.5" (RT)
D = 06°09'39.0"
Lc = 230.24
Tc = 115.71
R = 930

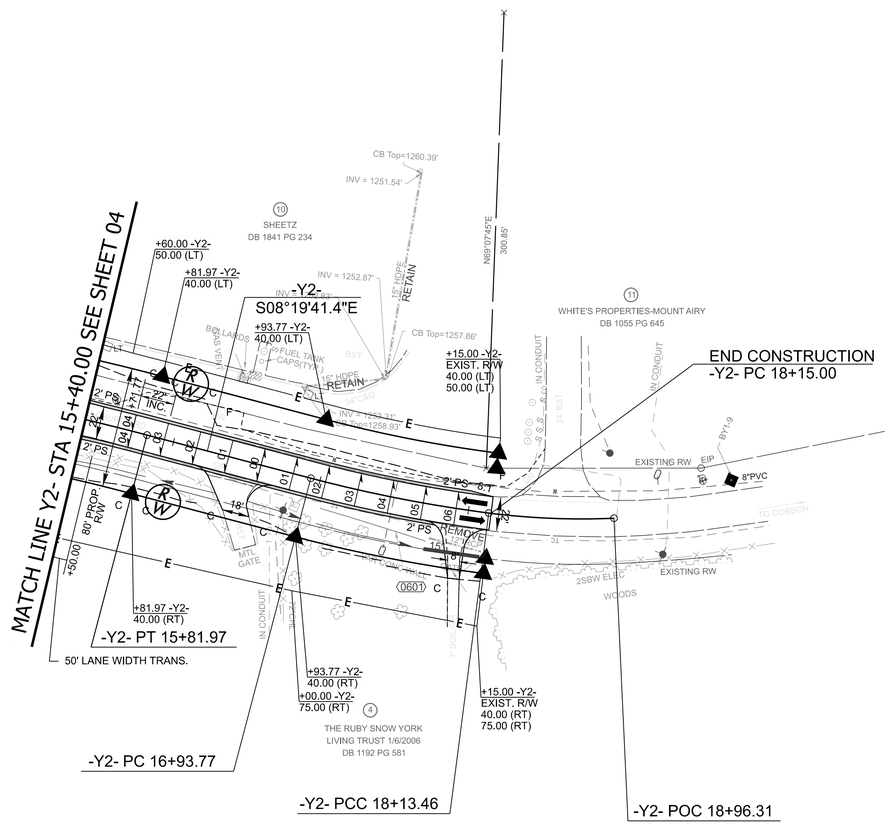


-Y2-

CUR DATA -Y2-
PIc 15+14.28
Δc = 04°51'01.8" (RT)
D = 03°34'51.6"
Lc = 135.45
Tc = 67.77
R = 1,600
SE = 0.040

CUR DATA -Y2-
PIc 17+53.70
Δc = 07°24'50.3" (LT)
D = 06°11'38.9"
Lc = 119.69
Tc = 59.93
R = 925
SE = 0.060

CUR DATA -Y2-
PIc 18+54.99
Δc = 09°59'39.0" (LT)
D = 12°03'44.2"
Lc = 82.85
Tc = 41.53
R = 475
SE = EXIST.



NOTES:

1. DRIVEWAY RADII = 15' UNLESS OTHERWISE NOTED.
2. FOR -Y1- AND -Y2- PROFILE, SEE SHEET NO. 8

PAVED SHOULDER
RAISED CONCRETE MONOLITHIC ISLAND
TRUCK APRON
PAVEMENT REMOVAL

R-5901
2RD2 | 06

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
SURRY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

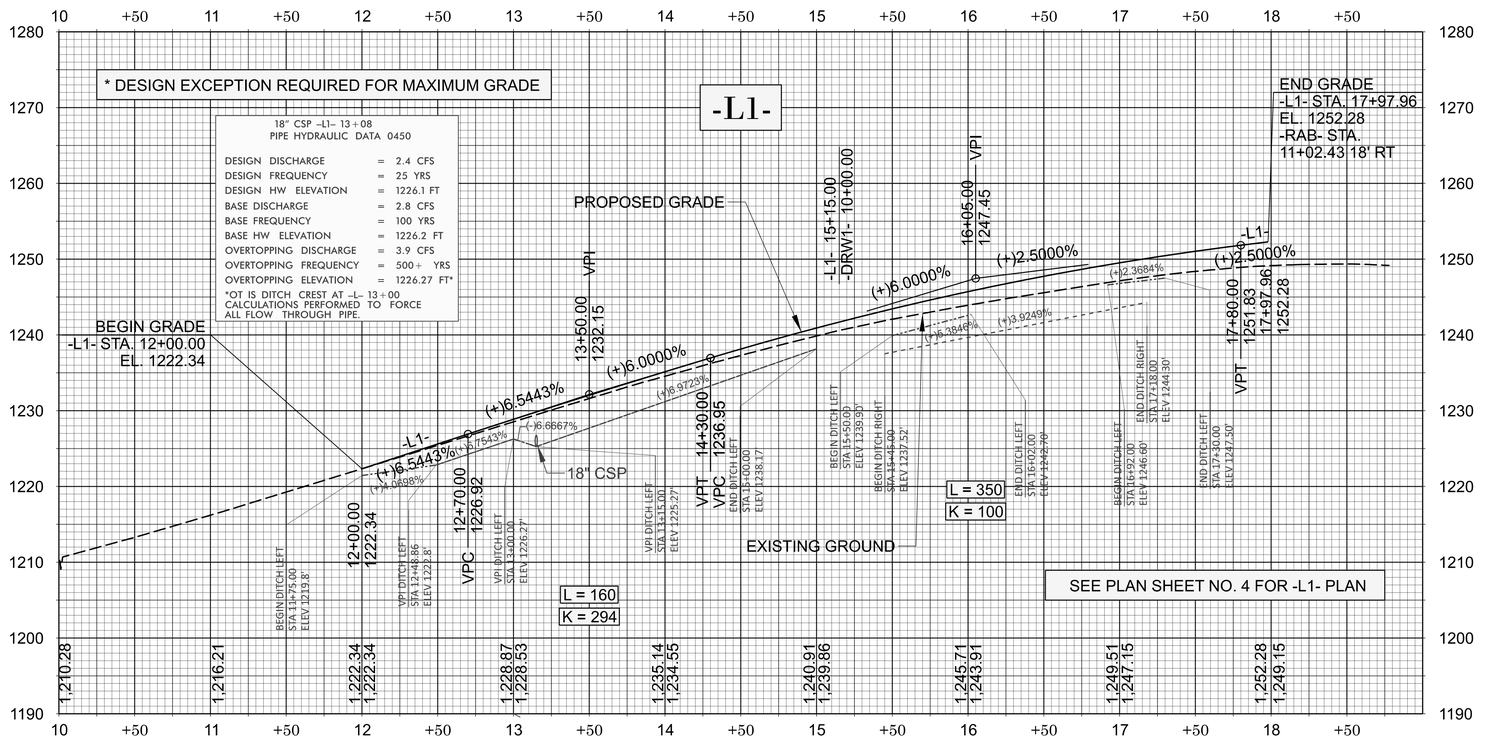
HYDRAULICS ENGINEER

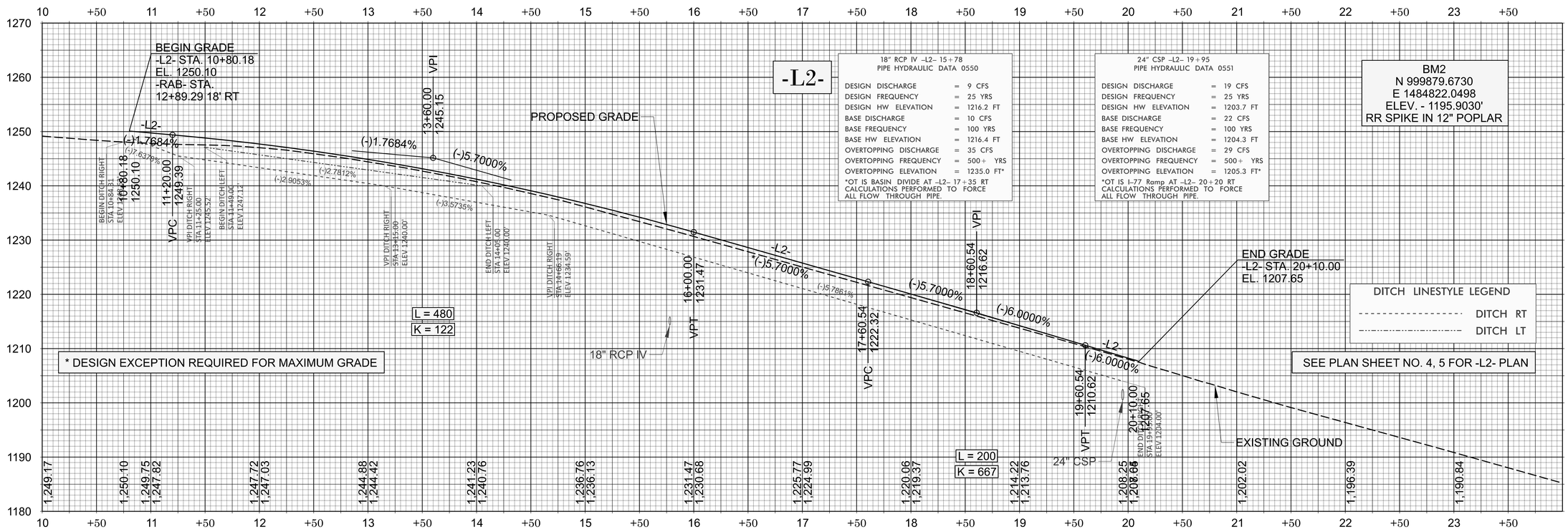
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

REVISIONS

11/14/23





R-5901

2RD2 | 07

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
SURRY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

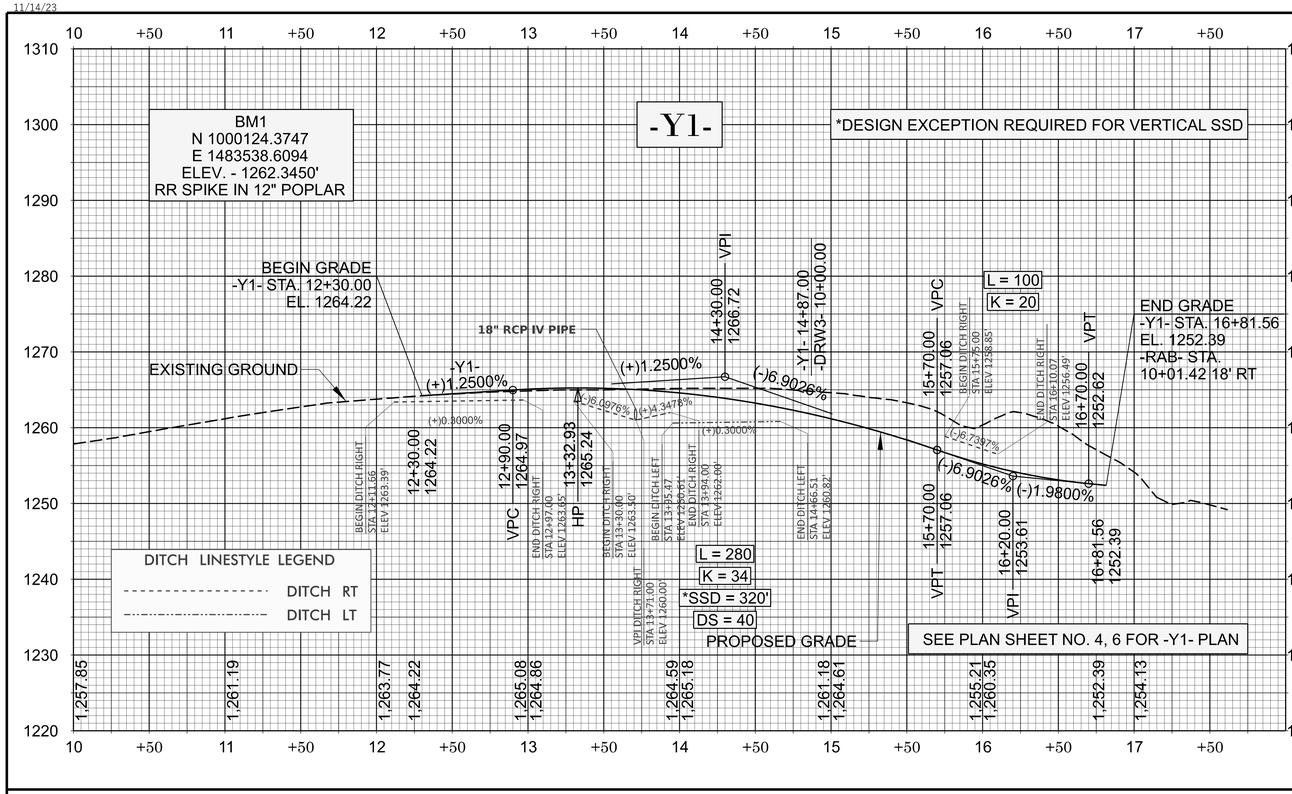
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

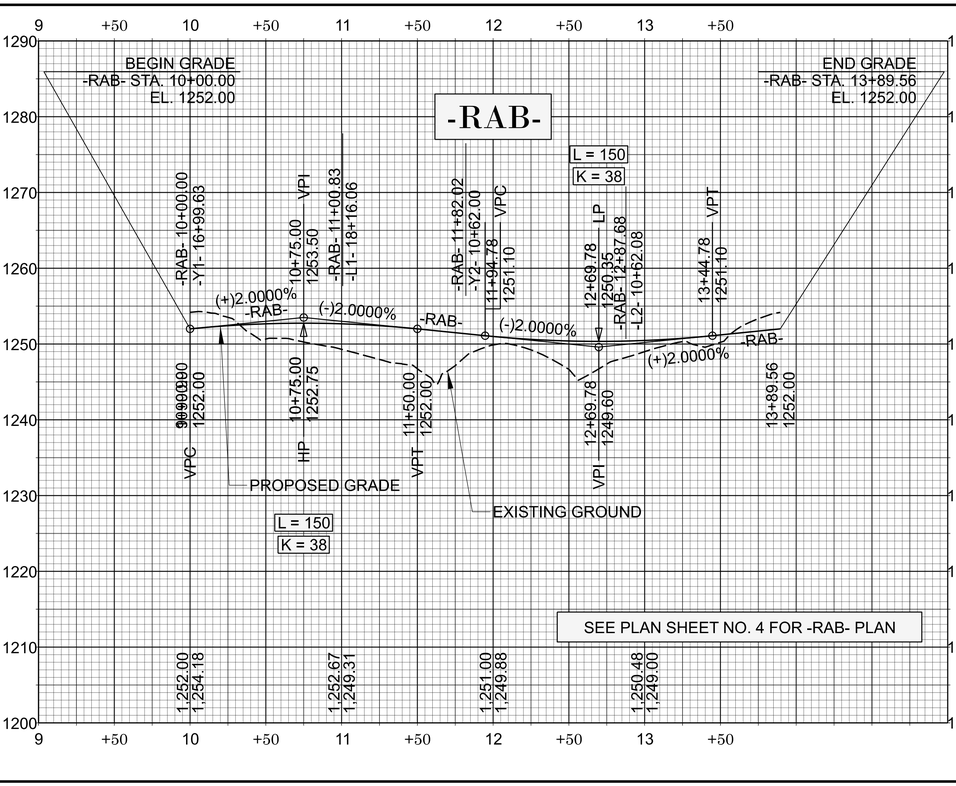
PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

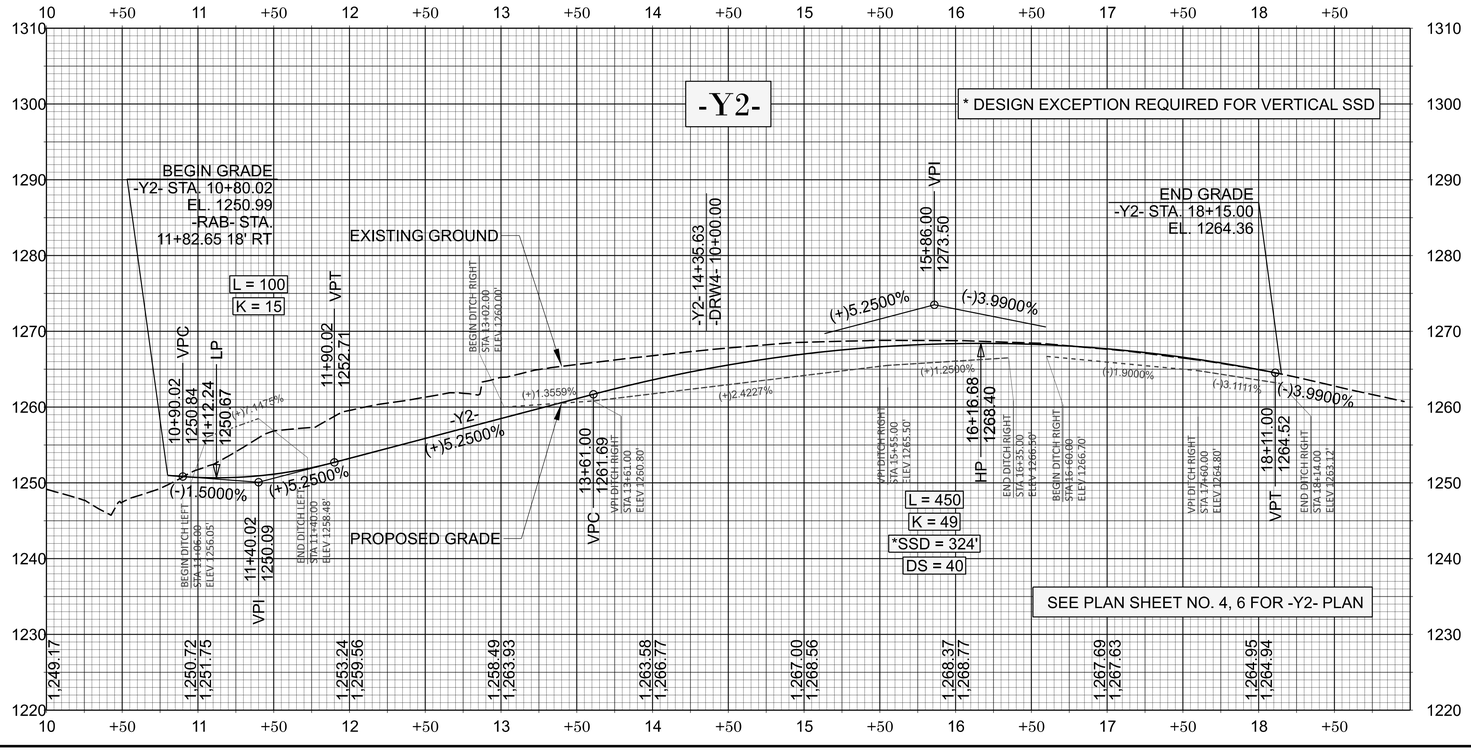
REVISIONS

REVISIONS

11/14/23







R-5901

2RD2 | 08

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
SURRY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

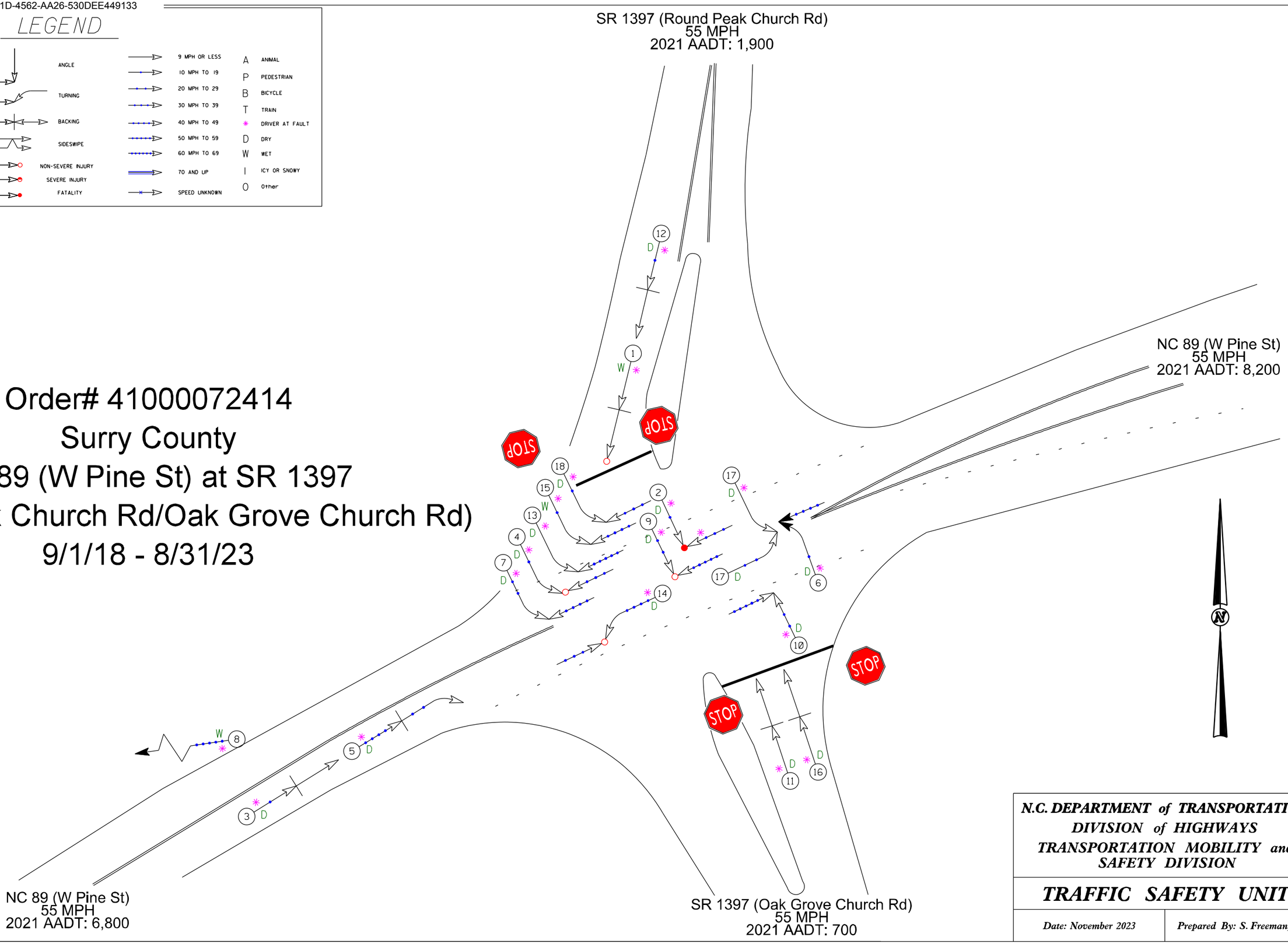
PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

REVISIONS

LEGEND

- MOVING VEHICLE
- PARKED VEHICLE
- PARKING VEHICLE
- MOVABLE OBJECT
- HEAD ON
- REAR END
- RAN OFF ROAD
- DAYLIGHT CRASH
- NIGHT CRASH
- ANGLE
- TURNING
- BACKING
- SIDESWIPE
- NON-SEVERE INJURY
- SEVERE INJURY
- FATALITY
- 9 MPH OR LESS
- 10 MPH TO 19
- 20 MPH TO 29
- 30 MPH TO 39
- 40 MPH TO 49
- 50 MPH TO 59
- 60 MPH TO 69
- 70 AND UP
- SPEED UNKNOWN
- A ANIMAL
- P PEDESTRIAN
- B BICYCLE
- T TRAIN
- * DRIVER AT FAULT
- D DRY
- W WET
- I ICY OR SNOWY
- O Other

Order# 41000072414
Surry County
NC 89 (W Pine St) at SR 1397
(Round Peak Church Rd/Oak Grove Church Rd)
9/1/18 - 8/31/23



N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: November 2023	Prepared By: S. Freeman, EI

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Study Criteria Summary

County: SURRY **City:** All and Rural
Date: 09/01/2018 **to** 08/31/2023 **Study:** 41000072414
Location: NC 89 (Pine St) at SR 1397 (Round Peak Church Rd/Oak Grove Church Rd)

Report Details

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
1	**105622632**	09/27/2018 08:05	REAR END, SLOW OR STOP	$ 1000	0	0	1	0	2	1	3	1	0	1	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
2	**105769075**	02/09/2019 17:37	ANGLE	$ 7500	1	0	0	1	1	1	1	1	0	1	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 9 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:** 58							
Unit	**2 :** 2	**Alchl/Drgs:** 1	**Speed:** 50 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
3	**105826829**	04/02/2019 13:09	REAR END, SLOW OR STOP	$ 6100	0	0	0	0	1	1	1	7	0	13	1
Unit	**1 :** 2	**Alchl/Drgs:** 0	**Speed:** 50 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 50 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1			**Obj Strk:**							
4	**105896393**	06/14/2019 13:15	LEFT TURN, DIFFERENT ROADWAYS	$ 17500	0	0	0	1	1	1	1	2	0	1	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** SW	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 8			**Obj Strk:**							
5	**106057316**	11/08/2019 07:34	REAR END, SLOW OR STOP	$ 7000	0	0	0	0	1	1	1	1	0	0	
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 7			**Obj Strk:**							
6	**106306157**	08/12/2020 21:46	LEFT TURN, DIFFERENT ROADWAYS	$ 3000	0	0	0	0	1	5	1	3	0	1	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 15 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 8			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
7	**106595387**	06/05/2021 17:17	LEFT TURN, DIFFERENT ROADWAYS	$ 4000	0	0	0	0	1	1	1	2	0	1	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 25 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 8			**Obj Strk:**							
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 50 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:**							
8	**106604288**	06/06/2021 23:30	FIXED OBJECT	$ 2000	0	0	0	0	2	5	3	3	0	13	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4			**Obj Strk:** 60							

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries F	A	B	C	Condition R	L	W	Road Ch	Ci	Trfc Ctl Dv	Op
9	**106634382**	07/10/2021 14:10	ANGLE	$ 7000	0	0	1	0	1	1	1	1	0	1	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 20 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
10	**106687503**	09/05/2021 15:07	ANGLE	$ 5000	0	0	0	0	1	1	1	2	0	1	1
Unit	**1 :** 2	**Alchl/Drgs:** 0	**Speed:** 20 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 11				**Obj Strk:**						
Unit	**2 :** 4	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
11	**106718696**	10/02/2021 16:42	REAR END, SLOW OR STOP	$ 3000	0	0	0	0	1	1	1	3	0	1	1
Unit	**1 :** 2	**Alchl/Drgs:** 0	**Speed:** 10 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 5 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 11				**Obj Strk:**						
12	**106870896**	02/23/2022 15:25	REAR END, SLOW OR STOP	$ 1000	0	0	0	0	1	1	1	1	0	1	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 10 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 1				**Obj Strk:**						
13	**106950684**	05/05/2022 16:29	LEFT TURN, DIFFERENT ROADWAYS	$ 4000	0	0	0	0	1	1	1	2	0	1	1
Unit	**1 :** 2	**Alchl/Drgs:** 0	**Speed:** 5 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 8				**Obj Strk:**						
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
14	**106987422**	06/13/2022 14:50	LEFT TURN, SAME ROADWAY	$ 11000	0	0	0	3	1	1	1	1	0	13	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 8				**Obj Strk:**						
Unit	**2 :** 4	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
Unit	**3 :** 1	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 1				**Obj Strk:**						
15	**107096483**	09/30/2022 16:25	LEFT TURN, DIFFERENT ROADWAYS	$ 13000	0	0	0	0	2	1	3	1	0	1	1
Unit	**1 :** 4	**Alchl/Drgs:** 0	**Speed:** 10 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 8				**Obj Strk:**						
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** W	**Veh Mnvr / Ped Actn:** 4				**Obj Strk:**						
16	**107099472**	10/01/2022 16:15	REAR END, SLOW OR STOP	$ 2000	0	0	0	0	1	1	1	3	0	1	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 11				**Obj Strk:**						
Unit	**2 :** 2	**Alchl/Drgs:** 0	**Speed:** 0 MPH	**Dir:** N	**Veh Mnvr / Ped Actn:** 1				**Obj Strk:**						
17	**107121465**	10/22/2022 14:41	LEFT TURN, DIFFERENT ROADWAYS	$ 4500	0	0	0	0	1	1	1	3	0	1	1
Unit	**1 :** 1	**Alchl/Drgs:** 0	**Speed:** 55 MPH	**Dir:** E	**Veh Mnvr / Ped Actn:** 8				**Obj Strk:**						
Unit	**2 :** 1	**Alchl/Drgs:** 0	**Speed:** 35 MPH	**Dir:** S	**Veh Mnvr / Ped Actn:** 8				**Obj Strk:**						

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
18	**107346872**	05/25/2023 17:54	LEFT TURN, DIFFERENT ROADWAYS	$ 7500	0	0	0	0	1	1	1	2	0	1	1

Unit	**1 :** 1	**Alchl/Drgs:**	0	**Speed:**	0 MPH	**Dir:**	S	**Veh Mnvr / Ped Actn:**	8	**Obj Strk:**
Unit	**2 :** 2	**Alchl/Drgs:**	0	**Speed:**	55 MPH	**Dir:**	W	**Veh Mnvr / Ped Actn:**	4	**Obj Strk:**

Legend for Report Details:

Acc No - Accident Number
Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
Condition: R - Road Surface, L - Ambient Light, W - Weather
Rd Ch - Road Character
Rd Ci - Roadway Contributing Circumstances
Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
Alchl/Drgs - Alcohol Drugs Suspected
Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
Obj Strk - Object Struck

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	18	100.00
Fatal Crashes	1	5.56
Non-Fatal Injury Crashes	4	22.22
Total Injury Crashes	5	27.78
Property Damage Only Crashes	13	72.22
Night Crashes	2	11.11
Wet Crashes	3	16.67
Alcohol/Drugs Involvement Crashes	1	5.56

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	18	100.00
Fatal Crashes	1	5.56
Class A Crashes	0	0.00
Class B Crashes	2	11.11
Class C Crashes	2	11.11
Property Damage Only Crashes	13	72.22

Vehicle Exposure Statistics

Annual ADT = 8800

Total Vehicle Exposure = 16.07 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	112.02
Fatal Crash Rate	6.22
Non Fatal Crash Rate	24.89
Night Crash Rate	12.45
Wet Crash Rate	18.67
EPDO Rate	767.95

Miscellaneous Statistics

Severity Index =	6.86
EPDO Crash Index =	123.40
Estimated Property Damage Total = $	106100.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	3	16.67
FIXED OBJECT	1	5.56
LEFT TURN, DIFFERENT ROADWAYS	7	38.89
LEFT TURN, SAME ROADWAY	1	5.56
REAR END, SLOW OR STOP	6	33.33

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	1	12.50
Class A Injuries	0	0.00
Class B Injuries	2	25.00
Class C Injuries	5	62.50
Total Non-Fatal Injuries	7	87.50
Total Injuries	8	100.00

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	2	11.11
Mar	0	0.00
Apr	1	5.56
May	2	11.11
Jun	4	22.22
Jul	1	5.56
Aug	1	5.56
Sep	3	16.67
Oct	3	16.67
Nov	1	5.56
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	5.56
Tue	1	5.56
Wed	2	11.11
Thu	3	16.67
Fri	3	16.67
Sat	6	33.33
Sun	2	11.11

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	1	5.56
0800-0859	1	5.56
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	2	11.11
1400-1459	3	16.67
1500-1559	2	11.11
1600-1659	4	22.22
1700-1759	3	16.67
1800-1859	0	0.00
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	1	5.56
2200-2259	0	0.00
2300-2359	1	5.56

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	14	2	0	16
Dark	1	1	0	2
Other	0	0	0	0
Total	15	3	0	18

Object Struck Summary

Object Type	Times Struck	Percent of Total
DITCH	1	50.00
MAILBOX	1	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	16	44.44
PICKUP	11	30.56
SPORT UTILITY	9	25.00

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2018	1	0	1	0
2019	4	1	1	2
2020	1	0	0	1
2021	5	0	1	4
2022	6	0	1	5
2023	1	0	0	1
Total	18	1	4	13

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2018	0	1
2019	1	2
2020	0	0
2021	0	1
2022	0	3
2023	0	0
Total	1	7

Miscellaneous Totals

Year	Property Damage	EPDO Index
2018	$ 1000	8.40
2019	$ 38100	87.20
2020	$ 3000	1.00
2021	$ 21000	12.40
2022	$ 35500	13.40
2023	$ 7500	1.00
Total	$ 106100	123.40

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2018	0	0	1	0	0	0	0
2019	1	0	2	0	1	0	0

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2020	1	0	0	0	0	0	0
2021	1	0	1	1	2	0	0
2022	4	0	2	0	0	0	0
2023	1	0	0	0	0	0	0
Total	8	0	6	1	3	0	0

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Roy Cooper
Governor

J.R. "Joey" Hopkins
Secretary

MEMO TO: PROJECT ENGINEER

FROM: Mr. Ramie A. Shaw, PE

DocuSigned by:
Ramie A. Shaw
C56DB73B487E4E6...

SUBJECT: Division 11 Final Pavement Design
R-5901, 48416.1.1
NC 89 (West Pine Street) at the intersection of SR 1397 (Round Peak Church Road)
Surry County, Division 11

DATE: 8/15/2024

The pavement designs for the above project are as follows:

Line	Surface	Intermed.	Base	ABC	Stab.	SN_{REQ}
NC 89 (West Pine Street)	3.0" S9.5C	2.5" I19.0C	4.0" B25.0C	-	No	3.57
NC 89 (West Pine Street) C&G	3.0" S9.5C	4.0" I19.0C	4.0" B25.0C	-	No	3.20
SR 1397 (Oak Grove Church Road)	3.0" S9.5C	2.5" I19.0C	4.0" B25.0C	-	No	3.67
SR 1397 (Round Peak Church Road)	3.0" S9.5C	2.5" I19.0C	4.0" B25.0C	-	No	2.27
Temporary Pavement	2.0" S9.5C	-	-	6.0" w/ Prime Coat	No	1.64
DRW1,DRW2,DRW3,DRW5 and DRW6	2.0" S9.5C	-	-	8.0" w/Prime Coat	No	N/A
DRW4	3.0" S9.5C	4.0" I19.0C	4.0" B25.0C	-	No	N/A

Overlay the existing pavement with the following: 1.5" S9.5C

The mix designations provided for the above designs are in accordance with the 2019 NCDOT QMS manual.
If any additional information is needed, please contact: Ramie Shaw @ 336-903-9134

Design Information:

Initial Year:	2023	Projection Year:	2050
Initial Year ADT:	11,520	Proj. Yr. ADT:	13,000
% DUALS:	3.0	% TTST:	3.0
LANE/DIRECTION:	1	Des. Life (Years):	30
DIR %:	50	Subgrade M[r]:	10,426
Construction Year:	2025	Design TOT. 18K:	2,555,885
SN Required:	3.57	SN DESIGN:	3.62

RAS/ras
cc: pavementrequests@ncdot.gov

Mailing Address:	*Telephone: 336-667-9111*	Location:
NC DEPARTMENT OF TRANSPORTATION	*Fax: (336)667-4549*	801 Statesville Rd
Divison 11	*Customer Service: 1-877-368-4968*	North Wilkesboro, NC 28659
PO Box 250		
North Wilkesboro, NC 28659	*Website: www.ncdot.gov*	

PROPOSED DESIGN CRITERIA

STATE PROJECT:	48416.1.1	**TIP:**	R-5901
F. A. PROJECT:		**TIER:**	REGIONAL
COUNTY:	Surry		
DIVISION:	11	**PAGE:**	1 of 2
PROJECT DESCRIPTION:	NC 89 (W Pine St) and SR 1397 (Round Peak Church Rd/Oak Grove Church Rd) Intersection Improvements.		

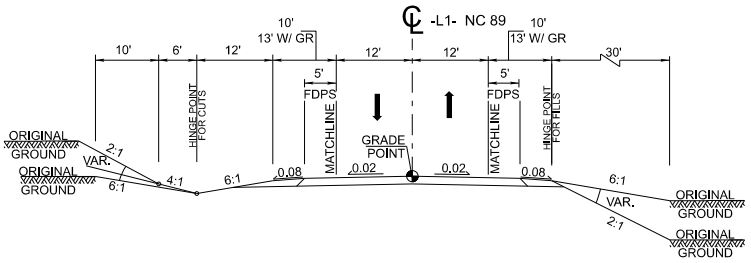
PREPARED BY:	Andrea Gordon, PE	**CHECKED BY:**	Debbie Barbour, PE	**REVISED BY:**	Andrea Gordon, PE
DATE:	January 11, 2024	**DATE:**	January 19, 2024	**DATE:**	March 13, 2024

ROUTE	NC 89	SR 1397	SR 1397		REFERENCE OR REMARKS
ROAD NAME	W Pine St	Round Peak Church Rd	Oak Grove Church Rd	Roundabout	
ALIGNMENT NAME	L1, L2	Y1	Y2	RAB	
TRAFFIC DATA					
ADT LET YEAR (2025) =	11,520	2,150	4,840		R-5901 FINAL TRAFFIC FORECAST (02/28/2024)
ADT DESIGN YEAR (2050) =	13,000	2,700	6,500		
K (AM)	7.5%	13%	9%		
D (AM)	72.5%	65%	65%		
TTST	3%	0.5%	18%		
DUALS	3%	2%	9%		
FUNCTIONAL CLASSIFICATION	MINOR ARTERIAL	LOCAL	LOCAL		Planning doc/Go!NC
CONTEXT CLASSIFICATION	RURAL	RURAL	RURAL	RURAL	GB 1.5.1
TERRAIN TYPE	ROLLING	ROLLING	ROLLING	ROLLING	RDM 1, 2.3/GB 3.4.1
DESIGN SPEED (mph)	50	50 (1)	50 (1)	30	RDM 2.2.3
POSTED SPEED (mph)	45 (2)	55 (STAT)	55 (STAT)		NCDOT GIS
TYPICAL SECTION TYPE	2 - 4 LANE DIVIDED (3)	2 LANE SHOULDER	2 LANE SHOULDER	1 LANE C & G	Per Scope
CURB & GUTTER (LT, RT, BOTH, NONE)	NONE/BOTH (4)	NONE/BOTH (4)	NONE/BOTH (4)	BOTH SIDES	Per Scope
LANE WIDTH (ft)	12'	11' (12' w/ C&G)	11' (12' w/ C&G)	18'	GB TBL 7-3, 5-5
MEDIAN TYPE (RAISED OR DEPRESSED)	Raised	N/A	N/A	Raised	Per Scope
MEDIAN WIDTH (ft)	17.5 (Varies)	N/A	N/A	N/A	Per Scope
MEDIAN PROTECT. (GR/BARRIER)	N/A	N/A	N/A	N/A	--
SIDEWALK (LT, RT, BOTH, NONE)	None	None	None	None	--
SIDEWALK WIDTH (ft)	N/A	N/A	N/A	N/A	--
SIDE PATH (LT, RT, BOTH, NONE)	None	None	None	None	--
SIDE PATH WIDTH (ft)	N/A	N/A	N/A	N/A	--
BICYCLE LANE WIDTH (ft)	None	None	None	None	--
RUMBLE STRIPS (Yes/No)	NO	NO	NO	NO	RDM 1, 4.4.7
PROPOSED R/W WIDTH (ft)	VARIES (60' MIN.)	VARIES (60' MIN.)	VARIES (60' MIN.)	VARIES	Full C/A within interchange, break on NC 89 for Sheetz driveway
CONTROL OF ACCESS	FULL	PARTIAL	PARTIAL	PARTIAL	
SHOULDER WIDTH (TOTAL)					
INSIDE or MEDIAN (ft)	N/A	N/A	N/A	N/A	--
OUTSIDE w/o GR (ft)	10'	6'	6'	N/A	GB TBL 7-3, 5-5; RDM 1, TBL 4-1 and 4-2
OUTSIDE w/ GR (ft)	13'	9'	9'	N/A	
BERM WIDTH w/o GR (ft)	10' (4)	6'-10' (4)	10' (4)	10'	--
BERM WIDTH w/ GR (ft)	N/A	N/A	N/A	N/A	--
PAVED SHOULDER WIDTH					
INSIDE or MEDIAN (ft)	N/A	N/A	N/A	N/A	* 5' for Complete Streets, RDM 1, 4.4.4
OUTSIDE (ft)	5' *	N/A	2'	N/A	
HORIZONTAL ALIGNMENT					
MAXIMUM SUPER (04, 06, 08, 10)	06	06	06	04	RDM 1, 3.4
MINIMUM RADIUS (ft)	833'	833'	833'	62' (7)	GB TBL 3-9
SPIRAL NEEDED (Yes/No)	NO	NO	NO	NO	RDM 1, 3.3.2
VERTICAL ALIGNMENT					
MAXIMUM GRADE	5% (5)	8%	8%	4%	GB TBL 7-2, 5-2
MINIMUM GRADE	0.30%	0.30%	0.30%	0.30%	GB PG 3-130; RDM 1, 3.5.2
MINIMUM CREST K FACTOR	84	84	84	19	GB, TBL 3-35
MINIMUM SAG K FACTOR	96	96	96	37	GB, TBL 3-37
CROSS SLOPES					
PAVEMENT	0.020	0.020	0.020	0.020	RDM 1 2.7.4
TURF SHOULDER INSIDE or MEDIAN	N/A	N/A	N/A	N/A	RSD 560.01 RDM 1, 4.4.5
PAVED SHOULDER INSIDE or MEDIAN	N/A	N/A	N/A	N/A	
TURF SHOULDER OUTSIDE	0.080	0.080	0.080	N/A	
PAVED SHOULDER OUTSIDE	0.020	N/A	0.020	N/A	
BERM	0.020 (4)	0.020 (4)	0.020 (4)	0.020	--
MEDIAN DITCH	N/A	N/A	N/A	N/A	--
DITCH TYPICAL (A or B)	A	B	B	N/A	RDM 1, 4.4.6 Figure 4-4
DITCH WIDTH (ft)	12'	8'	8'	N/A	RDM 1, 4.4.6 Figure 4-4
CLEAR ZONE (ft)	24'-28'	20'-26' (6)	24'-28' (6)	14'-16' (6)	RDM 1, 4.6.1, TBL 4-5
TYPICAL SECTION NO.	1, 2	3	4	5	

LEGEND: GB = 2018 AASHTO GREEN BOOK RDM = ROADWAY DESIGN MANUAL (NOV 2023) RSD = 2024 ROADWAY STANDARD DRAWINGS

NOTES:

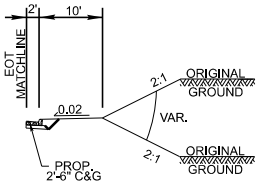
(1) Standard design speed is 55 mph + 5 mph. However, within proposed roundabout intersection vicinity (stop/yield condition) achievable design speed will be within the range of 30-50 mph.
(2) Proposed new posted speed limit is 45 mph on NC 89 from west of Beulah Rd to east of the I-77 ramps per Division 11 Traffic Engineer.
(3) Proposed median divided section from NC 89/SR 1397 intersection to I-77 SB ramp intersection.
(4) Curb and gutter is proposed within the roundabout radii/splitter island limits.
(5) Design exception for maximum grade may be required for grades exceeding 5.0%, up to 6.4% on L1 and L2 (matches existing condition).
(6) Minimum clear zone allowable for Y1 and Y2 within the roundabout vicinity is 14'-16' due to stop/yield condition and C&G on approaches.
(7) Radius based on controlling fastest path speeds and accommodating design vehicle rather than selecting from GB Table.



TYPICAL SECTION NO.1

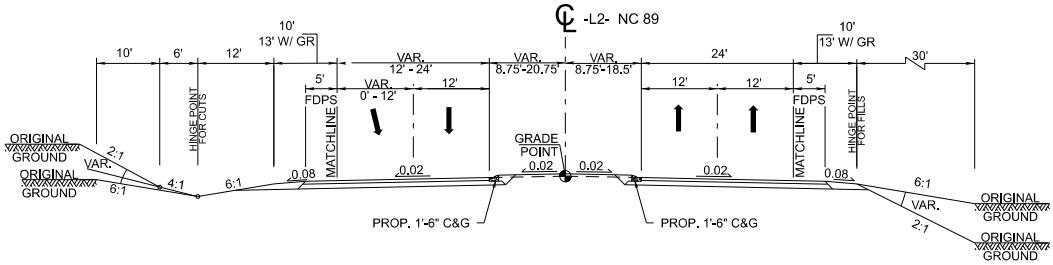
-L1-

CURB AND GUTTER DETAIL



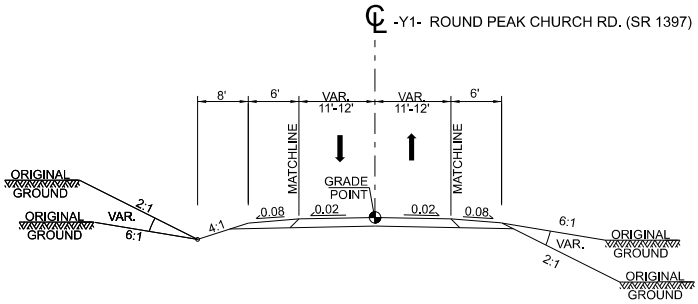
(VARIABLE LIMITS) USE WITH:

-L1-, -L2- , -Y1-, -Y2-



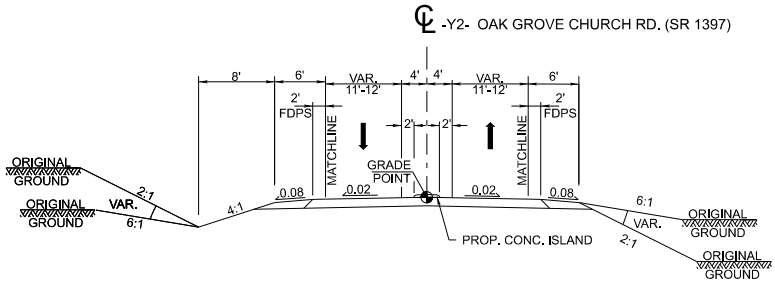
TYPICAL SECTION NO. 2

-L2-



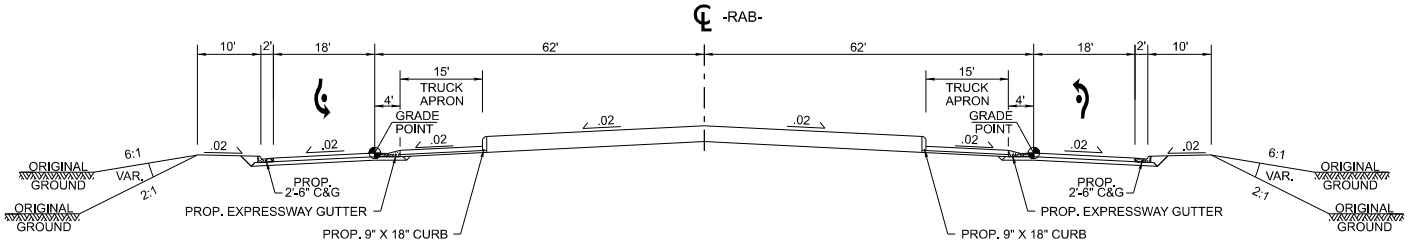
TYPICAL SECTION NO. 3

-Y1-



TYPICAL SECTION NO. 4

-Y2-



TYPICAL SECTION NO. 5

-RAB-

R-5901 Design Notes/Decisions

Last updated: 02/02/2024 **By:** Andrea Gordon, P.E. (Project Design Engineer and EOR)

- **08/01/2023** – coordinated at the Project Scoping Meeting
  - 5-leg roundabout alternative and a standard intersection alternative were dismissed. 4-leg roundabout will be designed.
  - Cross slopes should be designed to facilitate high volume of truck traffic.
  - Design vehicle should be WB-67.
  - Sight distance was noted as a concern to be evaluated/addressed within the proposed designs. Horizontal alignments may also be adjusted to slow traffic at the roundabout approaches.
  - Propose a 20' truck apron and 4' expressway gutter between the truck apron and circulating lane.
- **12/05/2023** - Design vehicle previously discussed at scoping meeting was WB-67. Update to RDM (November 2023) stated that WB-67 should not be used as standard design vehicle. Design vehicle for project was therefore revised to WB-62FL (41' axle spacing, 53' trailer length). – Coordinated via email with EOR and Division.
- **12/12/2023** – Desiree Hagwood relayed a memo from the Division documenting the design vehicle for the roundabout (selected WB-67) and associated reasoning
- **12/13/2023** – Following the monthly status meeting (12/12/23), Daniel Adams followed up with Chris Brown (Division Traffic Engineer) and confirmed that the recommended posted speed on NC 89 from west of the proposed roundabout at Beulah Road to east of the I-77 ramps will be 45 mph.
- **01/03/2024** – KCA held a pre-2RD1 design review meeting with Donald Nance, Desiree Hagwood and Daniel Adams. Various design questions were discussed including sight distance concerns and mitigation options particularly on Y2.
- **01/04/2024** – Donald Nance relayed comments on the pre-2RD1 designs. The following major items were included:
  - reduce the truck apron width to 16' (verify in Autoturn)
  - maintain the Sheetz driveway at -Y2- 14+45 as full movement
  - Regarding sight distance concerns on Y2: "The Division team has discussed possible mitigation issues, and it is not supported for the Division to add additional signage/flashing beacons or move the access. The sight distance issues with the current statutory speed were pre-existing at this developed site prior to this project design and it would be outside of the intended scope of the allotted project funds to resolve this. However, please know that our final decision to try and alleviate the stopping sight distance issue at this location has been for the Division Traffic Unit to reduce the speed on this -Y2- leg. We are intending to drop it down to a 45mph posted speed…this has not yet been enacted, only discussed." (Division to provide status on posted speed change at a later date)
  - Investigate feasibility of the use of curbing or retaining wall as needed on -Y1- to avoid relocating the home and to reduce property impacts on the property northwest of the roundabout

    - Investigate revising L2 to use the successive high-speed curve reduction method (NCHRP Report 1043 Exhibit 10.110)
- **01/10/2024** – KCA had a follow-up Teams meeting with Donald Nance, Desiree Hagwood and Daniel Adams to discuss options for the high-speed successive curve method to be added to Y2. After the meeting, the Division sent an email recommending to proceed with the revised design option which drops the inside WB through lane using a successive curve type alignment. This option offers a speed reduction benefit for the inside through lane and increased deflection for the outside through lane while maintaining 200' west of the ramp terminal intersection prior to the lane drop/merge begin point.

Project: **R-5901**

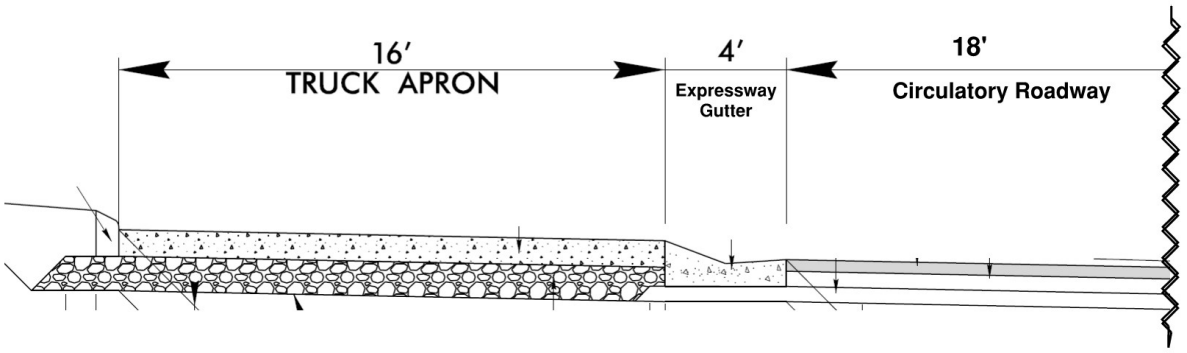
Pre-Design comments from Division 11

1/4/2024

*KCA responses 1/30/24

After review of the initial draft footprint and in conjunction with the Teams meeting held on 1/3/24, the Division recommendations for the R-5901 roundabout are as follows:

- Depending upon no conflict with the new proposed elevation we advise using the existing pavement and any minimal widening necessary to stripe a dedicated drop-lane into the Sheetz business at the drive located roughly around -L2- Station 11+60 to 13+50. Updated design to utilize existing pavement with minimal wedging/widening for turn lane
- Extend the 2'6" curb and gutter through the outside edges of all four roundabout legs to end at the beginning point of each splitter island. Revised
  - To be clear, the 4' expressway gutter is only intended to be used adjacent to the outside edge of the truck apron. The inside edge of the truck apron is typically either 9"x18" or 9"x12" curbing. All other curbing used on the project is recommended to be 2'6" (unless hydro recommends something different for drainage purposes). Understood/noted
- Reduce the truck apron to 16' in width. Revised. The 160' ICD dimension of the roundabout will not change, and as a result only the central island will be increased by 4'. It is believed that this ICD is large enough to provide adequate accommodation for a high volume of WB-67 vehicles, and we have no issue with it. Our previous recommendation for the truck apron size was an overdesign, and by reducing it we can keep the roundabout closer to current roadway standards.
  - Once again, use auto-turn to re-assess that the WB-67 sweep path is satisfactory through the roundabout performance check. Verified that WB-67 is accommodated
  - For clarity, here is a partial snapshot of the above-mentioned cross-section:



- The Division does not believe that a grade change *(while allowing for the roundabout to remain within recommended design standards)* will improve the sight-distance enough on -Y2- to fix the issues at the Sheetz business. In the Teams meeting, the drawbacks of

extending the splitter island past the 1st driveway at -Y2- Sta.14+45 was discussed, and we agree not to block this access with a splitter island. We do want to maintain left-in/left-out movements for this access. Understood, the full movement access for this driveway has been maintained. The Division team has discussed possible mitigation issues, and it is not supported for the Division to add additional signage/flashing beacons or move the access. The sight distance issues with the current statutory speed were pre-existing at this developed site prior to this project design and it would be outside of the intended scope of the allotted project funds to resolve this. However, please know that our final decision to try and alleviate the stopping sight distance issue at this location has been for the Division Traffic Unit to reduce the speed on this -Y2- leg. We are intending to drop it down to a 45mph posted speed.

  - This should not affect the design criteria you are preparing as this has not yet been enacted, only discussed at this point. We can provide the status of this speed change at a later date. Noted – design criteria is unchanged and will be revised if speed limits is revised.

- Regarding the two proposed profiles of either Alternative 1 or 2, the Divisions preference is to move forward with Alternative 1 and attempt as much effort as reasonably possible to reduce impact on the property north-west of the roundabout on the -Y1- leg. Feel free to use any curbing and retaining wall measures to avoid this property, if possible. Please inform the project manager (Donald) of the feasibility for avoidance or not before submitting the 2RD1 plans. Understood, proceeded with profiles of Alt 1 (minor changes as needed to verify tie-ins of all radii).
  - Update 1/23/24: We investigated retaining wall/avoidance measures for the mentioned property and emailed the Division with findings on 1/19/24. It was recommended at this time that 1.5:1 slopes as opposed to retaining wall may be the preferred option so we have shown this on the DRPS.
- Lastly, my question is whether the approach method for high-speeds using progressively smaller curves was considered in your design of the -L2- leg? This is just a comment for thought …. so, disregard it if it was previously decided against in your initial design investigation. Considering the constraints on this location it may not be feasible due to the restrictive proximity of the lane drop taper on the -L2- leg.
  - We're on a tight schedule, and it is understood that you might not have time to investigate the potential use of this method here. However, it would appear an ideal location to utilize this for the proposed -L2- alignment/splitter island considering its approach is from a 50mph design speed. It does already naturally help with speed reduction that this is an uphill approach. The leg on -L1- is less of a concern considering that the adjacent intersection east of the project (Beulah Rd) is proposed to also have a roundabout design soon.
  - The location of the method being referred to can be found in the *TRB NCHRP Report 672* (see pg.8-35 of the *Nov.2023* NCDOT Roadway Design Manual for the hyperlink).
  - Our design will differ slightly from the example in that text because our splitter island is going to continue further down the alignment and not transition into a painted taper for this project, but if you have the time do a quick sketch to investigate if it is feasible or not to fit this here it is being mentioned to consider

before you move into finalizing the 2RD1 plans. You can inform the project manager (Donald) if it did work out to be feasible. Again, just disregard the comment if not.

- You likely already know this, but a better example referencing a single-lane roundabout design and curve table can be found in Exhibit 10.110 of the *TRB NCHRP Report 1043* on page 10-101.
- Thank you for this comment and the inclusion of references as well. We did utilize the method shown within NCHRP 1043 p. 10-101 on the -L1- approach with radii similar to the suggestions included in the table. On the -L2- approach, a lateral shift towards the north is more challenging to balance with the lane drop. We held a follow-up discussion with Division on 1/10/24 to show various options including 1) Revising the lane drop to an inside lane drop with long successive curves to imitate this method, 2) dropping the additional through lane within the interchange limits and then adding the successive curves, 3) leaving the design as shown on the pre-2RD1 concept. The selected option to proceed was option #1 and the DRPS has incorporated this change.

END OF REVIEW COMMENTS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

April 9, 2024

MEMORANDUM TO: Michael Poe, PE
Division 11 Engineer

ATTENTION: Daniel R. Adams, PE
Division 11 Project Team Lead

FROM: Matthew J. Alexander, PE
State Geotechnical Engineer

DocuSigned by:
DC6858AD2A2C474...

STATE PROJECT: 48416.1.1 (R-5901)
COUNTY: Surry
DESCRIPTION: Intersection Improvements of NC 89 (W Pine St) and SR 1397 (Round Peak Church Road)/(Oak Grove Church Road).

SUBJECT: Geotechnical Report – Design and Construction Recommendations

The Geotechnical Engineering Unit makes the following recommendations. A subsurface inventory will not be submitted.

I. Slope and Embankment Stability

A. *Slope Design*
Recommend all roadway slopes be constructed no steeper than 2:1 (H:V).

B. *Undercut*
Recommend 200 cubic yards of Undercut be included in the contract as a contingency item to be used at the direction of the Engineer.

C. *Geotextile for Soil Stabilization*
Include 200 square yards of Geotextile for Soil Stabilization in the contract as a contingency item to be used at the discretion of the Engineer.

II. Subgrade Stability

A. *Undercut for Subgrade Stability*
Recommend a contingency quantity of 200 cubic yards of Undercut be included in the contract to be used at the discretion of the Engineer.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH, NC 27699-1589

Telephone: (919) 707-6850
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

B. *Grade Point Undercut*
For inclusion in the contract we recommend 50 cubic yards of grade point Undercut to be used at the discretion of the Engineer.

C. *Aggregate Subgrade*
Shallow Undercut
Include 200 cubic yards of 12" Shallow Undercut in the contract as a contingency item to be used at the discretion of the Engineer.

Geotextile for Subgrade Stabilization
Include a contingency quantity of 600 square yards of geotextile for subgrade stabilization in the contract to be used at the discretion of the Engineer.

Class IV Subgrade Stabilization Material
Recommend a contingency quantity of 400 tons of Class IV Select Material be included in the contract for use at the discretion of the Engineer.

D. *Subsurface Drainage- Subsurface Drains*
Recommend a contingency quantity of 200 linear feet of 6" perforated subdrain pipe per Roadway Standard Drawing 815.02 - Subsurface Drain be included in the contract to be used at the direction of the Engineer.

E. *Geotextile for Soil Stabilization*
Include a contingency quantity of 200 square yards of geotextile for soil stabilization in the contract for use with items in section II.A. to be used at the discretion of the Engineer.

III. Borrow Specifications

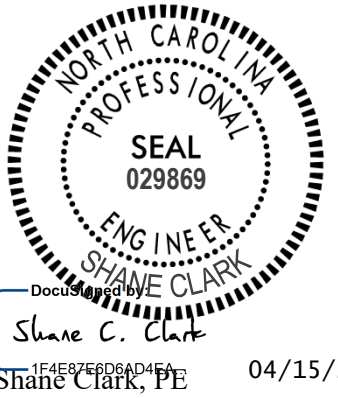
A. *Shrinkage Factor*
Recommend a shrinkage factor of 15% for calculation of earthwork quantities.

B. *Select Granular Material*
A quantity of 400 cubic yards of Select Granular Material should be included in the contract as a contingency to be used at the discretion of the Engineer in conjunction with section I.C. and II.E.

IV. Miscellaneous

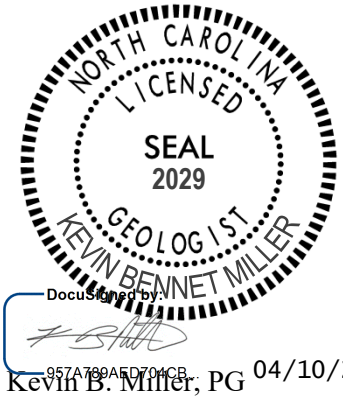
A. *Reduction of Unclassified Excavation*
The estimated loss of unclassified excavation due to clearing and grubbing is considered to be insignificant.

Respectfully Submitted,



DocuSigned by:
Shane C. Clark
1F4E87E6D6AD4EA...

Shane Clark, PE 04/15/2024
Regional Geotechnical Engineer



DocuSigned by:
957A789A5D704CB...

Kevin B. Miller, PG 04/10/2024
Regional Geological Engineer

Document Not Considered Final Unless All Signatures Are Completed

Cc: Desiree Hagwood, Division 11 Design Engineer

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
Summary of Quantities

WBS Number: 48416.1.1 | County: Surry | Project Engineer: Shane Clark
TIP Number: R-5901 | Field Office / PEF: Harrisburg WRO | Project Geologist: Eddie Beverly DS JEB
Description: Intersection Improvements of NC 89 (W. Pine St.) and SR 1397 (Round Peak Church Rd.) / (Oak Grove Church Rd.)

Pay Item No.	Pay Item/ Quantity Adjustment	Spec Book Section No. or Special Provision (SP) Reference	Report Section	Alignment	Begin Station	End Station	Quantity	Units / %
0036000000-E	Undercut Excavation	225 - Roadway Excavation	I. B	Contingency	N/A	N/A	200	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. A	Contingency	N/A	N/A	200	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. B	Contingency	N/A	N/A	50	CY
						Total Quantity of Undercut Excavation =	**450**	**CY**
0195000000-E	Select Granular Material	265 - Select Granular Material	III. B	Contingency	N/A	N/A	400	CY
						Total Quantity of Select Granular Material =	**400**	**CY**
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	I. C	Contingency	N/A	N/A	200	SY
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	II. E	Contingency	N/A	N/A	200	SY
						Total Quantity of Geotextile for Soil Stabilization =	**400**	**SY**
1004500000-E	Geotextile for Subgrade Stabilization	505 - Aggregate Subgrade	II. C	Contingency	N/A	N/A	600	SY
						Total Quantity of Geotextile for Subgrade Stabilization =	**600**	**SY**
1099500000-E	Shallow Undercut	505 - Aggregate Subgrade	II. C	Contingency	N/A	N/A	200	CY
						Total Quantity of Shallow Undercut =	**200**	**CY**
1099700000-E	Class IV Subgrade Stabilization	505 - Aggregate Subgrade	II. C	Contingency	N/A	N/A	400	TON
						Total Quantity of Class IV Subgrade Stabilization =	**400**	**TON**
2044000000-E	6" Perforated Subdrain Pipe	815 - Subsurface Drainage	II. D	Contingency	N/A	N/A	200	LF
						Total Quantity of 6" Perforated Subdrain Pipe =	**200**	**LF**

These Items Only Impact Earthwork Totals								
N/A	Shrinkage Factor	235 - Embankments	III. A	N/A	N/A	N/A	15	%

Andrea Gordon

From: Debbie Barbour
Sent: Wednesday, May 8, 2024 10:51 AM
To: Andrea Gordon
Cc: 1202129-12 R-5901
Subject: FW: [External] RE: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

Fyi, we may need to add to the discussion this morning.
Debbie

KISINGER CAMPO & ASSOCIATES

Debbie Barbour, PE
Vice President and Regional Manager

Email: DBarbour@kcaeng.com
Office: 919.882.7839
Cell: 919.980.1001
301 Fayetteville Street, Suite 1500, Raleigh, NC 27601

From: Slaughter, Johnathan H <hslaughter@ncdot.gov>
Sent: Wednesday, May 8, 2024 10:48 AM
To: Debbie Barbour <DBarbour@kcaeng.com>
Cc: Nance, Donald O <donance@ncdot.gov>
Subject: FW: [External] RE: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

> **Caution:** External email.

J. Heath Slaughter
Div. 11 Project Manager
North Carolina Department of Transportation

336-903-9202 office
336-667-4549 fax
hslaughter@ncdot.gov Email

801 Statesville Road
North Wilkesboro, NC 28659

From: Nance, Donald O <donance@ncdot.gov>
Sent: Wednesday, May 8, 2024 10:28 AM
To: Slaughter, Johnathan H <hslaughter@ncdot.gov>
Subject: FW: [External] RE: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

---

From: Clark, Shane C <scclark@ncdot.gov>
Sent: Tuesday, April 23, 2024 4:12 PM
To: Nance, Donald O <donance@ncdot.gov>
Cc: Miller, Kevin B <kbmiller@ncdot.gov>
Subject: RE: [External] RE: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

Hey Donald

This will work fine. I do have a couple of questions/comments that may help with potential claims.

-From a good neighbor approach, we are getting close to the house and their yard is shrinking. I'm guessing the impacts don't warrant taking the house yet. Would you all want to include a condition assessment and/or vibration monitoring during construction in the recs?

-Across the street, we have the CA fencing running adjacent to their well and I am assuming they are still using it. Are there any concerns of damaging or negatively impacting it during construction?

Let me know your thoughts and we will adjust as needed

Thanks
Shane

From: Nance, Donald O <donance@ncdot.gov>
Sent: Tuesday, April 16, 2024 12:51 PM
To: Wang, Michael A <mawang@ncdot.gov>; Williams, Eric <ewilliams3@ncdot.gov>
Cc: Adams, Daniel R <dradams@ncdot.gov>
Subject: FW: [External] RE: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

I need you to give me your stamp of approval to change the slope in this area of R-5901 from a 2:1 to a 1.5:1.

Just for our consultant records please

Thanks,

Donald O. nance

From: Debbie Barbour <DBarbour@kcaeng.com>
Sent: Tuesday, April 16, 2024 12:03 PM
To: Nance, Donald O <donance@ncdot.gov>
Cc: Adams, Daniel R <dradams@ncdot.gov>; Andrea Gordon <agordon@kcaeng.com>; 1202129-12 R-5901 <1202129-12@kcaeng.com>
Subject: [External] RE: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

Good afternoon Donald:

As we discussed this morning, could you further coordinate the slope recommendation as described below with the Geotechnical Engineering Unit representative?

The provided recommendations include the following:

> **I. Slope and Embankment Stability**
> A. *Slope Design*
> Recommend all roadway slopes be constructed no steeper than 2:1 (H:V).

Our design currently proposes a cut slope of 1.5:1 for a portion along Y1 to avoid relocating the home at 121 Round Peak Church Rd. This proposed 1.5:1 slope was shown within the cross sections in the approved 25% plans (R-5901 DRPS) and was also coordinated with Roadside Environmental (see attached email). Could GEU update the provided Geotechnical Recommendations to include the highlighted information, assuming this steeper slope is determined to be acceptable/stable, with the appropriate matting that may be needed?

A. Slope Design
Recommend all roadway slopes be constructed no steeper than 2:1 (H:V) with the exception of the following area in which cut and fill slopes may be constructed no steeper than 1.5:1 (H:V):
-Y1- 14+50 to 16+00 (RT)

Note: if this steeper 1.5:1 slope is not permissible, we would need to look at a retaining wall to avoid the home.

Thanks for your assistance.
Debbie Barbour

KCA KISINGER CAMPO & ASSOCIATES

Debbie Barbour, PE
Vice President and Regional Manager

Email: DBarbour@kcaeng.com
Office: 919.882.7839
Cell: 919.980.1001
301 Fayetteville Street, Suite 1500, Raleigh, NC 27601

From: Nance, Donald O <donance@ncdot.gov>
Sent: Tuesday, April 16, 2024 8:19 AM
To: Debbie Barbour <DBarbour@kcaeng.com>
Cc: Adams, Daniel R <dradams@ncdot.gov>
Subject: FW: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

F.Y.I.

From: Adams, Daniel R <dradams@ncdot.gov>
Sent: Monday, April 15, 2024 2:38 PM
To: Nance, Donald O <donance@ncdot.gov>
Cc: Shaw, Ramie A <rashaw@ncdot.gov>; Hagwood, Desiree L <dlhagwood@ncdot.gov>
Subject: FW: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

See below.

Daniel Adams, PE
Division Project Team Lead
Highway Division Eleven – Project Development Unit
North Carolina Department of Transportation

336 903 9136 office
dradams@ncdot.gov

801 Statesville Road
PO Box 250
North Wilkesboro, NC 28659-0250

From: Wang, Michael A <mawang@ncdot.gov>
Sent: Monday, April 15, 2024 2:34 PM
To: NCDOT Service Account - Roadway Design <roadwaydesign@ncdot.gov>; Poe, Michael L <mlpoe@ncdot.gov>; Adams, Daniel R <dradams@ncdot.gov>; Biggerstaff, Mark A <mabiggerstaff@ncdot.gov>
Cc: Gracey, John S. <sjgracey@ncdot.gov>; Kennedy, Durwood R <drkennedy1@ncdot.gov>; Barfield, Jeffrey B <jbbarfield@ncdot.gov>; Williams, Eric <ewilliams3@ncdot.gov>; NCDOT Service Account - hydraulics_notify <hydraulics_notify@ncdot.gov>; Clark, Shane C <scclark@ncdot.gov>; Miller, Kevin B <kbmiller@ncdot.gov>
Subject: R5901_GEO_RDWY_Contingency Recs_SURRY Distribution

Please find the Roadway Inventory/Recommendations in link below:
https://connect.ncdot.gov/site/Preconstruction/division/div11/R-5901%20NC%2089%20and%20SR%201397/Geotechnical/Forms/GT%20Document%20Set/docsethomepage.aspx?ID=1&FolderCTID=0x0120D5200057F9826B0BD7E1469862DB1A6B72CC4300242E72363BDA21419A1AB8FB584B4BC7&List=6ae4a43d-7399-4963-8b09-7c0bba8b389c&RootFolder=%2Fsite%2FPreconstruction%2Fdivision%2Fdiv11%2FR%2D5901%20NC%2089%20and%20SR%201397%2FGeotechnical%2FR5901%20RDWY&RecSrc=%2Fsite%2FPreconstruction%2Fdivision%2Fdiv11%2FR%2D5901%20NC%2089%20and%20SR%201397%2FGeotechnical%2FR5901%20RDWY#InplviewHash54d4efde-e7df-4fa8-abd5-386fd4fe6d8f=WebPartID%3D%7B54D4EFDE--E7DF--4FA8--ABD5--386FD4FE6D8F%7D
The PDF file(s) in the link are the only copies you will receive. No hardcopies will be sent.

This email is intended for Roadway Design, Roadway Regional Manager, Area Roadway Construction

Engineer, Contract Standards & Development, GeoPavement, GEU Regional Manager, Hydraulics, GEU Regional Design Engineer, and GEU Regional Geologist.

If you are not acting in one of these capacities or if you would like these emails to be routed to someone else in your area, please reply to the sender or contact Scott Hidden.

Support Services
Geotechnical Engineering Unit

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

June 10, 2025

MEMORANDUM TO: Desiree Hagwood
Division Design Engineer

ATTENTION: Donald Nance
Assistant Division Design Engineer

FROM: Eric N. Williams, PE
Asst. State Geotechnical Engineer
Western Regional Office

DocuSigned by:
Eric N. Williams
A6B874E1197848B...

STATE PROJECT: 45733.1.1 (R-5901)
COUNTY: Surry
DESCRIPTION: Improve intersection of NC 89 (W. Pine St) & SR 1397 (Round Peak Church Rd)

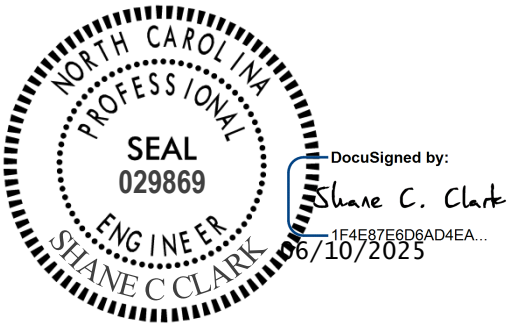
SUBJECT: Revised Standard Shoring Details

The Geotechnical Engineering Unit (GEU) has received the following proposed temporary shoring locations for the referenced project:

Shoring Location No.	Begin Station & Offset	End Station & Offset	Estimated Average Height	Estimated Maximum Height	Unit Requesting Temporary Shoring
No. 1	-L- Sta. 16+00 +/- 19.55 ft. Right	-L- Sta. 18+17/- 25 ft. Right	2.0 ft.	2.0 ft.	Rdwy

The GEU recommends including Geotechnical Standard Detail No. 1802.02 in the contract for the proposed shoring locations. Hard copies of these details are not attached to this memorandum; current versions of standard shoring details are available from the geotechnical website at: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx

Secure sealed PDFs of the standard details recommended for this project will be posted on the NCDOT connect site in the \LET Preparation\Final Plans\100 Roadway Plans\ folder at least 15 weeks before letting. Please contact Shane Clark at (828) 250-3390 if there are any questions concerning this memorandum.



Shane Clark, P.E.
Geotechnical Design Engineer
NCDOT Geotechnical Engineering Unit – Western Region
North Carolina Department of Transportation

ENW/SCC/

cc: Debbie Barbour, PE (DBarbour@kcaeng.com)

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

June 10, 2025

MEMORANDUM TO: Desiree Hagwood
Division Design Engineer

ATTENTION: Donald Nance
Assistant Division Design Engineer

FROM: Eric N. Williams, PE
Asst. State Geotechnical Engineer
Western Regional Office

DocuSigned by:
Eric N. Williams
A6B874F1197848B...

STATE PROJECT: 48416.1.1 (R-5901)
COUNTY: Surry
DESCRIPTION: Improve intersection of NC 89 (W. Pine St) & SR 1397 (Round Peak Church Rd)

SUBJECT: Revised Temporary Shoring Recommendations

The Geotechnical Engineering Unit (GEU) has received the following proposed temporary shoring locations for the referenced project:

Shoring Location No.	Begin Station & Offset	End Station & Offset	Estimated Average Height	Estimated Maximum Height	Shoring Location Type
No. 1	-L- Sta. 16+00 +/- 19.5 ft. Right	-L- Sta. 18+17/- 25 ft. Right	2.0 ft.	2.0 ft.	Rdwy

Shoring Location No. 1

IF SPACE ALLOWS, A 1.5:1 (H:V) SLOPE OR FLATTER MAY BE USED INSTEAD OF TEMPORARY SHORING FROM STATION 16+00 +/- -L-, 19.5 FT. RIGHT TO STATION 18+17 +/- -L-, 25 FT. RIGHT.

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

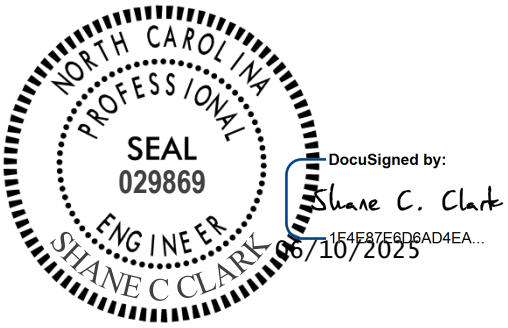
DESIGN TEMPORARY SHORING FROM STATION 16+00 +/- -L-, 19.5 FT. RIGHT TO STATION 18+17 +/- -L-, 25 FT. RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 PCF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 PSF
GROUNDWATER ELEVATION = N/A FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 16+00 +/- -L-, 19.5 FT. RIGHT TO STATION 18+17 +/- -L-, 25 FT. RIGHT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 16+00 +/- -L-, 19.5 FT. RIGHT TO STATION 18+17 +/- -L-, 25 FT. RIGHT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

The GEU recommends including the Temporary Shoring and Standard Shoring provisions. Standard shoring details have been transmitted to the Division under a separate cover. Please contact Shane Clark, PE at (828) 250-3390 if there are any questions concerning this memorandum.



Shane Clark, P.E.
Geotechnical Design Engineer
NCDOT Geotechnical Engineering Unit – Western Region
North Carolina Department of Transportation

ENW/SCC

cc: Debbie Barbour, PE (DBarbour@kaceng,com)

Attachments: Standard Temporary Shoring Provision

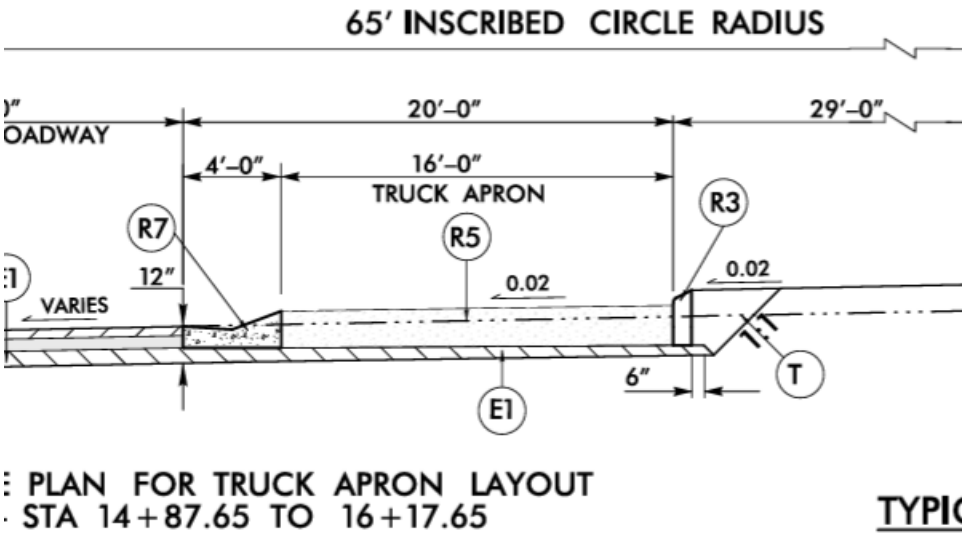
Debbie Barbour

From: Shaw, Ramie A <rashaw@ncdot.gov>
Sent: Thursday, May 16, 2024 12:04 PM
To: Debbie Barbour; Nance, Donald O
Cc: Adams, Daniel R; Hagwood, Desiree L; Kirby, Greg A; Glenn Mumford; 1202129-12 R-5901
Subject: RE: [External] Project R-5901, 2RD1 Plan Set, Traffic Forecast, Pavement Design,

Debbie,

We would like 12” Concrete Truck Apron on top of the 4” B25.0C Base Course, this should ease construction and eliminate key-ins. The central island needs to be grass for possible future landscaping.

Example of another project below.



Thanks,

Ramie A. Shaw, PE
Project Development Engineer
Highway Division Eleven – Project Development Unit
North Carolina Department of Transportation

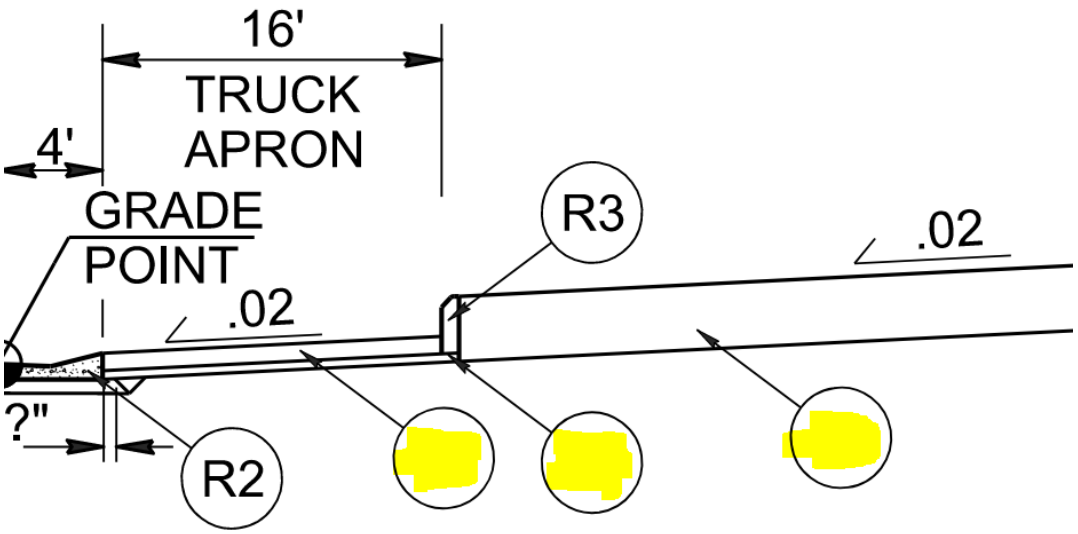
336 903 9134 Office
336 428 6830 Mobile
rashaw@ncdot.gov

P.O. Box 250
801 Statesville Road
North Wilkesboro, North Carolina 28659-0250

From: Debbie Barbour <DBarbour@kcaeng.com>
Sent: Thursday, May 16, 2024 10:22 AM
To: Shaw, Ramie A <rashaw@ncdot.gov>; Nance, Donald O <donance@ncdot.gov>
Cc: Adams, Daniel R <dradams@ncdot.gov>; Hagwood, Desiree L <dlhagwood@ncdot.gov>; Kirby, Greg A <gakirby@ncdot.gov>; Glenn Mumford <gmumford@kcaeng.com>; 1202129-12 R-5901 <1202129-12@kcaeng.com>
Subject: RE: [External] Project R-5901, 2RD1 Plan Set, Traffic Forecast, Pavement Design,

Good morning Ramie:

We are incorporating the R-5901 Final Pavement Design into the typical sections in preparation for the CFI. Does the Division have a pavement structure in mind for the truck apron within the roundabout? Usually it would be some combination of ABC (6-8”) with Concrete (PCCP, 6-9”) with the thickness dependent on truck volumes/etc. Also, would the Division prefer to pave (concrete on ABC) the central island or have a landscaped/grass central island?



Thanks,
Debbie Barbour

KCA
KISINGER CAMPO
& ASSOCIATES

Debbie Barbour, PE
Vice President and Regional Manager

Email: DBarbour@kcaeng.com
Office: 919.882.7839
Cell: 919.980.1001
301 Fayetteville Street, Suite 1500, Raleigh, NC 27601

From: Shaw, Ramie A <rashaw@ncdot.gov>
Sent: Tuesday, March 5, 2024 1:57 PM
To: Debbie Barbour <DBarbour@kcaeng.com>; Nance, Donald O <donance@ncdot.gov>

Cc: Adams, Daniel R <dradams@ncdot.gov>; Hagwood, Desiree L <dlhagwood@ncdot.gov>; Kirby, Greg A <gakirby@ncdot.gov>; Glenn Mumford <gmumford@kcaeng.com>; 1202129-12 R-5901 <1202129-12@kcaeng.com>; Craig Singer <CSinger@kcaeng.com>
Subject: RE: [External] Project R-5901, 2RD1 Plan Set, Traffic Forecast, Pavement Design, Geotech Activities

> **Caution:** External email.

Debbie,

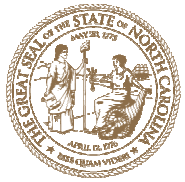
Attached you will find the final pavement design for R-5901.

Thanks,

Ramie A. Shaw, PE
Project Development Engineer
Highway Division Eleven – Project Development Unit
North Carolina Department of Transportation

336 903 9134 Office
336 428 6830 Mobile
rashaw@ncdot.gov

P.O. Box 250
801 Statesville Road
North Wilkesboro, North Carolina 28659-0250



Facebook Twitter YouTube

From: Debbie Barbour <DBarbour@kcaeng.com>
Sent: Tuesday, March 5, 2024 12:28 PM
To: Nance, Donald O <donance@ncdot.gov>
Cc: Adams, Daniel R <dradams@ncdot.gov>; Hagwood, Desiree L <dlhagwood@ncdot.gov>; Kirby, Greg A <gakirby@ncdot.gov>; Shaw, Ramie A <rashaw@ncdot.gov>; Glenn Mumford <gmumford@kcaeng.com>; 1202129-12 R-5901 <1202129-12@kcaeng.com>; Craig Singer <csinger@kcaeng.com>
Subject: [External] Project R-5901, 2RD1 Plan Set, Traffic Forecast, Pavement Design, Geotech Activities

Good afternoon Donald:

I wanted to let everyone know that we received approval yesterday from the Transportation Planning Division of the project R-5901 Traffic Forecast. The final information has been posted to Connect earlier this morning and can be found here:

R-5901 Traffic Forecast

With the approval of the traffic forecast, the pavement design can begin. The Department will be furnishing the pavement design.

Roadway plans
Also, I wanted to let you know that we are continuing work on the development of the roadway plans. We are preparing written responses to all the comments that were received from the 2RD1 plan set review. Also, where plan changes are associated with our responses, we will have those incorporated within a couple of weeks; the revised/approved design criteria will be submitted then as well. Will you be sending a formal memo of approval regarding the 2RD1 plan set that was previously submitted? We understand the approval is contingent upon our continued work to address the comments that were received.

Geotechnical

The geotechnical work is not part of our team's scope so I also wanted to send a reminder that the geotechnical work could begin. Since the horizontal and vertical alignments are acceptable as presented, the 2RD1 plans could be utilized that were previously posted until the revised plan set is available in a couple of weeks.

I will add the above information to our agenda for our monthly project meeting next week as well. Please let me know if we need to further discuss or if there are any questions.

Thanks,
Debbie Barbour

KISINGER CAMPO & ASSOCIATES

Debbie Barbour, PE
Vice President and Regional Manager

Email: DBarbour@kcaeng.com
Office: 919.882.7839
Cell: 919.980.1001
301 Fayetteville Street, Suite 1500, Raleigh, NC 27601

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

DATE: December 12, 2023

MEMO TO: R-5901 – PEF Design Team

FROM: Desireé Hagwood, Div.11 DDC Engineer

DocuSigned by:
Desiree Hagwood
1C3EE16971B94C6...

SUBJECT: State Project: R-5901 (48416.1.1) Surry County
Improve intersection of NC 89 (W Pine St) & SR 1397

Design Vehicle

A decision has been made by the Division 11 office that project R-5901 will be designed in accordance with the WB-67 design vehicle.

At present, this design vehicle is non-standard; however, the Division has deemed this necessary due to concern for the large volume of truck traffic that the recently opened Sheetz business will attract adjacent to the proposed roundabout. This design vehicle has been utilized with the intent of reasonably increasing the project turning radii. The WB-67 has a 4.5 ft wider span between the rear center wheel path and the king pin of the trailer as opposed to the design standard recommendation of the WB-62FL. In addition, the decision was also made to prevent the issue we have encountered previously with other Division roundabout projects in which the tractor-trailer's rear-wheels "fall off" the pavement.

This memo shall serve as an official record for the project file to reference moving forward.

ec:
Daniel Adams, PE (Div.11 Team Lead)
Donald Nance (Div.11 NCDOT)
Debbie Barbour, PE (KCA)
Andrea Gordon, PE (KCA)

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DDC UNIT
P.O. BOX 250
N. WILKESBORO, NC 28659

Telephone: (336) 903-9135
Fax: (336) 667-4549

Website: www.ncdot.gov/doh

Location:
HIGHWAY DIVISION 11
801 STATESVILLE RD.
NORTH WILKESBORO, NC 28659