

R-2511 4B Interagency Concurrence Point Meeting Minutes



Date: April 18, 2018

Location: NCDOT Structures Conference Room

Time: 1:00 PM

Minutes Authored By: Brent Huskey

Attendees: Kyle Barnes – USACE

Gretchen Byrum – NCDOT Div.1

Barry Hobbs – NCDOT Div.1

Clay Willis – NCDOT Div.1 DEO

Brooks Braswell – NCDOT Div. 1

Stephen Lane – DCM

Samuel Kohl – Atkins

Matthew Cook – RK&K

Scott Blevins – RK&K

Garcy Ward – NCDWR

John Abel – NCDOT Div.1

Brian Lipscomb – NCDOT Hydraulics

Jason Dilday – NCDOT NCDOT EAU

Casey Whitley – NCDOT Div. 1

Cathy Brittingham - DCM

Sam Cullum – KCA

Eleni Riggs – RK&K

Brent Huskey – RK&K

Via Telephone:

Mark Staley – NCDOT Roadside Envir.

Travis Wilson - NCWRC

The 30% Hydraulic Review was held in order to reach agreement on concurrence point 4B for the R-2511 US-17 widening project in Beaufort and Martin Counties. The following items were discussed and conclusions reached:

Matthew Cook began the meeting and introductions were made. Mr. Cook gave an overview of the project, stating that the project is eight miles north US 264/Washington, five miles south of US 64/Williamston splitting Beaufort and Martin counties. Beaufort county is in the Tar-Pamlico river basin that requires buffer filtration for all blue lines and Martin County is in the Roanoke river basin. The project is widening 10.6 miles of US 17 from two lanes to four lanes with open shoulder and grass medians. Anywhere on the project where an existing lateral ditch is being filled in due to the widening a lateral ditch must be placed back. With requirements from Geotech there are additional ditches proposed to allow the ground water to drain properly with the water table being at or close to the existing ground. The proposed outside edge of travel must be five feet higher than the existing ground or five feet higher than the bottom of the ditch to meet the Geotech requirements. Mr. Cook stated that RK&K received a new WEX file on April 5, 2018 and that the hydraulics design has not been revised in some areas to reflect new delineated wetlands or jurisdictional streams that were not there prior to April 5th. Mr. Barnes stated that the Jurisdictional Determination is still on going for this project and he and Mr. Ward plan to revisit the project site again to see if some of the crossings need to be determined jurisdictional or not.

Kyle BARNED stated that the Jurisdictional Determination was not complete. Field visits will be required to complete the JD. Clay Willis said he would coordinate with Mr. Barnes and Garcy Ward to set up a date.

Mr. Cook then began to go through the 4B planset.

Plan sheet 4 (Stream UT to Old Ford Swamp SA, wetland WA): Stream SA runs east to southwest through the project and is currently conveyed in a 60" CMP at -L- 18+27. The design team is proposing to retain the 60" CMP. This will be called out as Site 1. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. With the crossing being in the Tar-Pamlico River Basin the proposed lateral swales entering the stream must meet the design criteria for buffer filtration. There will be stream and buffer impacts on the up and downstream sides of the site as well as wetland impacts upstream of the site due to the roadway fill slopes moving laterally outward in the proposed condition. The four swales that are tying down to the stream for this site all meet the buffer filtration requirements. Mr. Lipscomb asked if the level spreaders at -L- 17+10 LT and -L- 17+80 RT will be removed. Mr. Cook stated that the level spreaders will be removed so that the buffer swales can be built for this site. Mr. Cook asked for guidance on where buffer impacts start next to the existing roadway facility as well as how the buffer zone lines are drawn next to the existing roadway facility. Mr. Ward stated that buffer impacts start at the existing toe of fill and that the buffer zone lines are drawn in a horseshoe shape around the up or downstream end of an existing crossing. Ms. Brittingham asked if the proposed roadway fill slopes are 3:1 in the wetland areas on this project to ensure minimizations to the wetlands. Mr. Cook stated that yes, the proposed fill slopes are 3:1 in the wetland and jurisdictional stream areas.

Plan sheet 5-6: There are no surface water or wetland impacts on these sheets.

Plan sheet 7 (Stream UT to Latham Creek SB2, wetland WB): Stream SB2 runs southeast to northwest through the project and is currently conveyed in a 48" RCP at -L- 55+00. This crossing is identified in USGS and soil survey mapping and is only identified as jurisdictional on the downstream end of the crossing in the JD. With the crossing being in the Tar-Pamlico River Basin the proposed lateral swales entering the stream must meet the design criteria for buffer filtration. The wetlands on the upstream end will be impacted due to the road widening. There will be stream and buffer impacts on the downstream end of the crossing due to the widening. The 48" RCP will be removed and a 60" RCP-III not buried with a 2GI-A will be installed in the final condition. This will be called out as Site 2. The two swales that are tying down to the stream for this site all meet the buffer filtration requirements.

Plan sheet 8 (Stream UT to Latham Creek SB): Stream SB runs east to west through the project and is currently conveyed in a 48" RCP and a 6'x4' RCBC at -L- 69+25. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. With the crossing being in the Tar-Pamlico River Basin the proposed lateral swales entering the stream must meet the design criteria for buffer filtration. There will be stream and buffer impacts on the up and downstream sides of the site due to the roadway widening. The 48" RCP and 6'x4' RCBC will be removed and a proposed 8'x6' RCBC buried 1.0' and 2 @ 48" RCPs will be installed in the final condition. Mr. Cook stated that the additional 48" RCPs are required due to the headwater increase at the crossing potentially affecting a structure upstream. The pipes provide a wider conveyance entrance to alleviate the waterway constriction occurring at the RCBC. This will be called out as Site 3. The four swales that are tying down to the stream for this site all meet the buffer filtration requirements. Mr. Ward stated that a portion of the bulb out for the roadway at -L- STA. 69+00 LT is inside the buffer zone for Stream SB. Mr. Ward stated that since a bulb out is not considered part of the roadway facility, it needs to be shifted out of the buffer zone area as part of the minimization efforts. Mr. Ward and Mr. Barnes stated that they will be going back to this site to do field verification for the JD.

Plan sheet 9-10: There are no surface water or wetland impacts on these sheets.

Plan sheet 11 (Stream UT to Latham Creek SJ): Stream SJ runs east to west through the project and is currently conveyed in a 24" RCP at -L- 99+00. This crossing is identified in USGS and soil survey mapping and is only identified as jurisdictional on the downstream end of the crossing in the JD. With the crossing being in the Tar-Pamlico River Basin the proposed lateral swales entering the stream must meet the design criteria for buffer filtration. There will be stream impacts on the downstream end of the crossing due to the widening. The 24" RCP will be removed and 2 @ 42" RCPs-III not buried will be installed in the final condition. This will be called out as Site 4. Mr. Ward and Mr. Barnes stated that they will be going back to this site to do field verification for the JD.

Plan sheet 12: There are no surface water or wetland impacts on this sheet.

Plan sheet 13-14: There are no surface water or wetland impacts on these sheets. Mr. Ward asked if the design team could add rip rap on the backside of the proposed lateral ditch at -L- STA. 129+00 LT where the proposed double 48" RCP-III outlets into the ditch. Mr. Ward and Mr. Barnes stated that the drainage feature that runs parallel with the project and outlets to a pond from -L- STA 130+00 to 140+00 LT needs to be field verified for the JD.

Plan sheet 15 (Stream Gum Swamp Creek SC, wetland WC): Gum Swamp Creek runs east to west through the project and currently flows under an existing bridge at -L- 156+50. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. With the crossing being in the Tar-Pamlico River Basin the proposed lateral swales entering the stream must meet the design criteria for buffer filtration. There are only wetland impacts at this site due to the road widening. The existing bridge will be removed and dual 60' single span bridges with 36" girders will be built for the final condition. This will be called out as Site 5. This is the last site on the project in the Tar-Pamlico river basin that has buffer filtration requirements.

Ms. Riggs took a moment to explain how the design team decided to go with proposed dual bridges versus a RCBC or any other option. Originally a culvert option was explored in an effort to minimize the shifting of adjacent -Y4- which would affect a shed and house. The culvert option would require a triple box culvert. Based on the normal water surface elevation, which is approx. 3.8' above the streambed, sills in the two outside barrels would need to be approximately 4' high which would ultimately block 50% of the culvert barrel. The culvert option would also require raising the grade approx. 3' which would, again, affect the -Y4- tie in and adjacent property. The culvert option would also cause a significant rise (greater than 1.0') that would extend beyond the limits of the effective HEC-RAS model. While this could be allowed since there were no structures upstream that would be impacted, this rise combined with the necessary 4' sills made the culvert not a viable option. Ms. Riggs then explained that there was originally a left turn lane from -L- to -Y4-. This left turn lane caused several design issues when going with the bridge design. The roadway sight distance and guardrail limit criteria were forcing -Y4- further away from the bridge which was going to impact the adjacent house and shed along -Y4-. After speaking with John Abel about the situation, it was determined that the left turn onto -Y4- could be removed and a bulb out would be added further down the -L- line to provide access back to -Y4-. Once that was decided, it was determined that the design would move forward with dual 60' bridges but the roadway grade would need to be raised approx. 2' to allow for adequate clearance and work area under the bridge. With this design, there is a decrease in water surface elevation when compared to the existing condition. Mr. Cook stated that the design team has made a good faith effort to achieve buffer

filtration for swales that are flowing to the bridge in each quadrant. The swales that are flowing to the bridge in the southeast, northeast and northwest quadrants all receive anywhere from 32 to 54 acres each which is making it difficult to achieve buffer filtration for swales that already have a 4' base, 3:1 side slopes and a slope of 0.3%. Mr. Ward stated that with the ditches stopping short of the wetlands, the wetlands should provide the proper filtration before flowing into the jurisdictional stream. Mr. Ward asked the design team to look at the swale that is flowing down the left side of the -L- alignment from the 3 @ 36" RCPs that cross under -Y4- from -L- STA. 158+50 to 200+00 LT to see if any filtration could be achieved since the pipes outlet very close to the buffer prior to a wetland. Mr. Cook stated the design team will look at the swale again and noted that the road is in superlevation here preventing some of the roadway drainage from entering the swale. Mr. Cook asked for guidance on how the agencies would like to see the toe protection on the proposed roadway fill slopes in wetland areas. Mr. Cook stated that he has worked on projects where the rip rap for the toe protection is placed half on the fill slope and half on the existing ground and on other projects the rip rap for the toe protection is placed only on the fill slope. Mr. Ward stated that he would like to see the rip rap for the toe protection all on the fill slope to minimize impacts to the wetlands.

Plan sheet 16-20: There are no surface water or wetland impacts on these sheets.

Plan sheet 21 (Wetland WD): The crossing runs west to east through the project and is currently conveyed in a 48" RCP at -L- STA 230+50. This crossing is in the Tar-Pamlico river basin but the crossing is not identified as being jurisdictional so buffer filtration is not required. There are wetland impacts on the downstream end of the crossing due to the widening. The 48" RCP will be removed and a 66" RCP-III not buried will be installed in the final condition. This will be called out as site 6. Mr. Ward and Mr. Barnes stated that they will be going back to this site to do field verification for the JD

Plan sheet 22-24: There are no surface water or wetland impacts on these sheets.

Plan sheet 25 (Stream UT to Smithwick Creek SD, wetland WE): Stream SD runs west to east through the project and is currently conveyed in a 30" RCP at -L- 280+40. This site and the rest of the sites on the project will be in the Roanoke river basin which does not require buffer filtration. There will be stream impacts on the up and downstream end of the crossing as well as wetland impacts to the upstream side of the crossing due to the road widening. The 30" RCP will be removed and replaced with a 48" RCP-III buried 0.8' in the final condition. This will be called out as site 7.

Plan sheet 26-29: There are no surface water or wetland impacts on these sheets.

Plan sheet 30 (Stream Jacks Swamp Creek SE, wetland WF): Jacks Swamp runs west to east through the project and is currently conveyed in an 8'x3' RCBC at -L- 346+50. There will be wetland impacts up and downstream of the crossing. The 8'x3' RCBC will be removed and replaced with a 10'x5' RCBC buried 1.0' in the final condition. Mr. Cook stated that the design team is still looking at this crossing, and he presented four different options that the team is looking at for aligning the proposed culvert. The four options were as presented (and attached to these minutes): 1) aligning the culvert as shown in the 4B plans crossing at -L- 344+50 at 90° and adding an outlet channel that runs for 200' parallel to the roadway facility before tying to the stream; 2) aligning the culvert at -L- 344+75 at 70°, while leaving the inlet in the same location as option 1, and adding an outlet channel that runs for 150' parallel to the roadway facility before tying to the stream; 3) sliding the culvert up station (from options 1 & 2) and providing approx. 100' channel to the inlet with the crossing at -L- 345+75 at 70° and adding 100' +/- tail channel that gradually ties to the stream; 4) providing approx. 200' channel to the inlet running parallel to the roadway and replacing the existing culvert in the same location, crossing at -L- 346+50 at 90° and tying the outlet of the culvert to the existing stream channel.

Mr. Cook stated that the design team is in favor of options 1 and 2 since the inlet end of the culvert is being placed in the low flow pattern and the center of the natural flow direction of the crossing even though an outlet channel must be constructed that will impact wetlands. Mr. Cook stated that options 3 and 4 are not as favorable due to the fact that it would be hard to tie to the low flow area to the proposed RCBC since there really isn't a true channel to tie to. Potentially scour could also occur in the new fill slope at the location where the new channel would tie to the low area due to the sharp angle the flow would need to take. Mr. Cook stated that once an alignment is decided for the proposed culvert the model will be able to be completed since hydraulics of this culvert works together with the next site up that crosses US 17; 2,150' farther up station. This will be called out as site 8. Mr. Ward and Mr. Barnes stated that they will be going back to this site to do field verification for the JD when the site is in dryer conditions. The design team will wait for the JD field verification to move forward with the culvert design.

Plan sheet 31-32 (UT to Smithwick Creek SF, wetland WG): Stream SF runs west to east through the project and is currently conveyed in a double barrel 8'x6' RCBC at -L- 365+50. There will be stream and wetland impacts on the up and downstream end of the crossing due to the road widening. The double barrel 8'x6' RCBC will be removed and replaced with a double barrel 10'x8' RCBC buried 1.0' in the final condition. This site will be called out as site 9. Mr. Ward asked if the design team would be able to shift the inlet side of the proposed culvert south so that it would line up better with existing channel. Mr. Cook stated that yes, the culvert can be shifted. Mr. Willis asked if the match line of the plan sheets could be shifted to fit site 9 on one plan sheet. Mr. Cook said that the design team will consider shifting the match line.

Mr. Cook stated that more wetlands need to be identified on the left side of the crossing from the JD. Mr. Barnes said that they will look at this site as well when they go back to the project. (This is the RCBC referenced above as part of the Jacks Swamp model.)

Plan sheet 33-37: There are no surface water or wetland impacts on these sheets. On plan sheet 36, Mr. Abel asked if the design team could remove the ditch in front of the Macedonia Christian Church from approximately -L- STA. 421+00 to 422+50 LT. He stated that NCDOT wants to minimize impacts to the property of the church. Mr. Cook said that the design team will remove the ditch.

Plan sheet 38 (Stream UT to Smithwick Creek SK): Stream SK runs west to east through the project and is currently conveyed in a 4'x3' RCBC at -L- 452+00. The downstream end is the only side called out as jurisdictional so there will only be stream impacts on the downstream end due to road widening. The 4'x3' RCBC will be removed and replaced with a 48" RCP in the final condition. This site will be called out as site 10. Mr. Abel stated that the house at -L- STA. 447+00 RT is not historic anymore, and that the building is gone.

Plan sheet 39: There are no surface water or wetland impacts on this sheet. Mr. Abel asked the design team to remove the proposed lateral ditch from -L- STA. 462+00 to 464+00 LT due to the historic property at this location.

Plan sheet 40-41: There are no surface water or wetland impacts on these sheets.

Plan sheet 42 (Stream UT to Smithwick Creek SG): Stream SG runs west to east through the project and is currently conveyed in a 36" RCP at -L- 499+00. There will be stream impacts at the up and downstream end of crossing due to the road widening. The 36" RCP will be removed and replaced with a 60" RCP-III with two 2GI-As in the final condition. This site will be called out as site 11. Mr. Ward stated that cross pipes typically get buried if the jurisdictional stream runs through the entire site. Mr. Cook stated that the design team did not bury the pipe due to the crossing being 390' long. He stated a crossing this length will not provide an adequate passage for aquatic life. Mr. Ward stated that even though the crossing is 390' long, the agencies would like to see the pipe buried. Mr. Wilson stated that they have only had issues with burying pipes in the piedmont area of the state due to the slopes. With this crossing having minimal slope and being in the coastal plain the pipe should be buried. Mr. Willis and Mr. Barnes also agreed that the pipe should be buried at this crossing. Mr. Ward asked the design team to armor the channel banks with rip rap where the proposed channel change will tie into the existing stream at -Y7- STA. 19+00 RT.

Plan sheet 43 (Stream UT to Smithwick Creek SH & SH2, wetland WH, pond PA): Stream SH is the first crossing on this plan sheet and runs west to east through the project currently conveyed in a 30" RCP at -L- 512+00. There will be stream and pond impacts on the upstream end of the crossing and stream impacts on the downstream end of the crossing due to the road widening. The 30" RCP will be removed and replaced with a 60" RCP-III in the final condition. The pond that is on the upstream side of the crossing will be drained and the inlet of the pipe will be moved to match with the natural channel. This site will be called out as site 12. Mr. Ward stated that this is another crossing where the pipe will need to be buried. Mr. Willis stated that for this site an open water impact needs to be added for the permit due to the pond.

Stream SH2 is the second crossing on this plan sheet and runs west to east through the project currently conveyed in 2 @ 24" RCPs at -L- 521+35. There will be stream impacts on the up and downstream end of the crossing due to the road widening. The 2@ 24" RCPs will be removed and replaced with a 48" RCP-III in the final condition. This site will be called out as site 13. Mr. Cook stated that the pipe will be changed to a 54" RCP-III and buried 1.0' now that both ends of the crossing are called out as jurisdictional. The previous WEX file had only called out the downstream side of the crossing being jurisdictional.

Wetland WH is currently not impacted.

Plan sheet 44-45: There are no surface water or wetland impacts on these sheets. Mr. Abel confirmed that the proposed lateral ditches from -L- STA. 521+50 to 534+00 LT are okay being inside the Historical Property Boundary. He stated that this part of the property are farm fields and that there will be no real impact.

Plan sheet 46-47 (Wetland WI): At this site Wetland WI is delineated from -L- STA. 557+50 to 568+50 LT until it reaches the pond that is adjacent to the roadway facility. There will be wetland impacts stretching from -L- STA. 557+50 to 568+00 LT where the new roadway fill slopes will be encroaching into the wetlands due to the road widening. This wetland was not in the previous WEX file, so the ditch running through it will be removed. Toe projection will be placed only up on the fill slopes where the wetland impacts are to protect the fill slopes from eroding. This will be called out as site 14.

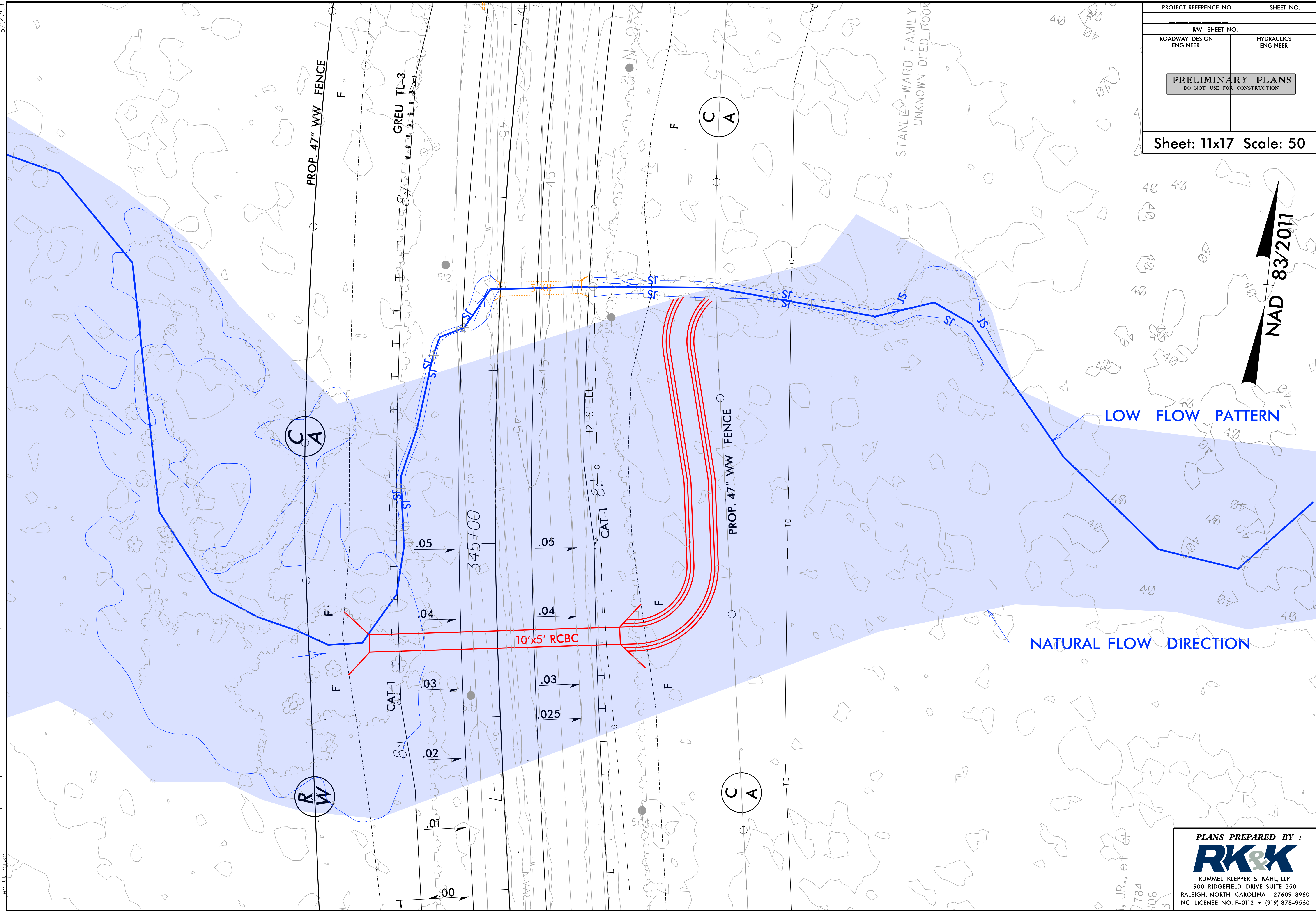
After completing the review of the plans, Mr. Cook asked if anyone was interested in a field visit to see the sites and project. No one felt it necessary to review the project in person other than to complete the JD.

The meeting adjourned.

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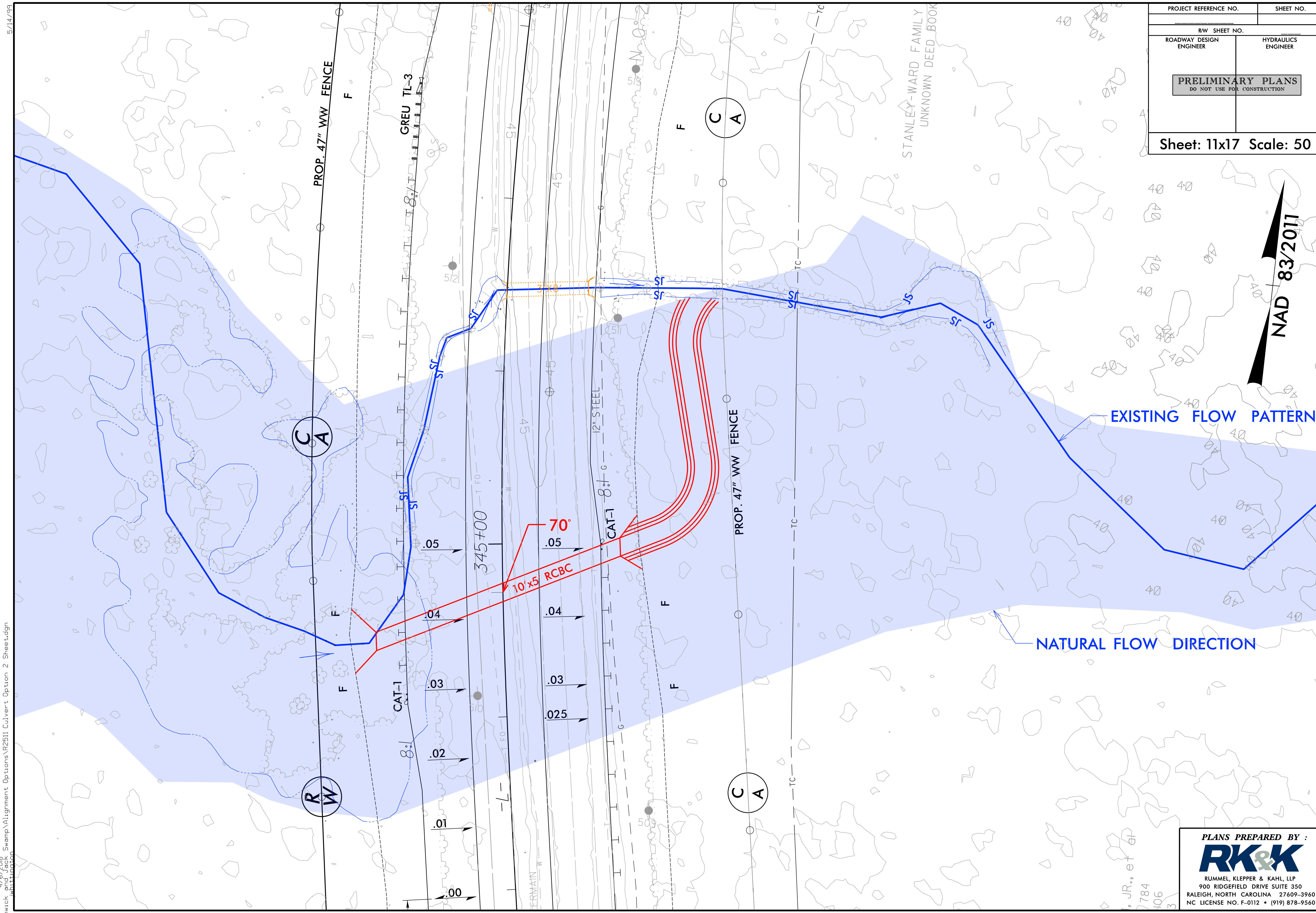
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EXISTING FLOW PATTERN

NATURAL FLOW DIRECTION

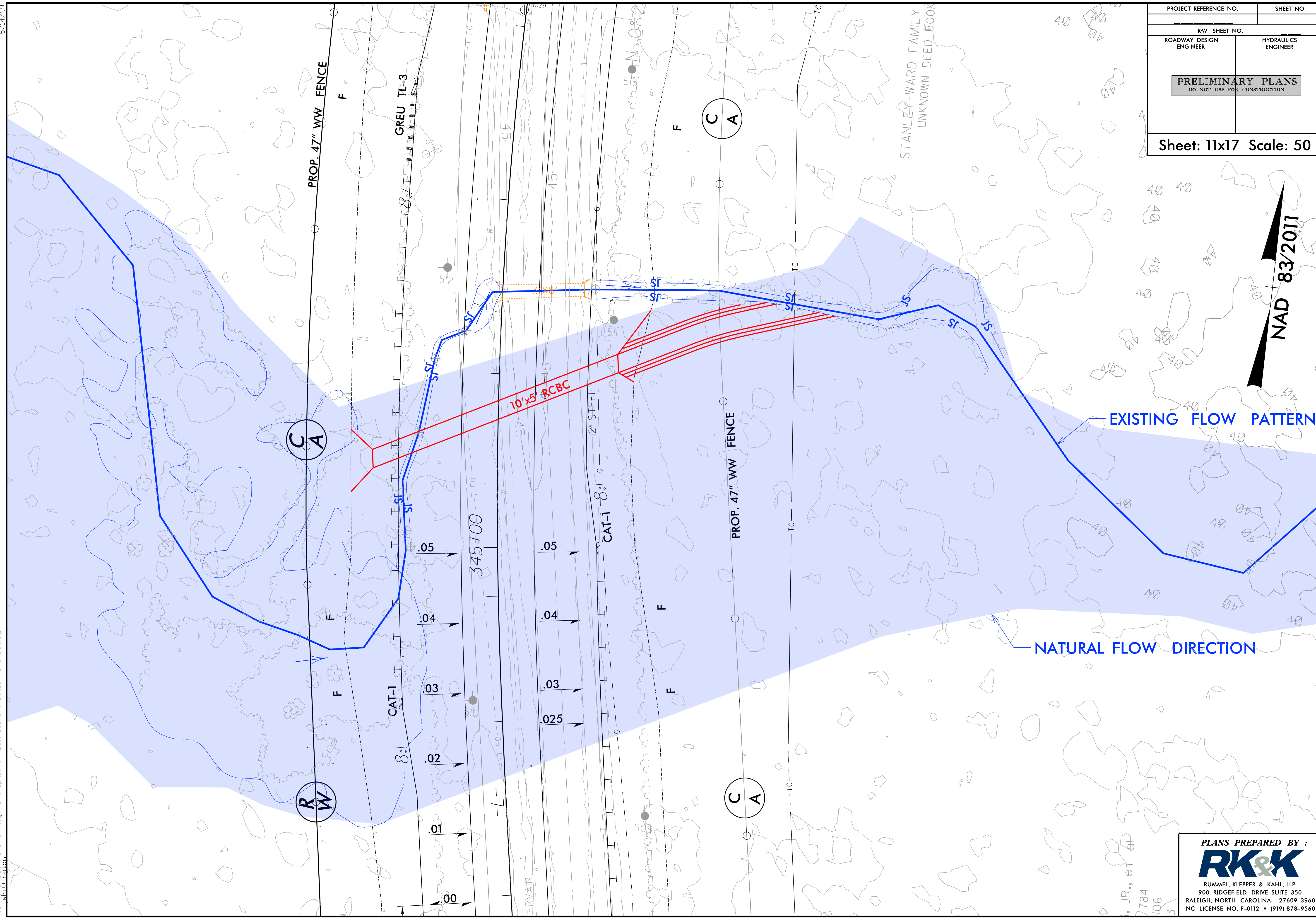
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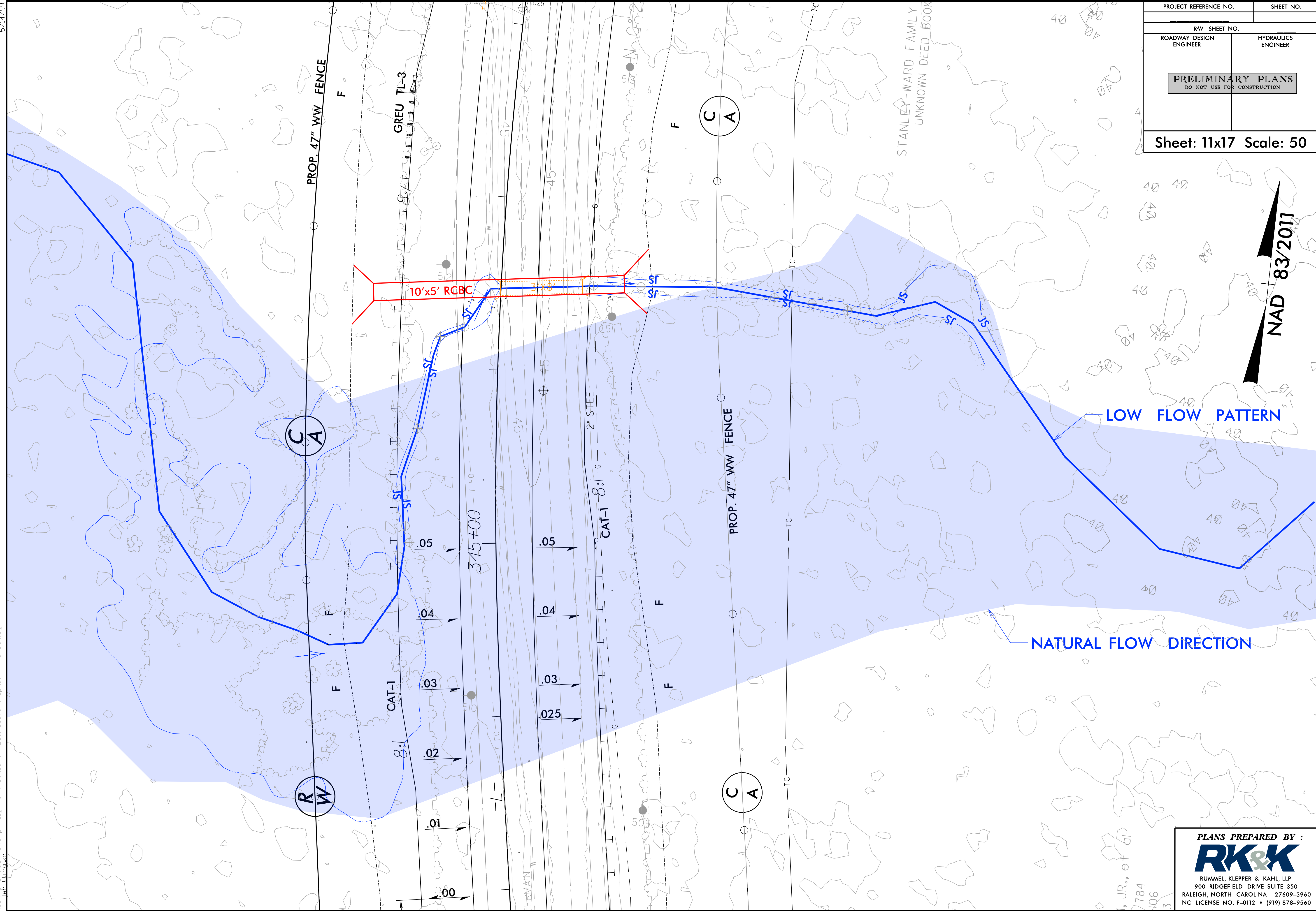
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LOW FLOW PATTERN

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