

**To:** Rob Balland, Paramounte Engineering  
**From:** Brian Chambers, Senior Planner; 910.342.2782  
**CC:** File;  
**Date:** 10/17/2022  
**Re:** The Avenue TRC Rev 1

The following is a list of comments for review from planning regarding the project. Please provide your corrections as listed below. A staff summary of comments:

Staff	Department	Notes
Brian Chambers	Planning, Plan Review	Comments below
Eric Seidel	Engineering	Comments attached
Chris Walker	Fire	Comments attached
Mitesh Baxi	Traffic Engineering	Comments attached
Bill McDow	Transportation	Awaiting comments
Anna Reh-Gingerich	Stormwater	Comments attached

### Planning Review

Brian Chambers, [brian.chambers@wilmingtonnc.gov](mailto:brian.chambers@wilmingtonnc.gov), 910.342.2782

### Comments:

- Include list of CD conditions on the plan set (CD-24-518).
- Note approved administrative modification on plan set (3/10/22).
- Include list of DAC conditions on the plan set (DAC-3-722).
- DAC approval eliminated Road C as a right-of-way behind Buildings 2 and 8, to be classified as a private drive.
- Provide calculation for conservation resource setback impact.
- Show pedestrian connections to Arboretum Drive (north) and the apartment community (south) (CD #9).
- Provide lighting plan (CD #12).
- Provide elevations for parking structures. The design of all above-grade parking structures shall relate to the context of the area. Exterior walls of parking structures shall be designed with materials, colors, and architectural articulation in a manner that provides a visual compatibility with adjacent buildings and environment.
- Signs and signage plan will be reviewed separately by zoning staff (separate sign permit(s)).
- Plan identifies 793 required bicycle parking spaces. Please provide location of remaining spaces.
- Provide minimum distance for all tree protection fencing, 1-foot for every 1-inch DBH.

- Protected trees can only be removed to accommodate essential site improvements. Protected trees cannot be removed in areas for future development without site specific plans for these areas to justify their removal.
- Provide mitigation calculation and required plantings for all significant trees being removed that are outside of building footprints.
- Mimosa trees are invasive, these can be removed.
- Can grade adjacent to Road B next to wetlands be tightened up to save some additional trees?
- Parking lot design exemption (Sec. 18-304 (c)(6)h. does not apply to landscaping. Please remove note.
- Surface parking lots visible from the public right-of-way shall be screened by permanent walls, shrubbery or hedges at least three (3) feet in height. Shrub sizes/heights provided north of Building 12 do not show compliance.
- Foundation plantings are required between buildings and all internal parking lots or drive isles. This would also include portion of Road C to be identified as a private drive, not right-of-way, per DAC approval. Please provide calculations/areas to be provided.
- Provide detail for dumpster screening. If trash containment, including areas for holding recycling, cannot be accommodated within a building, it shall be placed on the rear or side of the building and shall be completely enclosed and screened from view of public rights-of-way with an opaque fence or wall and/or plant materials, as approved by the technical review committee. The enclosure shall be at least one (1) foot taller than the highest point of the trash receptacle. Chain link and exposed concrete blocks are prohibited.
- Connection from property to Old MacCumber Station Road is within an easement, not a right-of-way (per approved preliminary plan).
- Please remove CFPUA detail sheets from city plan set.

Project Name: Carroll at the Avenue  
Formal TRC Date: 10/20/2022  
Reviewer: Eric Seidel, PE  
Department: Engineering – Plan Review Section

1. Lance Drive culvert crossing drainage area looks to be larger than what is proposed. Per City GIS & field visits this proposed culvert receives Station Road Outfall via a 72" culvert, additional Military Cutoff Road drainage via a 24" pipe, and E. Westwood Drive drainage via a 15" collection system. City Engineering will forward GIS information to aid in the watershed analysis for culvert sizing. Please update DA Map to show these areas have been accounted for in calculations inclusive of Station Road culvert.
2. Station Road Outfall Ditch/Stream needs to be realigned adjacent to proposed roundabout. A retaining wall may be necessary along the back of curb to allow room for realignment. Please Note: Engineering is working with stormwater services to determine what level of Public Drainage Easement will be required.
3. Provide Gutter Spread calculations.
4. Provide City Operation & Maintenance Agreements for each SCM found at:  
<https://www.wilmingtonnc.gov/departments/engineering/plan-review/stormwater-permits>.
5. Provide subdivision monumentation on Site Plan while including Details 14-05 & 15-01. Please work with City Surveying to assure monumentation is located at desired PC, PT, PI, and intersections.
6. Provide a Table which shows Total Area within 575' SA-ORW setback, proposed impervious, % impervious, and Future BUA remaining to reach 25% maximum. Please add Table to DA Map Fig 1.
7. Per LDC Section 18-255: Standards Section C: Water Quantity Standards; Line Item 3: The post-development discharge rates shall be no more than 10 percent higher than the predevelopment discharge rate at any given discharge point from the project area. The Post drainage area directed to the wet-pond looks to be much larger than Pre conditions, assure attenuation of post discharge are analyzed and meet the 10% criteria. Please reach out with any questions or concerns.
8. Impervious surface proposed on internal wetland islands need to provide a secondary treatment measure, to promote passive infiltration, prior to discharge into wet pond. Please provide plan/details on how pretreatment is being provided. Could this be added to sheet C-6.3?
9. Narrative: Describe how Spa Island BUA runoff will receive pre-treatment prior to entering wet-pond main pool.
10. Additional Grading/Drainage plans required for Building #6 courtyard, Pool Amenity, Park Area adjacent to Building 8, & Spa Island. How is connection made to MH 152 from Building #6? If this pipe is proposed under building it will need to be located within steel encasement piping.
11. Provide a development phasing plan. Identify which buildings, parking decks and infrastructure will be constructed first, second, third... etc. This can be completed with a table.

12. Clarify on plans where/how Klassikdrains tie in. Do they tie directly to the CI Boxes?
13. It does not look like the 200 Series stormwater network been sized to account for Future Building #9 & 10 parcels, what is plan for this future drainage?
14. Application: Proposed Future BUA Allocation is less than the 25% impervious ORW Zone max for Building 9 & 10 parcels. Is the pond large enough to account for this additional impervious? Updated Site Data Table (Sheet C-2.0) to match future Phase #2 Allocation.
15. CN Calculations: Mu, Le, & Wa Soil classifications need to use HSG A. Adjust Pre/Post Curve Numbers accordingly and update routing calculations.
16. C-2.0: Update Stormwater Note #4.
17. Sheet C-2.18: update Cross Sections to match grading. Many of the street sections are superelevated while cross sections show only normal crown.
18. Only water / sewer profiles provided. It is highly recommended street profiles are provided with vertical curve data. For street profiles not provided additional spot elevations will be required along the road network with high and low points identified with drainage arrows.
19. Additional spot elevation required around buildings to assure drainage matches inlet drainage area map. Provide drainage arrows at high/break points as necessary to assist constructability. Provide roof drain connections to drainage structures.
20. Sidewalk is required along E. Westwood & Lance Drive frontages. There may be an opportunity to adjust project limits, lets plan to discuss during formal TRC meeting.
21. Provide Rip-Rap aprons on grading / drainage plans.
22. C-4.8: Is the pond being filled to elevation 14'? Please include additional detail / notes to plan.
23. C-6.3: Add plan view detail for outlet structure.
24. Does CI-301 need to connect to CI-201. Discharging CI-301 directly to forebay would avoid equalizer pipe crossing.
25. Routing: Please check Riser 1 weir length of 20'. Isn't this riser only 3 sides at 4' a piece (12')?
26. Routing Pond Blocked Condition: Check Riser 2' weir length of 20'.
27. Lance Drive Culvert: 10 yr. storm elevation looks to stage about road. Resize culvert based on updated Drainage Area (Comment #1) and HGL calculations. Provide Lance Drive Extension Profile with pipe crossing.

Project Name: **The Avenue**

FORMAL TRC Date: October 20, 2022

Reviewer Name: Chris Walker

Reviewer Department/Division: FIRE

Please address the following:

- The T backing stub for parking lot #4 appears to be only 18' feet wide? Please increase the width to 20'.
- Please take look at your FDC locations, they must be within 40' of apparatus placement. The FDC for building 1A does not appear to be in compliance.
- Please illustrate through auto-turn that our largest fire engine can negotiate the site as well as access the dry remote stand-pipe and FDC's for Spa Island. The link is below for the truck specs.

<https://www.sutphen.com/wp-content/uploads/sph-100-drawing.pdf>

**BASE COMMENTS:**

1. Road C on sheet C-2.0 is labelled as Road B on sheet C-2.4. Reconcile.
2. Key notes 3 & 51 are for same item on 'L' sheets!?
3. Provide a signage and pavement marking plan showing all proposed traffic control signs, street name signs, and related pavement markings locations and types for all the proposed ROWs. [[CofW Sign Specification and Installation Guide](#)] [[Provide a reference from MUTCD](#)]. Include all the improvements on Military Cutoff Rd. Expect further comments once we receive this.

**TECHNICAL STANDARDS – NEW ROADS:**

4. Sheet L-2.1: a). Show stopping sight distance for Traffic approaching MUP crosswalk/ramp located away from intersection at one-way ingress ROW. b). For 20'6" width of one-way Road B drivers may mistakenly interpret the wide entry to be two lanes when there is only one receiving circulatory lane.
5. Sheet L-2.2: a). Keynote 50 "Right turn only" signage should be installed at the driveway exit instead of splitter island of roundabout. b). Provide an appropriate signage for loading zone. c). Pavement markings for on-street parallel parking may be avoided to store more vehicles in available spaces. d). Stop sign and bar are recommended for the street style driveway off ROW particularly since in the vicinity of roundabout.
6. Sheet L-2.4: a). Callout for Road G is missing. b). Show stop sign for traffic exiting Military Cutoff Rd. c). Crosswalk/ramps north of intersection, across Road C should be moved closer to intersection to avoid requiring additional warning signage for mid-block crosswalk. d). Pedestrian crossing sign shown at the SE corner of intersection is irrelevant at this location. If this is for mid-block crosswalk should be installed at the crosswalk location.
7. Sheet L-2.5: Entry sign shall be clear of 20'x70' sight triangles.
8. Sheet L-2.7: 'City maintenance ends here' signage shall be provided at the transition of public ROW off Lance Dr to private ROW Road B. The demarcation point must be surveyed prior to installation. Please contact City's sign and marking Engineering Manager or Supervisor prior to installation.
9. Sheet L-2.8: Provide an appropriate signage for loading zone.
10. Sheet L-2.13: a). Clarify the accessibility of item 82, 'Wayfinding signage' in the median. b). Road A has travel lanes with varying width. Road A been multi lane an additional pavement marking should be required to delineate traffic appropriately in respective lanes. c). Consider providing pedestrian refuge island for north-south pedestrian movement on west side of Road A median. d). Sight clearances must be taken care for Traffic travelling east on Road A. Nose of median should be shortened.
11. Sheet L-2.14: a). The STOP or YIELD sign shall be installed on the near side of the intersection on the right-hand side of the approach. Revise the location. b). Clarify the reason of providing 'Right turn only' with the median. c). Wayfinding signs in the median must not impede driver's vision at crosswalk locations.
12. Sheet L-2.19: ADA ramps for the southern crosswalk at Road D intersection are not in alignment and creates a skewed path for handicap pedestrian. Consider revising ADA location or design. A directional ramp may be provided to achieve this.
13. For off-site improvements dimension the lane width, islands, storage, taper, protection stem based on TIA requirements on Military Cutoff Rd and relevant streets.

**TECHNICAL STANDARDS – ACCESS:**

14. Show and callout the City's 20'x70' sight distance triangle at each driveway and the City's 46'x46' sight distance triangle at each street corner intersection on the site plan and landscaping plan. [Sec. 18-667 CofW Updated LDC] [Sec. 18-693 CofW Updated LDC].
15. Show all the sight distance triangles on the site, landscape construction and landscape plans.

#### **SIGHT DISTANCE TRIANGLE FOR ANY STREET/DRIVEWAY INTERSECTIONS WITH THOROUGHFARES**

Military Cutoff Rd is a major thoroughfare [Chap VII (C) (2) (a) of CofW Tech Stds]. In accordance with the City Code, sight distances along thoroughfares must be calculated in compliance with the AASHTO requirements. [Chap VII (C) (1) of CofW Tech Stds] [Sec.18-556 CofW LDC] [Sec. 18-667 CofW Updated LDC].

#### **TECHNICAL STANDARDS – PARKING:**

16. Dimension the angle parking space length and parking angle.
17. Sheet C-2.2: Few perpendicular parking spaces north of building 6 off Road B are in is proposed in such a way that it allows a vehicle to back into the ROW. Please revise.
18. Sheet C-2.11: Dimension the backing stub at the end of parking facility south of Building 3A & 3B.
19. Show the typical handicap sign detail on the plan as per ADA and City standards. [Detail No.: TE7-01 & TE7-02] [CofW Sign Specification and Installation Guide]
20. Note/label the plan with spot elevations that clearly indicate the accessible route from the handicap space(s) to the building. [Sec. 18-529(b)(2) CofW LDC] [Sec. 18-588 CofW Updated LDC].

#### **ROUNDAABOUT:**

- Provide the vertical profile detail at central island and splitter island.
- Dimension inscribed diameter consistent with design vehicle (Provide autoturn analysis)
- Dimension truck apron width consistent with design vehicle. Apron should generally be 3'-15' wide.
- Off-One-way drive: Entry width of travel lane is wider than travel lane width at the southern leg of one-way roundabout. Verify the offset of splitter and striping. Island should be widened or shifted right to provide the flare at nose point.
- Considering extending the splitter island beyond the crosswalk to provide cut-through island for pedestrian and provide the safety. The total length should generally be at least 50'. Dimension it.
- Provide sufficient flare and entry geometry to channelize the traffic to the right of roundabout.
- Pedestrian crosswalk placement at roundabouts should be consistent. Crosswalks should be in vehicle-length increments from the entrance line. Please dimension.
- Sheet L-2.17: Western leg of the Roundabout off Road A & E has proposed crosswalk away from the yield line for more than a vehicle-length. The further the crossing is from the roundabout; the more likely pedestrians will choose a shorter route that may put them in greater danger.
- Sheet L-2.18: Northern and Southern legs of the Roundabout off Road A & E has proposed crosswalk in the vicinity of the yield line. Consider revising the crosswalk location.

#### **STREET LIGHTING [City of Wilmington Street Lighting Policy]:**

- All the ROWs for this project are proposed as private.
- Streetlights shall be installed in accordance with the Technical Standards and Specifications Manual.
- Consider providing streetlights in advance of the proposed crosswalk for approaching traffic as per AASHTO guidelines.
- Verify that all street trees must be located a minimum of 15 feet from streetlights. [CofW SD 15-17]
- Contact Duke Energy to get photometric developed for the roundabout based on the proposed streetlighting fixture types.
- The streetlights installed on private ROWs are not eligible for reimbursement from City and not eligible to get transferred to City's account.

**GENERAL NOTES TO ADD TO THE PLAN:**

- A. Street trees must be located a minimum of 15 feet from streetlights. [[CofW SD 15-17](#)]
- B. Any required installation or relocation of traffic signs/pavement markings is the responsibility of the project developer. Please coordinate with City Traffic Signs and pavement markings Manager/Supervisor prior to installation/relocation of any traffic signs or markings in existing or proposed public ROW.

**NOTES TO BE AMENDED:**

General Notes 6 Sheet C-2.0: Contact 811 prior to contacting City of Wilmington, Traffic Engineering regarding the utilities in ROW.

**MISCELLANEOUS:**

- ❖ Contact Traffic Engineering at (910) 341-7888 to discuss street lighting options.

Please let me know if you have any questions or if I can be of further assistance.



**Project:** The Avenue

**TRC Meeting Date:** 5/12/2022; 10/20/22

**Reviewer:** Anna Reh-Gingerich

**Department:** Stormwater Services

To Whom It May Concern:

The Avenue project falls within the Howe Creek Watershed, which is listed on the regulatory 303(d) list as impaired due to pollution from stormwater runoff. Any additional infiltration on-site would help reduce the amount of stormwater runoff and pollution that could enter Howe Creek and contribute to the current shellfish harvest closures.

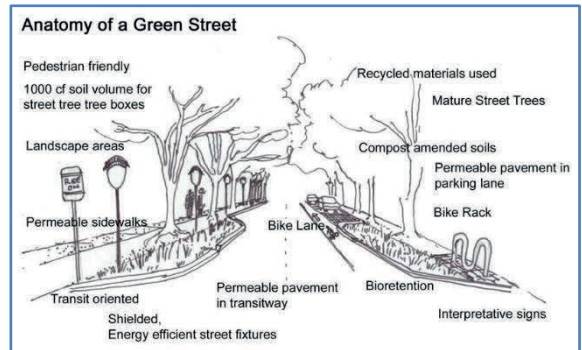
My comments:

1. Please incorporate more tree save into the site plan and specify which species of pine are present besides just longleaf pine to ensure all protected and significant trees are represented. Trees are helpful for improving erosion control, stormwater management, the heat island effect, air quality, and energy efficiency.
2. Although allowed by ordinance, the proposed wet ponds are not recommended for approval. With recent incidents of anatoxin-A and other bacteria associated with blue-green algae in wet ponds, as well as recent and on-going research by NC State University, UNC-Wilmington and NCDEMLR concerning the efficacy and overall public health and safety and water quality performance of wet ponds, we recommend alternative stormwater control measures, depending on the soils and ground water conditions. These could include bio-retention, constructed stormwater wetlands, and infiltration practices, using the NCDEMLR Stormwater MDC Design Manual.
  - a. Stormwater Wetlands MDC: <https://deq.nc.gov/media/17538/download>
3. I saw that permeable pavers were listed in the legend, but could not locate them on the site plan. If the soils and water table levels allow, consider incorporating pervious materials for parking stalls/driveways or replacing some parking stalls with additional landscaping/bioretention areas. Any replacement of impervious material with pervious material (pavers, pervious concrete, porous asphalt) would help reduce the amount of stormwater runoff being generated:
  - a. <https://deq.nc.gov/media/17539/download>



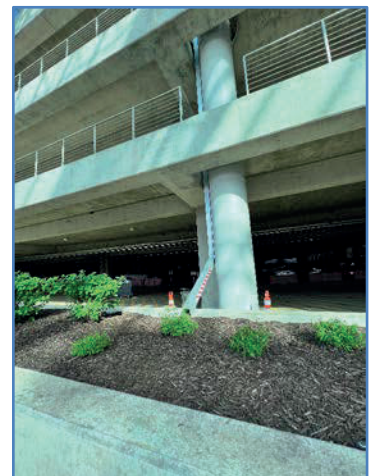
4. We encourage depressed bioretention areas in landscaping (with curb cuts and overflows) to allow for even more infiltration and pollution treatment on the property where possible. Some examples are available at the following links:

- a. EPA Green Streets video <https://www.youtube.com/watch?v=TxqxEqnHlKw&feature=youtu.be>;
- b. Massachusetts "Green Parking" example: <https://www.mass.gov/service-details/demonstration-3-permeable-paving-materials-and-bioretention-in-a-parking-lot>
- c. NCDEQ Stormwater Manual, Bioretention Cell Chapter: <https://deq.nc.gov/media/17536/download>
- d. Filterra boxes (adding trees and stormwater management in one practice): <https://www.conteches.com/stormwater-management/biofiltration-bioretention/filterra>
- e. Portland Green Street examples: <https://www.portlandoregon.gov/bes/45386>
- f. EPA Anatomy of a Green Street: <https://www.epa.gov/G3/learn-about-green-streets>
- g. ***Below are examples of bioretention, vegetated swales, and curb cuts combined with pervious pavement.***



5. Consider connecting downspouts from the building into stormwater planter boxes (as shown on the right) to help mitigate some of the roof runoff before draining to the drainage system

- a. [https://nacto.org/docs/usdg/stormwater\\_planter\\_crwa.pdf](https://nacto.org/docs/usdg/stormwater_planter_crwa.pdf);
- b. <https://emswcd.org/in-your-yard/rain-gardens/stormwater-planters/>



6. Thank you for incorporating many native species into the landscaping plan! Native plants require less maintenance (fertilizers, pesticides, etc.) than non-native plants to grow successfully since they are already acclimated to local conditions. I have a few additional suggestions:

- a. **Please find alternatives for the proposed *Ligustrum japonicum*, which is considered an invasive species in North Carolina:** <https://plants.ces.ncsu.edu/plants/ligustrum-japonicum/>
- b. Consider native shrub alternatives to the non-native azalea varieties, hydrangea variety, distylium, loropetalum chinense, pieris japonica, pittosporum tobira, podocarpus m.

maki, and nandina domestica “fire power” (which some varieties are considered invasive, though this one produces almost no fruit). Many native shrub options are listed here:

[https://plants.ces.ncsu.edu/find\\_a\\_plant/?plant\\_type\\_id=11&plant\\_type\\_id=17&flower\\_value\\_to\\_gardener\\_id=1&nc\\_region\\_id=1](https://plants.ces.ncsu.edu/find_a_plant/?plant_type_id=11&plant_type_id=17&flower_value_to_gardener_id=1&nc_region_id=1)

- c. **Native sedges are a great, low-maintenance option which could be used in place of the lirioppe, which is a species of concern in Georgia and South Carolina for invasive tendencies** (note that non-native sedges are indicated with an asterix \*):  
[http://hoffmannursery.com/assets/files/Hoffman\\_Nursery\\_Green\\_Infrastructure\\_Chart.pdf](http://hoffmannursery.com/assets/files/Hoffman_Nursery_Green_Infrastructure_Chart.pdf)
  - d. Consider native tree alternatives to the proposed non-native lacebark elm, Japanese zelkova, Italian cypress, loquat, and crape myrtle. Many native tree options are listed here, but keep space and height in mind when selecting:  
[https://plants.ces.ncsu.edu/find\\_a\\_plant/?plant\\_type\\_id=11&plant\\_type\\_id=18&nc\\_region\\_id=1](https://plants.ces.ncsu.edu/find_a_plant/?plant_type_id=11&plant_type_id=18&nc_region_id=1)
  - e. There are more great options in this booklet, including trees, flowers, shrubs, and groundcovers: <https://ncwildflower.org/handouts/Coastal-Landscaping-Guide-Book.pdf>
  - f. You can find more native plant resources at the Heal Our Waterways Learning Library page: <https://www.wilmingtonnc.gov/departments/public-services/stormwater/heal-our-waterways/learning-library>
7. Properties that go above and beyond to incorporate green infrastructure are eligible to apply to the Lower Cape Fear Stewardship Development Coalition Awards:  
<http://www.stewardshipdev.org/>
  8. Additionally, stormwater fee credits up to 40% may be available to incentivize innovative stormwater management. Contact Fred Royal ([Frederic.royal@wilmingtonnc.gov](mailto:Frederic.royal@wilmingtonnc.gov)) for more information.

Thank you for the opportunity to review! Please do not hesitate to reach out to me if you have any other questions or would like to explore other ways to incorporate green infrastructure into the project. Thank you,

### **Anna Reh-Gingerich**

Interim Watershed Coordinator - Heal Our Waterways Program

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