

Agenda Town of Duck Planning Board – Regular Meeting Paul F. Keller Meeting Hall Wednesday, March 12, 2025 – 4:00 p.m.

- 1. Call to Order
- 2. Welcome of New Member/Swearing In Ceremony
- 3. Public Comment
- 4. Text Amendments
 - a. Text Amendment: Tree Violation Penalties
 - b. Text Amendment Discussion: Outdoor Lighting
- 5. Discussion/Setting Priorities for Text Amendment Topics
- 6. Presentation of Studies/Reports
 - a. Westside Multi-Use Trail Feasibility Study
 - b. 2025 Trend Report for Planners
- 7. Approval of Minutes
 - a. Minutes from January 15, 2025 Meeting
- 8. Staff Comments
 - a. APA Online Conference April 23-25,2025
 - b. Summary of March 5, 2025 Town Council Meeting
 - c. Project Updates
- 9. Board Comments
- 10. Adjournment



- **TO:** Chairman Murray and Members of the Duck Planning Board
- **FROM:** Joe Heard, AICP, Director of Community Development

DATE: March 12, 2025

RE: Discussion Concerning Potential Text Amendments to the Town's Tree & Vegetation Preservation Standards

<u>Issue/Proposal</u>

Subsection 156.137(J) – Tree & Vegetation Violations & Penalties

When enforcing replanting penalties, staff has run across the issue of contractors being unable to find/purchase trees of the size required by the ordinance from many plant nurseries in the local area and region. The ordinance requires such replacement trees to be "...a minimum of 3 inches in caliper and 10 feet in height" at the time of planting. Staff received reports from landscaping contractors and contacted regional plant nurseries to document that this size of tree is not readily available.

At its meeting on November 6, 2024, the Duck Town Council authorized Community Development staff to work with the Planning Board to review the violations and penalties section of the Tree and Vegetation Preservation ordinance and recommend a more appropriate penalty and replanting standards.

Planning Board – 1/15 Meeting

At its public meeting on January 15, 2025, the Duck Planning Board reviewed the current tree protection and penalty standards in the Zoning Ordinance. The Board members also reviewed standards from other communities, availability of trees from local/regional nurseries, and discussed potential changes to the Town's current standards. After its consideration, the Board asked staff to prepare a draft ordinance that slightly reduces the size of replacement trees from 3" caliper to 2.5" caliper in the penalty section. The attached draft ordinance contains the amendment recommended by the Board members.

Background Information

In June 2007, the Duck Town Council adopted a *Tree and Vegetation Preservation and Planning* ordinance. This ordinance established standards concerning if/when trees can be removed, minimum requirements for tree canopy coverage, and vegetation protection during development. The ordinance was updated in March 2008 with additional canopy coverage standards and other minor amendments.



In March 2010, the Town Council added a subsection establishing specific fines and penalties for violation of the Town's Tree Preservation Ordinance.

In June 2015, following several months of comprehensive review by the Planning Board, the Duck Town Council adopted many substantial text amendments to Section 156.137, *Tree and Vegetation Preservation and Planning* (Attachment A). The specific amendments are summarized as follows:

- Adding standards for measurement of multi-trunk trees 156.137(A)(3)
- Adding requirements for documentation of emergency tree removal 156.137(D)(3)
- Not permitting shrubs to be planted as a substitute for replacement trees 156.137(F)(2)(a)
- Eliminating a prohibition against tree topping 156.137(H)(3)(a)(7)
- Adding greater requirements for replacement tree planting as a penalty for improper tree removal 156.137(J)(5)
- Establishing provisions for off-site planting or payment-in-lieu for situations where it is infeasible to replant all required plantings on site 156.137(J)(6)

Applicable Ordinance Standards

The entire *Tree and Vegetation Preservation and Planning* ordinance is provided as Attachment A but the violations and penalty standards found in Subsection 156.137(J) are outlined below.

(J) Violations and penalties.

(1) It shall be a violation for any person to remove a tree without having first obtained a tree removal permit, if so required under the provisions of Subsections 156.115 and 156.137 of the Town Code. It shall be a violation for a property owner to employ, authorize or direct any third person or entity to remove a tree without having first obtained a tree removal permit, if so required under the provisions of this section.

(2) A separate violation shall be deemed to have occurred for each tree removed without a tree removal permit in violation of the provisions of this section.

(3) Each violation of the tree removal permit requirements of this section shall subject the offender to a civil penalty in the amount of \$1,000.

(4) Removal of a tree greater than 6 inches in diameter at breast height on any vacant, undeveloped parcel without the necessary permits and approvals as defined above in Subsection 156.137(B), shall subject the offender to a civil penalty according to the following procedure.

(a) If the number and type of removed trees and/or vegetation can be determined, the civil penalty shall be assessed as follows:

1. Unauthorized removal of large trees as defined by the "Town of Duck Vegetation Planting Guidelines" shall subject the offender to a civil penalty in the amount of \$400 per tree.

2. Unauthorized removal of small trees as defined by the "Town of Duck Vegetation Planting Guidelines" shall subject the offender to a civil penalty in the amount of \$200 per tree.



1. Unauthorized removal of shrubs as defined by the "Town of Duck Vegetation Planting Guidelines" shall subject the offender to a civil penalty in the amount of \$40 per shrub.

(b) If the number and type of removed trees and/or vegetation cannot be determined, a civil penalty can be determined based on the square footage of disturbed area and/or area of canopy coverage removed. The penalty shall be equal to \$1 for every 1 square foot of canopy coverage removed. In no instance shall the civil penalty exceed \$5,000.

(5) Unauthorized removal of trees and vegetation shall also subject the offender to mitigation requirements as specified herein.

(a) When dealing with violations of clear-cutting standards under Subsection 156.137(B) or canopy coverage standards in Subsection 156.137(G), the required canopy coverage of replacement trees shall be no less than the canopy coverage which has been determined to have been removed for the assessment of the required civil penalty. The mitigation requirements shall be calculated using the formula to determine canopy coverage as defined above in Subsection 156.137(G). Replacement trees and vegetation, to the extent that it can be determined, shall of a similar type to that which has been removed.

(b) When dealing with tree removal violations of Subsection 156.137(C), the diameter at breast height measurement of the trunk shall be used to determine the number of replacement trees. Trees of similar type must be planted such that the total caliper inches of trees planted is no less than the dbh of the tree(s) removed. In cases where the size of an individual tree(s) cannot be determined, the canopy coverage of replacement trees and vegetation shall be no less than the canopy coverage which has been determined to have been removed for the assessment of the required civil penalty.

(c) The size of such replacement trees at the time of installation shall be a minimum of 3 inches in caliper and 10 feet in height. Each tree must be planted at least 30 feet from any other tree.

(6) If in the determination of the Zoning Administrator, the site cannot reasonably accommodate the required numbers of replacement trees, then only the amount of trees which can be accommodated on the site will be replaced and the remainder of replacement trees and vegetation shall be mitigated through a payment in lieu of providing on-site trees. This payment shall be made to the Town of Duck to be used for tree and vegetation planting and maintenance in public spaces. The amount of the payment shall be in accordance with the costs for purchase, delivery, and planting of the required replacement trees and vegetation.

Standards in Other Communities

The following list summarizes the fines and penalties used by a sample of other communities in North Carolina when trees are improperly removed. All these communities have a tree protection ordinance and have earned Tree City USA certification from the National Arbor Day Foundation.

COMMUNITY	FINE	OTHER PENALTY
Town of Cary	\$2,000	Replant inch/inch based on caliper of trees removed



Town of Chapel Hill	$1 \ 1/2$ times the	
	value of the trees	
	removed	
	(max. \$20,000)	
Town of Oak Island	\$500	Tree replanting consistent with planting plan
Town of Riverbend		Replant 30 trees/acre
City of Southport	\$100-\$200/dbh	Replant inch/inch based on caliper of trees removed
City of Wilmington	Optional fee-in-	Replant two times caliper of trees removed
	lieu of planting	
City of Wilson	Optional fee-in-	Replant in compliance with landscaping ordinance
	lieu of planting	standards
	based on value	
	of trees removed	

Regarding the size of replacement trees to be planted, staff has compiled the following sample of minimum tree sizes from communities throughout the State.

COMMUNITY	TYPE OF	MINIMUM SIZE
	TREE	
Town of Cary	Canopy	2.5" caliper
City of Elizabeth City		8' height, 2" caliper
Town of Grifton		6' height, 2" caliper
City of Jacksonville	Canopy	8-10' height, 2" caliper
	Understory	8' height, 1" caliper
Town of Oak Island	Canopy	2" caliper
Town of Riverbend		2" caliper
City of Southport	Canopy	3" caliper
	Understory	2" caliper
City of Wilmington		2" caliper
City of Wilson		2.5" caliper

Tree Availability/Cost

As noted in the proposal, one of the key issues is the availability (or lack thereof) of larger trees that comply with the Town's replanting standards. Staff has consulted with local and regional nurseries to better understand the availability and estimate the cost of purchasing and planting different sized trees.

Presently, the Town's ordinance requires replanted trees to be at least three-inch (3") caliper and ten feet (10') in height at the time of planting. Larger trees are required to achieve a more substantial, mature appearance at the time of planting.



Community Planner Jim Gould compiled the following information from local and regional nurseries:

- Home Depot (Kitty Hawk, NC) Do not have 3" caliper trees available.
- Lowe's (Kill Devil Hills, NC) Do not have 3" caliper trees available.
- Kitty Hawk Garden Center (Kitty Hawk, NC) closed for the season. Have not had 3" caliper trees available in the past.
- Nature's Harmony (Manns Harbor, NC) closed for the season. Have not had 3" caliper trees available in the past.
- Bennett's Creek Nursery (Powells Point, NC) 3" caliper trees not available on site but can be ordered from Virginia.
- Greenbrier Farms (Chesapeake, VA) 3" caliper trees not available on site but can be ordered.
- Tidewater Trees (Virginia Beach, VA) 3" caliper trees are available.
- Coastal Landscapes & Nursery (Virginia Beach, VA) 3" caliper trees are available.
- Lancaster Farms Wholesale Nursery (Suffolk, VA) 3" caliper trees not available on site.

So, only two of nine regional nurseries contacted have 3" caliper trees readily available.

The estimated costs are as follows:

SIZE OF TREE	ESTIMATED PURCHASE COST
1.5"-2" caliper	\$100-\$125 tree
2"-2.5" caliper	\$110-\$180 tree
2.5"-3" caliper	\$130-\$180 tree
3" caliper	\$170-\$200 tree

There are additional costs for tree delivery and planting, which can increase the cost of the tree itself many times over. For example, Greenbrier Farms charges \$700-\$750 for delivery of a truckload of trees to Duck. Local landscape contractor, Albemarle Landscapes & Tree Service, provided an estimate of approximately \$500/tree for purchase, delivery, and planting of a 3" caliper tree as heavy equipment is required to dig and transport each tree. Local general contractors have reported costs of over \$1,000/tree for delivery and installation by a landscape contractor.

Duck Comprehensive & CAMA Land Use Plan

The Town of Duck's adopted Comprehensive & CAMA Land Use Plan contains the following goal and recommendations relating to tree and vegetation preservation and protection.

Goal 3 of the CLUP is "to preserve and protect terrestrial ecosystems". To accomplish this goal, the following applicable actions are recommended:

3.2: "Continue tree preservation and landscaping site development standards."



3.2.1: "Implement best practices for fire and storm safety in site development and neighborhood design requirements that also balance with the benefits of native vegetation." The accompanying note highlights that vegetation helps reduce stormwater flooding and helps treat stormwater. It also improves air quality by trapping dust, sand, and other airborne particles.

3.2.2: "Provide opportunities to educate the public about the variety and importance of natural ecosystems."

As part of its recommendation, the Planning Board is asked to determine if the proposed text amendments are consistent with the Town's adopted Comprehensive & CAMA Land Use Plan.

Staff Recommendation

As the proposed amendment would update the Town's tree violation penalties to address tree availability issues and be more consistent with "real world" situations, staff recommends APPROVAL of the proposed text amendment.

ATTACHMENTS

- A. Town Code Section 156.137
- B. Draft Ordinance 25-01

§ 156.137 TREE AND VEGETATION PRESERVATION AND PLANNING.

(A) Purpose.

(1) The purpose of this section is to preserve, protect, and replace trees and vegetation within the town because such plantings:

(a) Are an important public resource;

(b) Preserve and enhance the town's physical and aesthetic environment, especially its natural and unique atmosphere;

- (c) Enhance the air quality by filtering air pollutants;
- (d) Reduce topsoil erosion by the holding effect of their roots;
- (e) Reduce storm water runoff;
- (f) Provide a buffer and screen against noise pollution;
- (g) Reduce energy consumption by acting as a wind break and producing shade;
- (h) Preserve and enhance nesting areas for birds and other wildlife which, in turn, assist in the control of insects;
- (i) Protect and enhance property values;
- (j) Protect and enhance the quality of life and the general welfare of the town; and
- (k) Improve the compatibility of uses by providing privacy and enhancing the aesthetic transition between uses.

(2) For the purpose of this section, *TREE* is defined as a self-supporting, woody plant, together with its root system, having a well-defined stem or trunk or a multi-stemmed trunk system, a more or less well-defined crown, and a mature height of at least 8 feet. *TREE* does not include trees in containers or nursery stock trees kept or maintained for resale. *VEGETATION* is herein defined as perennial bushes and shrubs or ornamental or other grasses meeting minimum size requirements at planting.

(3) Multi-trunk trees.

(a) For the purposes of this section, *MULTI-TRUNK TREES* are defined as trees that have more than 1 trunk growing from a single root mass or trees that split into multiple stems below breast height (4 1/2 feet above ground).

(b) The diameter at breast height of multi-trunk trees shall be measured according to the following formula from the U.S. Forest Service National Core Field Guide: the dbh for a multi-trunk tree is calculated by taking the square root of the sum of squared dbhs of all trunks. The following example shows how this formula is intended to be applied:

Example: multi-trunk tree with four 10-inch trunks

- 1. Find square of each trunk. I0 x 10 = 100
- 2. Add squared numbers together. 100 + 100 + 100 + 100 = 400
- 3. Calculate square root of total. Square root of 400 = 20
- 4. This multi-stem tree would be measured as a 20 inch dbh tree.

(c) Preserving some trunks of a multi-trunk tree is preferable to removal of the entire tree. The Director is authorized to allow the pruning or removal of an individual trunk to accommodate reasonable development of a property.

(B) *Clear cutting.* On a vacant, undeveloped parcel, removal of any tree greater than 6 inches in diameter at breast height is prohibited except after receiving an approved development site plan and issued building permit, an approved tree management plan and any required tree removal permit.

(C) Tree removal permit.

(1) *Permit required.* No person shall remove or destroy any tree which is 24 inches or greater diameter at breast height on any lot without first obtaining a tree removal permit from the Zoning Administrator in accordance with the procedures set forth in this section. Further, no person shall remove or destroy any tree located in the common open space of any development without first obtaining a tree removal permit.

(2) *Issuance of permit.* Tree removal permits shall be issued only after the Zoning Administrator has received the required tree management plan and a completed application for such permit which has been signed by the property owner. In determining whether to grant or deny a permit, the Zoning Administrator shall consider:

- (a) The effect of the proposed tree removal upon the stabilization of soil;
- (b) The intended use of the property and feasible alternatives which would preserve existing trees;
- (c) The existing topography, proposed changes in the topography and proposed landscaping;

- (d) The hardship imposed or the reasonable use denied to the applicant as a result of permit denial;
- (e) Historical value of the trees;
- (f) Good horticultural and forestry practices;
- (g) The effect of the proposed tree removal on the deadening and absorption of sound;
- (h) The likelihood that the proposed action will adversely affect the control of flooding or soil erosion;
- (i) The impact of such action on surrounding property or persons;
- (j) The consistency of the proposed action with the purpose of this section.

(3) (a) A permit shall expire and become null and void if work authorized is not commenced within 6 months from the date of the permit or if such work when commenced is suspended or abandoned at any time for a period of 6 months;

(b) If work has commenced and the permit becomes null and void or expires because of lack of progress or abandonment, a new permit for the proposed tree removal activity shall be obtained before proceeding with further work.

(4) Removal of any size tree where the tree trunk is within 10 feet of a structure shall be allowed without a permit.

- (D) Tree emergency exception.
 - (1) A tree emergency shall be deemed to exist when:

(a) A tree has become an imminent danger or hazard to persons or property as a result of fire, motor vehicle accident, or natural occurrence such as lightning, windstorm, ice storm, flood, or other similar event; or

(b) A tree must be removed in order to perform emergency repair or replacement of public or private water, sewer, electric, gas, or telecommunications utilities.

- (2) In the case of a tree emergency, the Director is hereby authorized to:
 - (a) Issue a tree removal permit without an application;
 - (b) Waive the requirement for a tree removal permit set forth in this section; or
 - (c) Waive any of the other regulations of this section.

(3) Notwithstanding any other regulations, a person otherwise required to obtain a tree removal permit may take any reasonable action necessary to avoid or eliminate the immediate danger or hazard, or conduct emergency repair or replacement of the public or private utility. The person taking such action shall file an application for a tree removal permit within 72 hours after a tree is removed in a tree emergency.

(4) In these instances, documentation of the need for the emergency tree removal must be provided. Such documentation can include (as applicable):

(a) Documentation from a certified arborist;

- (b) Police report;
- (c) Photographs; and/or
- (d) Other information documenting the condition of the tree and circumstances surrounding its removal.

(E) Vegetation management plan required for new development and substantial redevelopment. Any addition to the footprint of a structure, increases in lot coverage, changes to driveway and parking areas, or total renovation cost greater than or equal to 50% of the assessed value of the principal structure and for tree removal permits as required in division (C) (1).

(1) Any applicant proposing to remove or destroy existing trees or vegetation in conjunction with any land development activity, including the moving of buildings, shall submit a vegetation management plan containing such of the following information as deemed necessary by the Director:

(a) The location, size and species of all trees which are at least 6 inches diameter at breast height, indicating which are to be preserved, which are to be removed, and a description of the condition of trees or vegetation that are to be preserved;

(b) Specifications for the removal of trees and protection of trees during construction;

(c) Proposed grade changes or other potentially injurious work adjacent to trees or vegetation designated for preservation with specifications for maintaining ground drainage and aeration around such trees;

(d) The location, size and species of all vegetation to be planted;

(e) An estimate of the vegetation canopy coverage to be provided as required in division (G) via retention or new planting; and

(f) Such other information that the Director deems essential.

(2) Any applicant proposing to remove or destroy multiple existing trees or substantial vegetation on a developed lot not in conjunction with a land development activity shall ensure that the total vegetation cover on the property is equal to or greater than the minimum requirement through retention of existing vegetation or planting of new vegetation to meet ordinance requirements.

(3) Although not required, any person or firm subject to the requirements of this chapter is encouraged to seek professional assistance from a certified arborist, landscape architect, or similar professional.

(F) Acts harmful to trees.

(1) No person shall abuse, mutilate or otherwise damage any tree or vegetation located on public property, or any tree or vegetation protected by this section, including those located in the public right-of-way along street frontages within subdivisions. However, nothing in this section shall be construed to prevent reasonable and proper trimming of trees or vegetation located on public property by authorized persons in accordance with accepted horticultural practices.

(2) No person shall attach any sign, notice, placard, electrical wire or other injurious device to any tree, nor shall any person cause any substance harmful to trees to come in contact with them, or prevent water and oxygen from reaching their roots.

(G) Canopy cover required.

(1) New development and substantial redevelopment as defined in §156.137(E) on any property shall provide for the planting or retention of trees (or approved substitute vegetation in the "Town of Duck Vegetation Planting Guidelines") on the site to provide for a minimum vegetative lot coverage as follows:

(a) Ten percent for a lot within any commercial zoning district;

(b) Fifteen percent for a residential lot; and

(c) Required vegetative lot coverage will be calculated based on the total lot area minus the footprint of the principal building.

(2) To meet the minimum requirements of this division, vegetative lot coverage shall be calculated using the following methods:

(a) Vegetation that is newly planted to meet vegetative lot coverage requirements shall include only vegetation on an approved list of local vegetation, as provided in the "Town of Duck Vegetation Planting Guidelines," or other trees, bushes, shrubs, or grasses as approved by the Zoning Administrator upon submission of a landscape plan with assessment of local hardiness and calculation of canopy. All vegetation planted to meet these requirements shall be a minimum size as specified in the "Town of Duck Vegetation Planting Guidelines" and shall be planted as described in the technical standards included within the guidelines. Palm trees and tropical vegetation cannot be counted to meet vegetative lot coverage requirements. The plant list contained in the "Town of Duck Vegetation Planting Guidelines" defines the plant species that are included within each category. If the canopy coverage is accomplished by installation, canopy credit shall be provided based on the categories listed below:

- 1. Large trees, provide a 400 square foot canopy credit.
- 2. Small trees, provide a 200 square foot canopy credit.

3. Mulched bushes or shrubs (18-24 inches minimum height at planting or a 3 gallon size) provide a 40 square foot canopy credit.

4. Ornamental grasses (18-24 inches minimum height at planting or of a 3-gallon size) provide a 20 square foot canopy credit. Credit for smaller coastal grasses and forbs, such as American Beach Grass, will be provided at 100 sprigs or plants for every 100 square feet of lot area. Credit will not be provided for retention of existing vegetation in oceanfront areas within the CAMA small structure setback.

(b) Existing vegetation that is retained to meet vegetative lot coverage requirements may be calculated based on the methods described in division (a) above based on the allowable square footage as shown for large and small trees, shrubs, and grasses. Areas of significant, mature vegetation that will remain undisturbed may also be calculated on a square foot basis by determining the area within the perimeter surrounding the vegetation to be retained. Existing vegetation to be retained need not be on the approved list of local vegetation as provided in the "Town of Duck Vegetation Planting Guidelines," provided it is a native or locally adaptive plant species.

(c) For trees to be eligible for any tree canopy cover credit, the required amount of open soil surface must be present and protected around the tree. The area of vegetative canopy cover for which credit is given shall always remain in vegetative cover and there shall be no other use of the area other than for vegetation growth or passive recreation except as otherwise provided herein. Developed properties shall be required to maintain the minimum vegetative canopy described above and must provide for replacement of or vegetations that are removed, per division (E)(2).

(H) Vegetation protection during and post development.

(1) During development or razing activity, the builder shall install effective dripline protection around all vegetation preservation areas, and shall further install tree wells, retaining walls, construction fencing, or other structures necessary to protect individual trees designated for preservation. The protective measures shall be specified on the vegetation

management plan and shall be designed and installed in a manner consistent with good horticultural practices and subject to the approval of the site plan approving agent.

(2) If vegetation is not listed for removal on the tree removal permit but is destroyed or receives major damage due to construction activities, it must be replaced with vegetation sufficient to reach the required vegetation canopy, subject to review and approval of the Zoning Administrator.

(3) Trees conserved and planted to meet vegetation canopy requirements shall be actively protected during development activity and passively protected throughout their life in accordance with requirements for protected trees set forth below:

(a) *Prohibited activities.* During lot clearing, grading, building, and all construction activities, the following activities and conditions, and any other activities and conditions harmful to a tree's roots, trunk, or crown, within the vegetation protection zone are prohibited:

- 1. Vehicle or equipment traffic, parking, or storage, except as provided for in limited activities below;
- 2. Materials or supplies storage;
- 3. Placement of temporary or permanent structures;
- 4. Equipment maintenance or washout;
- 5. Wounding of trunk;
- 6. Wounding or breakage of scaffold limbs or branches greater than 6 inches in diameter; and
- 7. Fires; excessive heat from equipment exhaust pipes.

(b) *Limited activities.* During lot clearing, grading, building, and all construction activities, the following activities and conditions within the vegetation protection zone are limited to 1 side of the tree in the outer half of the dripline, but in no case closer than 2 1/2 feet to the trunk of a planted tree and 10 feet to the trunk of a conserved tree:

- 1. Site or lot clearing or grubbing;
- 2. Soil excavation;
- 3. Soil cuts;
- 4. Soil fill;
- 5. Grading;
- 6. Trenching;
- 7. Tilling;
- 8. Edging;
- 9. Soil compaction;
- 10. Top dressing with soil greater than 2 inches in depth; and
- 11. Paving.
- (I) Preservation of special trees.

(1) The Town Council may, by ordinance, designate any tree as a heritage, memorial, or designated specimen tree. A heritage tree means any tree which the Town Council has designated by ordinance to have notable historic or cultural interest. A memorial tree means any tree which the Town Council has designated by ordinance to be a special commemorating memorial. A designated specimen tree means any tree which the Town Council has designated by ordinance to be a special ordinance to be notable by virtue of its outstanding size and quality for its particular species. No designated tree shall be removed, damaged or disturbed in any way unless the Town Council finds that:

- (a) There is an overriding need for public improvements;
- (b) A severe hardship exists in developing a site; or

(c) The tree dies, becomes irreversibly diseased or irreversibly damaged by natural causes. In permitting such action, the Town Council may require that the tree be relocated on-site or to another site designated by the town, or be replaced with a similar tree or trees to approximate the canopy lost.

- (2) The provisions of this section shall not apply to:
 - (a) Work conducted on federal, state, or local government owned property;
 - (b) Emergency work to protect life, limb or property; and
 - (c) Routine installation, maintenance and repair of utilities.

(J) Violations and penalties.

(1) It shall be a violation for any person to remove a tree without having first obtained a tree removal permit, if so required under the provisions of §§ 156.115 and 156.137 of the Town Code. It shall be a violation for a property owner to employ, authorize or direct any third person or entity to remove a tree without having first obtained a tree removal permit, if so required under the provisions of this section.

(2) A separate violation shall be deemed to have occurred for each tree removed without a tree removal permit in violation of the provisions of this section.

(3) Each violation of the tree removal permit requirements of this section shall subject the offender to a civil penalty in the amount of \$1,000.

(4) Removal of a tree greater than 6 inches in diameter at breast height on any vacant, undeveloped parcel without the necessary permits and approvals as defined above in § 156.137(B), shall subject the offender to a civil penalty according to the following procedure.

(a) If the number and type of removed trees and/or vegetation can be determined, the civil penalty shall be assessed as follows:

1. Unauthorized removal of large trees as defined by the "Town of Duck Vegetation Planting Guidelines" shall subject the offender to a civil penalty in the amount of \$400 per tree.

2. Unauthorized removal of small trees as defined by the "Town of Duck Vegetation Planting Guidelines" shall subject the offender to a civil penalty in the amount of \$200 per tree.

3. Unauthorized removal of shrubs as defined by the "Town of Duck Vegetation Planting Guidelines" shall subject the offender to a civil penalty in the amount of \$40 per shrub.

(b) If the number and type of removed trees and/or vegetation cannot be determined, a civil penalty can be determined based on the square footage of disturbed area and/or area of canopy coverage removed. The penalty shall be equal to \$1 for every 1 square foot of canopy coverage removed. In no instance shall the civil penalty exceed \$5,000.

(5) Unauthorized removal of trees and vegetation shall also subject the offender to mitigation requirements as specified herein.

(a) When dealing with violations of clear-cutting standards under §156.137(B) or canopy coverage standards in § 156.137(G), the required canopy coverage of replacement trees shall be no less than the canopy coverage which has been determined to have been removed for the assessment of the required civil penalty. The mitigation requirements shall be calculated using the formula to determine canopy coverage as defined above in § 156.137(G). Replacement trees and vegetation, to the extent that it can be determined, shall of a similar type to that which has been removed.

(b) When dealing with tree removal violations of § 156.137(C), the diameter at breast height measurement of the trunk shall be used to determine the number of replacement trees. Trees of similar type must be planted such that the total caliper inches of trees planted is no less than the dbh of the tree(s) removed. In cases where the size of an individual tree(s) cannot be determined, the canopy coverage of replacement trees and vegetation shall be no less than the canopy coverage which has been determined to have been removed for the assessment of the required civil penalty.

(c) The size of such replacement trees at the time of installation shall be a minimum of 3 inches in caliper and 10 feet in height. Each tree must be planted at least 30 feet from any other tree.

(6) If in the determination of the Zoning Administrator, the site cannot reasonably accommodate the required numbers of replacement trees, then only the amount of trees which can be accommodated on the site will be replaced and the remainder of replacement trees and vegetation shall be mitigated through a payment in lieu of providing on-site trees. This payment shall be made to the Town of Duck to be used for tree and vegetation planting and maintenance in public spaces. The amount of the payment shall be in accordance with the costs for purchase, delivery, and planting of the required replacement trees and vegetation.

(K) Conflicting provisions.

(1) Where provisions of this zoning chapter dictate conflicting landscaping or screening requirements, the more stringent requirements shall prevail.

(2) Except under the following conditions, no certificate of occupancy or other final approval shall be issued until the relocation or replacement of trees and/or vegetation, as required by the tree removal or vegetation management plan, has been completed and the final approval has been given by the Zoning Administrator. To address temporary adverse conditions during the current planting season, at any time prior to the issuance of the certificate of occupancy the property owner may request to defer installation of vegetation for a period not to exceed 90 days beyond the date of the certificate of occupancy. This request will be accompanied by the following:

(a) A cash deposit, an irrevocable letter of credit, or other financial surety shall be provided to the town to be held until the planting is completed. The amount shall be equal to \$1 for every 1 square foot of canopy coverage required to be installed to satisfy the canopy coverage requirements as specified in the approved vegetation management plan.

(b) A signed memorandum of understanding between the property owner or authorized agent and the town specifying

the timeframe for installation of all vegetation and the penalties for failing to abide by the terms of the agreement. This agreement shall also include terms for refunding the cash deposit upon verification of compliance with terms of the vegetation management plan or tree removal permit.

(L) Special use permits. The Town Council may, upon application of the property owner, grant special use permits modifying the requirements of this section in accordance with the procedures and limitations established for special use permits in § 156.155. Special use permits shall be granted only if the applicant has clearly demonstrated a situation of extreme topography, unusual lot shape or extraordinary circumstance. In addition, the requested special use permit shall only be granted if the Town Council finds that the proposed development will not be inconsistent with the Comprehensive & Land Use Plan and the purpose of this section, and otherwise will not result in inadequate on-site amenity or any condition which will adversely affect nearby property. Requests for special use permits may be granted in whole, in modified form with conditions or denied by the Town Council after consideration of the requisites presented in this section.

(M) *Irrigation.* Vegetation that is well-adapted to the local environment does not generally require irrigation. Irrigation systems are not required; however, all irrigation systems installed subsequent to this section must meet the requirements of this section. If irrigation systems are used, the preferred source for their water is from individual or community wells rather than from the county water supply. For irrigation systems which use county water, the installation shall include rain sensors so that unnecessary watering does not occur and thereby add to the local high ground water table. No components of an individually owned private irrigation system shall be installed in any right-of-way. Water from sprinkler heads of an irrigation system shall be appropriately directed to retain the flow of water on the site for which it has been installed and to avoid run-off to adjacent properties and rights-of-way.

(Ord. 07-05, passed 6-6-2007; Am. Ord. 08-01, passed 3-5-2008; Am. Ord. 10-03, passed 3-3-2010; Am. Ord. 15-06, passed 6-3-2015; Am. Ord. 21-01, passed 6-2-2021) Penalty, see § 156.999

AN ORDINANCE UPDATING TREE PRESERVATION PENALTIES IN THE ZONING ORDINANCE OF THE TOWN OF DUCK, NORTH CAROLINA

Ordinance 25-01

WHEREAS, when facing replanting penalties, contractors and property owners have been unable to readily find and purchase trees of the minimum size required by the ordinance from plant nurseries in the local area and region; and

WHEREAS, the Duck Planning Board has considered this standard and voted to recommend approval of this ordinance at its public meeting on February 12, 2025; and

WHEREAS, the Town Council has found this ordinance to be consistent with the Town's adopted Comprehensive & CAMA Land Use Plan; and

WHEREAS, the Town Council has determined that this amendment would be beneficial by updating the Town's tree violation penalties to address tree availability issues and be more consistent with "real world" situations.

NOW THEREFORE BE IT ORDAINED by the Town Council for the Town of Duck, North Carolina that the Town's penalties for tree protection violations in Subsection 156.137(J) of the Zoning Ordinance shall be amended as follows:

PART I. The Town's minimum size standard for replacement trees in Town Code Subsection 156.137(J)(5)(c) be amended to read as follows:

"(c) The size of such replacement trees at the time of installation shall be a minimum of two-anda-half inches (2.5") in caliper. Each tree must be planted at least 30 feet from any other tree."

PART II. This ordinance shall be effective upon its adoption.

Don Kingston, Mayor

ATTEST:

Lori Ackerman, Town Clerk

Date adopted: _____

Motion to adopt by: _____

Vote: _____AYES _____NAYS



- TO: Chairman Murray and Members of the Town of Duck Planning Board
- FROM: Sandy Cross, Senior Planner
- **DATE:** March 12, 2025
- **RE:** Discussion Concerning Outdoor Lighting Standards

At your January 15, 2025 meeting, the Planning Board went through the list of questions in the staff report and had questions for the Town staff. During the discussion of the questions, it was determined that staff would identify current properties with positive and negative lighting qualities to pass along to the Board to also observe in person. The Board also added questions about penalty possibilities, presenting light fixtures during development process, and commercial versus residential standards.

Following this meeting, staff sent the Planning Board some homework to be completed, which included a good deal of reading about the impacts from lighting, as well an APA article that was timely and relevant to our discussions. The homework also included site visits with the expectation of discussion at your next meeting.

As there is no urgency with regard to this ordinance and any potential "down-zoning" at this time could have legal implications, we anticipate this meeting will be more of a continued discussion regarding potential direction.

<u>Please bring your comment sheets from your site visits and your staff report from the January</u> <u>meeting.</u> If you do not have your staff report and attachments from last month, please let me know and we will have a hard copy available for you at the meeting.



MEMORANDUM

TO: Chairman Murray & Members of the Duck Planning Board

FROM: Joe Heard, Director of Community Development

DATE: March 12, 2025

SUBJECT: Potential Ordinance Amendments

Recently, the Community Development staff identified several text amendments to the Town Code that can be considered to better address important issues. The Planning Board members considered these issues at their public meeting on October 9, 2024 and asked the Town Council's authorization to work with staff and the Town Attorney (as necessary) on development of the potential ordinance text amendments listed below. At its meeting on November 6, 2024, the Duck Town Council authorized the Board to develop recommendations regarding any necessary text amendments.

Several issues were simpler and have been dealt with already but many of the remaining proposals are more complicated and will require comprehensive review. The tree removal penalty issue is being addressed by a proposed text amendment at the March 12, 2025 Planning Board meeting. Discussion/consideration has occurred over the past few months regarding the outdoor lighting issue. One issue was further highlighted (pumping floodwater) and one new issue was added (fill/retaining walls) during Town Council's Annual Retreat. A brief description of each remaining potential amendment is provided.

At this time, staff is seeking guidance from the Board members regarding your preference concerning the order in which these issues and potential amendments are considered.

Chapter 91 – General Nuisances

Staff deals with several situations each year when property owners/contractors pump water onto adjoining properties or streets. This issue is exacerbated during the flooding conditions that many neighborhoods in Town have experienced recently. The proposal would involve a comprehensive review of these potentially harmful floodwater pumping activities to identify the legal parameters and standards that could be adopted by the Town.

P.O. BOX 8369 • DUCK, NORTH CAROLINA 27949 • 252.255.1234 • 252.255.1236 (FAX) WWW.TOWNOFDUCK.COM

Section 156.128 – Land Disturbing Activities

Noting an increase in the number of special use permit applications relating to fill and the use of retaining walls, the Council authorized review of the following subsections and related standards.

Subsection 156.128(A)(6) "Bulkheads or retaining walls shall not be allowed as a method to stabilize or contain fill, except bulkheads established for shoreline protection and as otherwise permitted by special exception permit granted by the Town Council."

Subsection 156.128(C)(1) "All proposals to add fill on a lot in excess of 36 inches shall require approval of a special use application by the Town Council in accordance with the procedures established in Section 156.155."

It is important to note that sometimes an uptick in requests for relief (such as variances or special use permits) can be a harbinger of changing development practices and warrant evaluation of current development standards to ensure that they meet current and future needs. So, it is important to check that the Town's current standards for fill and the use of retaining walls are still the best means for accomplishing the objectives of the community.

Subsection 156.130(F)(5) – Nonconforming Signs

The Town's standards for nonconforming signs are not completely clear and subject to some interpretation. The current standards state:

"(F) Administration and permits

(5) *Nonconforming signs.*

(a) Loss of non-conforming status. A non-conforming sign may lose its nonconforming designation if:

1. The sign is relocated or replaced; or

2. The structure of the <u>sign is altered in any way</u> except towards compliance with this chapter. This does not refer to change of copy or normal maintenance but shall include sign refacing."

The Council authorized a more comprehensive review of this subsection to further define and clarify the circumstances under which a nonconforming sign can be altered and ensure that current standards are consistent with State and case law.

Section 156.133 – Outdoor Lighting

"(A) Intent and purpose.

(1) The intent of this section is to set standards for outdoor lighting at proper intensities so as to adequately serve the intended use and not unreasonably interfere with the use and enjoyment of neighboring properties. It is further intended that the standards shall preserve the visual integrity of the nighttime environment by reducing glare and maintaining the character and integrity of the coastal village.

(2) The purpose is to regulate artificial lighting devices and encourage lighting that enhances visual performance and safety, particularly the illumination of buildings and landscaping, lighting of parking areas, loading zones, open canopies and signs.

(D) General provisions.

(1) Lighting fixtures shall be located on the site and designed, shielded or oriented in a manner so as to minimize light spill across property lines and prevent glare at any location on or off the property."

The above-referenced provisions regulating outdoor lighting are relatively general in nature and require some interpretation by staff involved with enforcement. This issue is particularly timely as the Town has recently highlighted its "Dark Sky" initiative in videos and social media posts. The Council authorized review of these standards more comprehensively in an effort to make the Town's outdoor lighting standards fair, reasonable, clear, and consistent with best practices.

Subsection 156.137(J) – Tree & Vegetation Violations & Penalties

When enforcing replanting penalties, staff has run across an issue of contractors being unable to find/purchase trees of the size required by the ordinance from plant nurseries in the region. The ordinance requires such replacement trees to be "...a minimum of 3 inches in caliper and 10 feet in height" at the time of planting. Staff received reports from landscaping contractors and contacted regional plant nurseries to document that this size of tree is not readily available from local/regional nurseries. The Council authorized review of the penalty section of the Tree and Vegetation Preservation ordinance to determine if a more appropriate replanting standard can be established.

NORTH CAROLINA | OUTER BANKS | DARE COUNTY

TOWN OF DUCK West Side Multi-Use Trail Feasibility Study

<image>

Agenda Item 6a

DUCK VILLAGE

<mark>خ خ</mark> west side multi-use trail

NC12







ACKNOWLEDGMENTS

Duck Department of Community Development

Joe Heard, Director of Community Development Sandy Cross, Senior Planner Jim Gould, Community Planner

Duck Town Council

Don Kingston, Mayor Monica Thibodeau, Mayor Pro Tempore Sandy Whitman Bren Chasen Kevin Lingard

Town Manager Drew Havens

Public Information and Events Director Kay Nickens

Dare County Tourism Board Lee Nettles

PREPARED FOR



PREPARED BY



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Executive Summary



Executive Summary

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EXECUTIVE SUMMARY

The genesis of this study rises out of a need to fill imperatives outlined in a series of local and regional planning initiatives and documents which recognize the need for infrastructure improvements to enhance quality of life, complement local growth while conserving sense of place, and improve the safety and circulation of people and traffic in Duck.

The Comprehensive Pedestrian Plan specifically recommends installation of a shared use path on the west side of NC12 south of the Village.

The Town of Duck 2032 Vision sets the tone for this feasibility study report with a dynamic, optimistic statement for the future:



In 2032, the Town of Duck, North Carolina, is a thriving coastal community. We respect and value our delicate, yet dynamic barrier island environment — clean waters and beaches, maritime forests, wetlands, and dunescapes. Residents and visitors alike are drawn to neighborhoods that reflect our small town atmosphere. Our village is a source of pride, offering diverse experiences by way of a cohesive and eclectic mix of independent businesses, shops, and restaurants. At the hub of our community is the Town Hall and Park, where we interact, share ideas, and build connections. Duck's vitality, founded on grassroots engagement, encourages meaningful participation from all of its stakeholders. Long-term financial stability, sustainable services, measured growth and a focus on quality of life distinguish Duck as a preeminent destination for everyone."



A set of underlying principles, each with specific 3-5 year goals, underpin the efforts and direction of the decisions made by the Duck Town Council. Several of these goals are directly related to this study:

Enhanced Movability

- Implement all facets of the Town of Duck Comprehensive Pedestrian Plan, including exploration of ongoing enhancements to pedestrian walkways
- » Analyze, investigate and plan the westside multi-use trail

Environmental Stewardship

» Evaluate and implement stormwater improvements

The consulting team at VHB worked closely with the Town Council to develop design options and alternatives and trail typologies for the westside trail within the corridor's right of way. Early site visits and technical analysis of existing conditions informed the preliminary proposed design that was presented to the Town in an Open House in November 2023. These preliminary design ideas are presented in Chapter 2. **4% of adjacent property owners** participated in the

1:1 interviews

78% of adjacent property owners were in support of the proposed trail

81% of community comments were in support of the proposed trail

Following the Open House event, the consulting team met with adjacent property owners to discuss the impact of the trail alignment on their property and hear directly from them their concerns, questions, preferences, and support. These 1:1 meetings coupled with email comments and feedback gathered from residents and stakeholders at large were used to develop a recommended design proposal. An impressive 81% of respondents were in support of the trail and 94% of adjacent property owners participated in the 1:1 interviews. Of the adjacent property owners, 78% indicated support for the trail, 14% are not in support, and 8% were uncommitted, providing the consulting team with invaluable information and feedback that informs the design, especially in sensitive or challenging areas.

The community engagement efforts are presented in Chapter 3. A record of the public comments can be found in Appendix A.

Chapter 4 moves into design recommendations where both the preferred route is presented and its associated probable design solutions addressing stormwater issues, privacy and screening, and utility conflicts.

Chapter 5 focuses on lingering design questions about major utility conflicts/relocation, the phasing of the westside trail's final design and construction sequence, steps toward implementation, and a feasibility-level cost estimate.



CHAPTER 1 Introduction





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INTRODUCTION

The proposed multi-use trail project in Duck, North Carolina is a one-mile development working to connect Duck Village to the Southern Shores border along the NC Hwy-12 (NC12) corridor. This project will work to address missing infrastructure on the westside of NC12, and further promote pedestrian and bicycle connectivity.

The study has been directed and developed by VHB and the Town of Duck. The study has analyzed various alternative development options for the westside of NC12, to determine the most beneficial outcome for the community and their needs. In this study, there will be an in-depth analysis into the alternatives, costs, and overall efficacy of implementation.

The multi-use trail will work to expand transportation options as well as address environmental and stormwater concerns.

Overview

The proposed multi-use trail feasibility study in Duck, NC has the overall goal of developing connectivity on the westside of NC12 from Southern Shores, NC all the way into Duck Village. The proposed development fills the void for missing critical infrastructure along the westside of NC12. The multi-use trail will work to expand transportation options as well as address environmental concerns in the area. The feasibility study will identify alternatives to determine the most beneficial and effective design. Additionally, feasibility-level costs and the overall implementation strategy will be identified and considered in the study.





The existing crosswalk across NC12 at Aqua marks where changes in pedestrian and bicycle accommodations occur.

Study Goals

Advance Roadway Safety. Through the development of the multi-use trial, pedestrians and bicyclists will be removed from the roadway and given a separate space. This will allow for safer mobility options for all users.

Improve Stormwater Safety. The multi-use trail alternatives have been designed to consider the environmental constraints along NC12. The overall designs strive to advance and improve stormwater management strategies.

Introduce Alternative Modes of Transit. By developing the multi-use trail, residents will be provided with new infrastructure that will allow them to walk or bicycle to the Village. Thus, creating more opportunities for increased mobility options that were unavailable before.

Provide Connectivity. One of the primary objectives associated with the project is to provide Duck residents with a safe means to access the Town Village. Through providing this access, residents will have increased transit and mobility options.



South of Aqua, the sidewalk is absent on the west side and bicycle lanes disappear. All non-motor traffic is encouraged to use the existing shared-use path on the east side of NC12.

Background & Site History

The Duck Multi-Use Trail Feasibility Study is a project that is being designed by the Town of Duck in partnership with VHB. The proposed multi-use trail is approximately one mile in length and along the westside of NC12 stretching from Duck Village to the border with the Town of Southern Shores.

Duck, incorporated in 2002, is located in the Outer Banks between Southern Shores and Corolla, in Dare County. The town has many wonderful amenities such as the historic town center which boasts restaurants, bars, shopping, and the boardwalk. NC12 exists as the primary connector for Duck and Northern Currituck Outer Banks, as it is the only major north-to-south road running between these communities. That being said, the multi-use trail feasibility study plays a critical role in helping to promote overall connectivity along NC12 as well as advance bike and pedestrian accommodations, while simultaneously working to address environmental hazards that plague local infrastructure. Protecting and improving NC12 safety is of critical importance for the local and regional economy. Post-pandemic, Dare County tourism is on the rise. In 2019, the county benefited from \$1.27 billion dollars in tourism spending. In 2023, tourism spending was up to \$2.1 billion dollars and rose 8.8% during the fiscal year. Lastly, this project will also advance transit options for the many of the workers who work in the tourism industry in the town.

TOWN OF DUCK **Comprehensive Pedestrian Plan**







COMPREHENSIVE AND CAMA LAND USE PLAN



Town of Duck North Carolina Comprehensive CAMA (2021)

Previous Plans

Duck and the Counties of Currituck and Dare have all made significant strides in terms of their planning and policy efforts over the past two decades. Many of the towns and counties have placed special emphasis on bike and pedestrian infrastructure development while still advancing critically important land use protections and regulations. A wide array of planning efforts and policies were evaluated, and the following have been included in this feasibility due to their relevance.

- » Southern Shores CAMA Land Use Plan (2012)
- » Town of Duck Comprehensive Pedestrian Plan (2014)
- » Dare County Comprehensive Transportation Plan (2015)
- » Outer Banks Regional Hazard Mitigation Plan (2020)
- » Town of Duck North Carolina Comprehensive and Coastal Area Management Act (CAMA) Land Use Plan (2021)

Southern Shores CAMA Land Use **Plan (2012)**

The Southern Shores CAMA Land Use Plan update, which was adopted in July of 2012, highlights the Town of Southern Shores' compliance with its various CAMA land use policies and other future land use goals for the town. The Town has the overall goal of achieving and promoting compliance with these rules and policies while still maintaining and protecting the overall charm of the coastal community they live in. As Southern Shores is the neighboring town to Duck, compliance with CAMA Land Use Plans and the maintenance of intercommunity connectivity is of the utmost importance for project success and coordination. The plan highlights several key goals as it relates to future land use development which include:

- » "Encourage the maintenance and improvement of existing private access facilities to public trust waters and shorelines in order to improve recreational opportunities."
- » "To protect, enhance and support land uses that are compatible with surrounding land uses and maintain the existing community character of Southern Shores."
- » "Ensure that providing infrastructure services do not affect the guality and productivity of Areas of Environmental Concern (AEC's), important resources and other fragile areas."
- » "Preserve, protect, enhance, maintain and improve the natural environment and water quality within and near Southern Shores."
- » "Protect, public health and safety from the damaging effects of storm surges, wave action, flooding, high winds, and erosion associated with hurricanes, severe weather, nor'easters, and other hazards."

The plan also highlights **Policy 7** - Stormwater Management and **Policies 8,9 –** Transportation, both of which have direct links to the work being proposed in this study. This study strives to achieve compliance in the multi-use trail development and promote pedestrian safety on NC12, while also addressing stormwater runoff in the corridor.

Town of Duck Comprehensive Pedestrian Plan (2014)

The Town of Duck Comprehensive Pedestrian Plan was developed with the overall intent of examining and recommending improvements and various implementations for multimodal transit in the town. The plan specifically recommends the installation of a shared-use path on the west side of NC12 south of the Village.

The plan also has the goal of making Duck "a pedestrian first community." The plan includes a breakdown of costs, action items, and overall implementation plans and policies. Several goals of the plan are derived from the vision statement, which include:

- » "Provide and/or adapt infrastructure which encourages safe pedestrian movement and awareness through a Complete Streets approach, including access for mobility impaired individuals, as well as separation of bicyclists and pedestrians where appropriate."
- » "Provide connectivity between and within neighborhoods and a beach trail to enhance pedestrian mobility, access to the village area, and for emergency access and evacuation."
- » "Improve environmental conditions in stormwater and air quality by following low impact development practices and encouraging non-motorized transportation."

These goals are all aligned with the development of the proposed multi-use trail on NC12. Connecting all the neighborhoods of Duck to the Town Village is of critical safety and importance to the community. Through this plan, Duck has advanced desired Complete Streets Policies by improving and developing bike lanes, modifying paved shoulders, improving shared used paths, further developing pedestrian lighting, improving drainage, and gateways and intersections.

Dare County Comprehensive Transportation Plan (2015)

The Dare County Comprehensive Transportation Plan was developed in part by Dare County and with the cooperation of many of the incorporated towns and communities of the Outer Banks. The overall goal of this effort was to develop a multimodal plan to better understand the transportation needs of the area through 2040. In terms of the overall connectivity of bike and pedestrian infrastructure, there is a clear need to connect many of the towns to other parts of Dare County such as various beaches and state parks. This plan has a clear directive to use American Association of State Highway and Transportation Officials (AASHTO) guides to further develop bicycle lanes. Pedestrian connectivity and access also play a critical role in providing an alternative mode of transportation for residents and visitors in the area. Additionally, there is the long-term goal of connecting Currituck County to Hatteras Village with pedestrian accommodations. Duck has independently made strides in this area by developing its own Comprehensive Pedestrian Plan, which has in turn influenced the Dare County's Comprehensive Transportation Plan.

Outer Banks Regional Hazard Mitigation Plan (2020)

The Outer Banks Regional Hazard Mitigation plan was designed and created by a committee made of community leaders and members from Currituck and Dare County. The overall objective of this plan is to help these communities better understand the coastal hazards that affect the area and find ways to address their vulnerabilities as a coastal region. This plan was additionally developed as it is a critical component to receiving federal disaster relief aid. The plan provides the framework for a successful analysis of vulnerabilities. Major areas of analysis include plan process, risk assessment, mitigation strategy, and plan maintenance. The vision for the plan furthers this, noting "the Outer Banks Region will maintain its unique quality of life and sense of place while planning and preparing for resilience in the face of future hazards."

The plan supplementary includes a section for each town and assesses the towns overall vulnerabilities and creates a table of prioritized mitigation strategies. Duck highlights the need to prioritize improving stormwater drainage and addressing drainage issues on NC12. These priorities are in direct agreement with the proposed westside multi-use trail. Meaningful placement and stormwater analysis will play an important role in protecting all bicyclists, pedestrians and motorists who utilize NC12. By employing these metrics and strategies, the town and region can analyze their vulnerabilities and focus on implementations that will help to protect the region from hazards in the future.



Town of Duck North Carolina Comprehensive CAMA (2021)

The Comprehensive and Coastal Area Management Act (CAMA) Land Use Plan describes the overall goals that Duck has outlined to achieve their 2027 Vision Statement (recently updated to 2032). The plan highlights the preservation of the village, enhanced pedestrian moveability, business development, environmental stewardship, community engagement and leadership. There were additional efforts made in terms of community engagement to connect with residents and vacationers to identify potential challenges and areas for improvement. The document also builds upon zoning and land use requirements as well as CAMA regulations for the Town.

The plan sets aside many tools for managing development, and several of these goals and regulations are closely aligned with the development of the multi-use trail proposed in this study. **Policies 6 and 8** revolve around stormwater management, promoting and enhancing NC12, and the corridor's overall pedestrian experience. As stated, these goals are closely aligned with the future improvements that the trail construction will bring to the Town.

Conclusion

Having considered the plans and policies that have been developed and implemented throughout the region, it is evident that Duck and the Outer Banks have taken clear steps to advance and protect the region. Through an analysis of these plans, there has been a clear emphasis placed on land use regulations and the advancement of bicycle and pedestrian connectivity opportunities. Many of these plans have influenced one another and are relevant to consider in this feasibility study.

Policy Review

The following policies have been identified as key policies that have direct impacts on the design and implementation of the multi-use trail feasibility study in Duck.

North Carolina Department of Transportation Complete Streets Policy

The North Carolina Department of Transportation's Complete Streets Policy, which was updated in 2019 works to provide guidelines on "multi-modal transportation networks that safely accommodate access and travel for all users". The updated policy highlights the importance of the advancement of transit networks that promote travel that is not centered around vehicles alone. The policy stipulates and requires that NCDOT planners and designers work to include multimodal facilities into the development and creation of projects across the state. Overall benefits from the policy include promotion of alternative modes of transit and improving safety and accessibility for all roadway users.

Public Rights of Way Accessibility Guidelines

The overall design and development requirements for a multi-use path fall under the purview of the U.S. Access Board. Additionally, The Public Rights of way Accessibility Guidelines (PROWAG) mentions in Chapter 3 sections R302.5 and R302.6 specific requirements surrounding the grade that is required of pedestrian routes and establishing the cross slope of pedestrian access routes at a 2% maximum. Additionally, all designs developed will be fully Americans with Disabilities Act (ADA) compliant.

North Carolina Department of Transportation Roadway Design Manual

The NCDOT Roadway Design Manual provides a thorough analysis of the requirements for roadway and multi-use path design in North Carolina. The manual also provides specific requirements and specifications for the development of shared use paths. Using the NCDOT Roadway Design Manual definition, a "shared use path will be defined as separate travel space adjacent to the roadway designed to accommodate two-way travel for various users" such as pedestrians, bicyclists, skaters, wheelchair users, and other nonmotorized users. The NCDOT Roadway Design Manual describes in detail the relevant content for shared use paths in Part 1 Chapter 4 Sections 4.14, 4.15, and 4.16. It is important to note that minimum widths do not include graded areas or buffers on either side of the shared use path. That being said, other specifications include:

- » Desired width 12 to 14 feet
- » Minimum width 10 feet; 8 feet in exceptionally constrained areas
- » Vertical clearance 8 feet minimum

Additional support and guidelines can be found in American Association of State Highway and Transportation Officials (AASHTO) in the Guide for Planning, Design, and Operation of Pedestrian Facilities. All design alternatives will be fully compliant with AASHTO guidelines and regulations. Additional AASHTO guidelines regarding bicycle facility development may be found in the Guide for the Development of Bicycle Facilities (2012) 4th Edition, Chapter 5.

Project Benefits

There are many benefits that are expected for the community as a result of the multi-use trail development. These benefits will have a direct and immediate impact on the community and allow for new engagement that was previously unavailable. Some of the projected benefits include:

Community Connectivity



Improved Accessibility & Tourism

Through the development of the multi-use trail, community residents and vacationers who live along the westside of NC12 will have new access to the Village that was previously unavailable. Not only will this help to advance connectivity within Duck but will also provide users in neighboring towns the opportunity to engage with the built infrastructure. This development would be in direct agreement with county goals to advance connectivity opportunities for pedestrian users across the Outer Banks region.

There are many expected benefits for both the environment and people in Duck. The proposed development will work to address stormwater drainage issues, improve runoff, and help to address flooding issues in the NC12 corridor. This will in turn help to make vehicular and pedestrian traffic safer during inclement conditions. Through the development of the multi-use trail, pedestrian and bicyclist activity will be removed from the roadway and provided with its own path. This will allow for a **safer user experience and provide trail users with the ability to enjoy their surroundings and the beauty that the town has to offer.**

By advancing connectivity options, all visitors and residents in Duck will have increased mobility options and will be able to interact with their community in a manner much safer than before. By providing the multi-use trail, **accessibility to town will become much easier and allow for prompt connection to the Village.**



CHAPTER 2 Study Considerations and Alternatives Development



Executive Summary

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Chapter 2. Study Considerations and Alternatives Development

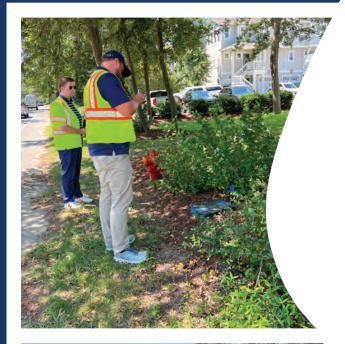
Chapter 3. Community Engagement

Chapter 4. Evaluation and Recommendations

Chapter 5. Implementation

Appendix A. Complete Record of **Community Comments**







STUDY CONSIDERATIONS AND ALTERNATIVES DEVELOPMENT

This project encompasses a wide range of factors ranging from the natural environment to the human environment. There are many planning implications that are imperative to consider in context of this project. The alternatives that will be outlined in this report have been analyzed and developed with these important factors in mind. Based off previous plans, thorough field analysis, and community engagement, the proposed alternatives have been considered in the context of the complex needs of the community and region.

Planning Level Considerations

Understanding the make-up and composition of a community plays a critical role in helping to determine the overall needs that a community might experience. This critical data helps planners and designers develop the best design for a community given their specific needs and/or constraints. Demographic data were pulled from data repositories, surveys, and reports: the U.S. Census Bureau and its American Community Survey (ACS), the Town of Duck North Carolina Comprehensive Pedestrian Plan, and the CAMA Land Use Plan. Some of the various demographic factors that were considered particularly relevant for this feasibility study include:

Population

- This projection plays a critical role in framing our narrative as it highlights the fact that Duck is reliant on its tourism economy and the proposed multi-use trail development will be an imperative piece in helping to connect users from Duck and the Outer Banks at large to the Village. Expanding infrastructure options now will help prepare the town for the future and provide Duck with adequate and diverse multimodal opportunities.
- Duck is a tourist destination and during peak seasons, the population of the town swells significantly, creating a larger demand and burden on the existing infrastructure (roads and sidewalks, where available) in terms of volume and use.

Employment & Employment Density

• Employment and employment density play a pivotal role in understanding the needs of reliable transit infrastructure in Duck. Most of Duck's employment opportunities (restaurants, shops, and government) all are located in the Village. By further developing missing multi-use trail infrastructure on the westside of NC12, transit options quickly expand and provide employees with more opportunities for their commute to work, while also alleviating some of the traffic congestion in the village.

Commute

 Understanding commuter data is beneficial to see how many people are driving both to, through, and within the town for work. Development of a trail on the westside of NC12 would have a positive impact on commuting because it expands transit options and would likely decrease the overall number of motorists on the road by creating more options for local commuters to, through, and within the Village.

Vehicle Access

- Vehicle access to Duck is limited to NC12 that travels northsouth in the Outer Banks.
- Within town limits, residents and businesses are accessible by feeder roads intersecting with NC12 (also referred to and/ or known as Duck Road.)

Natural Environment Considerations

In Duck, nature has played an instrumental role in the development of the community. From boardwalks and overlooks to beach access sites, the natural environment is connected to every aspect of daily life. Being part of the larger Outer Banks area, the region is teeming with wildlife and gorgeous beaches that attract visitors from all over the country. That being said, the area does face some developmental and environmental challenges.

The proposed west side multi-use trail alignment in Duck will interact with many natural features and elements as it is developed along the NC12 corridor. Given the complex nature of the landscape, special care has been given to address the environmental challenges that exist along the study corridor.

For the development of the multi-use trail, the following environmental factors were considered:

- » Topography
- » Wetlands and Floodplain
- » Existing Vegetation
- » Wildlife Presence

Human Environment Considerations

The human environment in Duck is equally as critical and relevant as the natural environment. The flow and movement of human activity impacts how residents and visitors are able to engage with the Village. Planning with these in mind allows for the trail to connect residents and visitors from south Duck to the Village center. This will allow for varied uses of non-motorized transportation in the corridor and will encourage bicycle use and walking as alternative modes of travel.

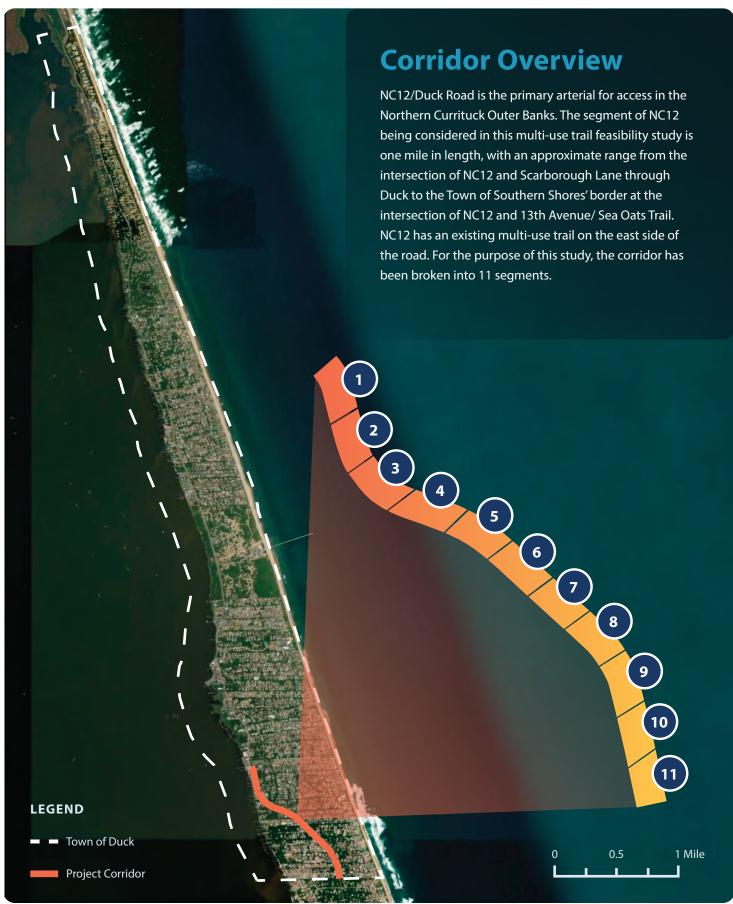
For the development of the multi-use trail the following human environment factors were considered:

- » Parcel Boundaries and Context
- » Bicycle & Pedestrian Facilities
- » Speed Limit
- » Right-of-Way
- » Intersections

Field Observations

Field work is a critical component of this feasibility study as it is a the primary way to understand the project terrain and the various opportunities and constraints that exist along the NC12 corridor. Through field observations, specific conditions were identified and used to influence the developing design alternatives for the project. Walking the proposed trail corridor with Town representatives in July 2023, the team identified the following:

- » Location of utility lines, boxes, and vaults
- » Stormwater infrastructure, such as pipes and drain inlets
- » Driveway pavement types, including decorative treatments, such as stamped concrete
- » Pavement markings like stop bars, crosswalks, striping, bike lanes, and turn lanes
- » Vegetation, either in or adjacent to the right-of-way, such as planting beds, hedges, and trees
- » Hardscape transitions, such as curbs, walls, gravel, stone, small boulders, and retention structures
- » Softscape transitions, including overall slopes and cross-slopes, holes, ponding locations, low-lying areas, berms, dunes, and private landscaping
- » Landscape entourage, such as street signs, neighborhood signs, power poles, light fixtures, columns, and mailboxes
- » Vertical and horizontal clearances
- » Structures that are immovable
- » Maintenance regimens



Existing Conditions

The study corridor can be characterized by several dominant physical and environmental features including, but not limited to: width of the right-of-way, private driveways and intersections, vegetation, slope and topography conditions, utility locations, and immovable objects.

Travel Lanes

The width of the overall drivable area changes as one travels along the corridor because the road width varies to accommodate the need for turn lanes, traffic calming structures, and traffic volumes. The northernmost part of the corridor is characterized by commercial development. Heading south, it transitions quickly to residential development with driveways that connect directly to NC12. Further south, shortly after passing Four Seasons Lane, and with only one exception, feeder roads intersecting NC12 enable access to neighborhoods along the corridor. The exception is one residence located between Jaycrest Road and Sea Oats Trail near the Southern Shores border. There is approximately 1,920 feet and 385 feet of center turn lane at the north and south ends, respectively, of the trail corridor. Outside of these zones, most of the corridor (56%), is characterized by two passing-prohibited travel lanes of 25- or 35 mph speed limits.

Vegetation

Most of the parcels on the west side of the corridor have existing vegetation that buffers the residences from the road. In some cases, this vegetation consists of overgrown scrub growth and young trees that encroach on the right-of-way. In others, the vegetation is nicely landscaped, with formal hedges or planting areas adjacent to or encroaching upon the right-of-way. There are also instances of vegetation outside of the right-of-way that have low-hanging limbs that create conflicts for clearance, access, and sight-lines in the proposed trail corridor.

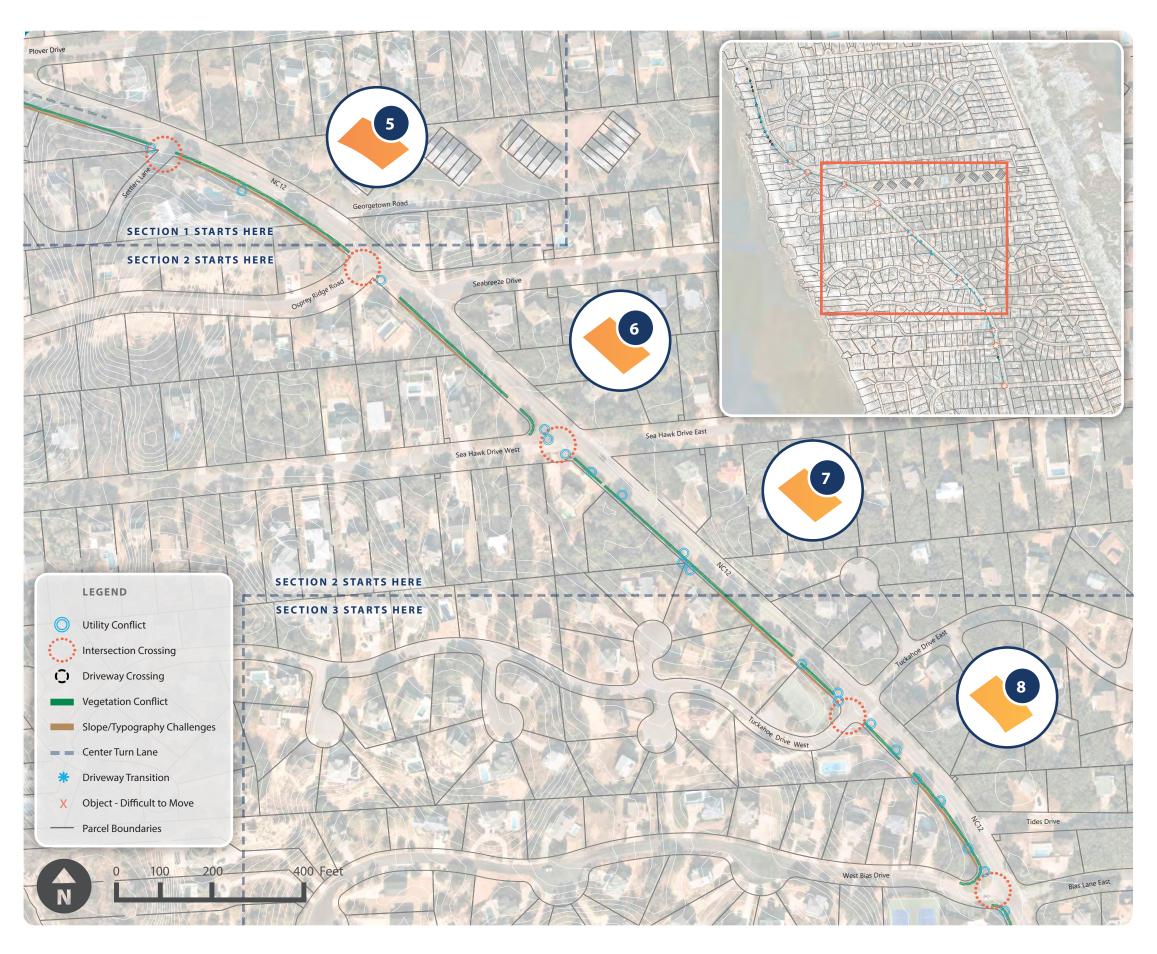


Topography and Landform

The characteristic rolling coastal dune landforms found in the Outer Banks are certainly present in Duck. NC12 generally follows the high-ground of the ridge, with rolling dunes that rise and fall outside of the right-of-way. Much of the shoulder on the west side boasts relatively flat ground. Generally, the topographic challenges in the corridor tend to be drainage swales and low spots that allows water to pond or the rising and falling dunes that may require retaining walls to accommodate the proposed trail alignment. The retaining walls would be proposed only where needed and designed so they support grade transitions with the least amount of impact required to solve site-specific topographic challenges. In some areas where private driveways meet NC12, the existing transition contains steep slopes and will have to be considered to make any proposed trail alignment work. These factors will influence design recommendations and will account for areas identified that may need reverse retaining walls, low retaining walls, or typical retaining walls on an as-needed basis.

Utilities and Public Services

Several utility services run parallel to NC12, and are densely located. Along the corridor, there are many instances of utility vaults, access boxes, water mains, gas-line markers, and telecommunications lines that will need to be addressed and accommodated. Most of these utility conflicts are easy to resolve, but some, such as telephone poles, can potentially be expensive to relocate. Notably, there exists stormwater structures and underground stormwater chambers adjacent to NC12 between West Bias Drive and West Sea Hawk Drive that should be respected.

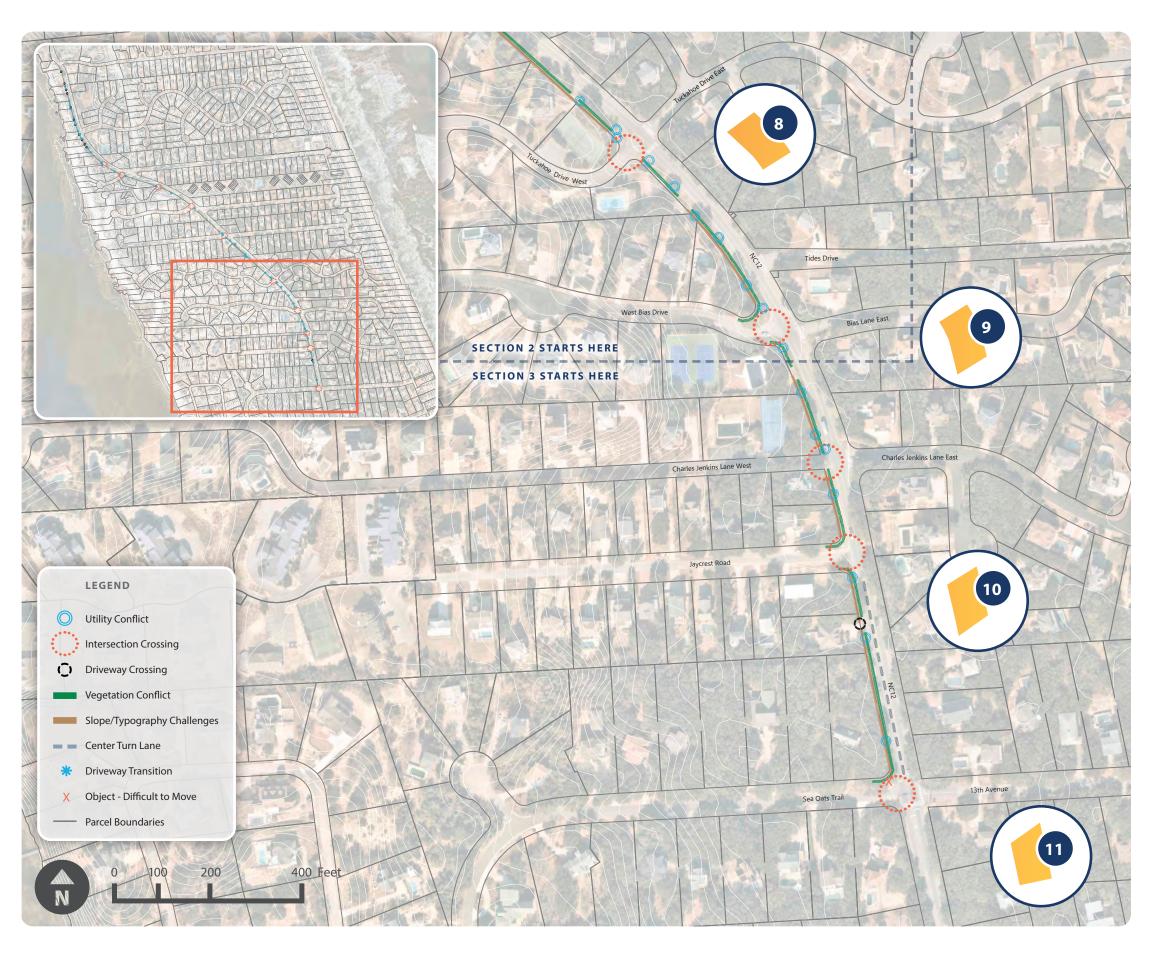


Physical Features

There are a range of existing physical features in the corridor that will impact the straight-forward development of a proposed alignment. Of particular note, there exists an immovable outbuilding in front of Aqua Restaurant and Spa at the north end of the corridor.

For businesses and residences with private driveways that intersect with NC12, their garbage pick-up service will need to be considered so there is adequate clearance. Additionally, there is range in the material and configuration of these private driveways--gravel, stamped concrete, poured concrete, and asphalt--all of which would require design intervention and special treatments so the interface between the driveway and multi-use trail crossings are safe and facilitate the free movement of private citizens in the public right-of-way.

Mentioned before in the utilities and public services section, there are several stormwater structures located within the study corridor. Swales and areas that are allowed to pond are also present. Some areas that pond are occurring on low spots in paved areas. Other spots occur in grassy, vegetated areas and appear to be formal swales that have silted-in over time. At the corner of Charles Jenkins Lane, there is a wooden footbridge that crosses a swale that captures stormwater from the intersection and upland areas.



Typical Sections

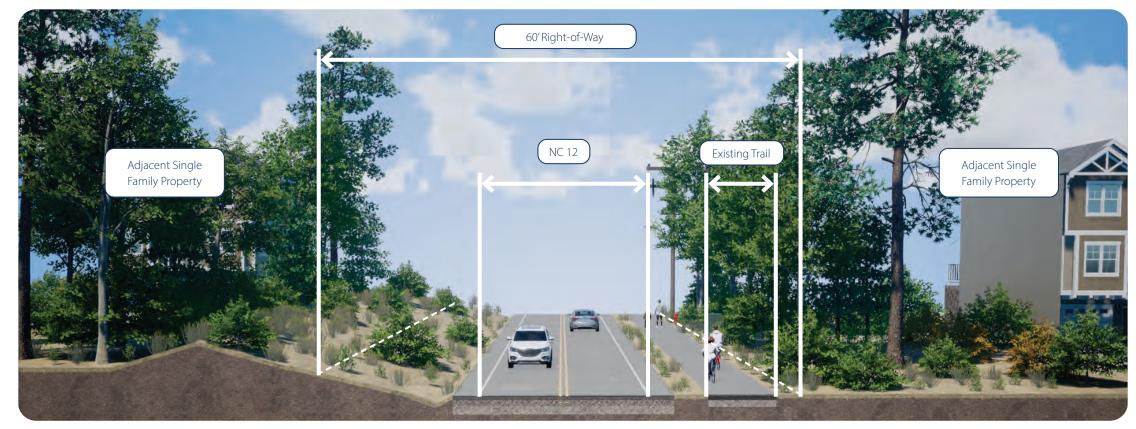
Within the study corridor, there are three typical existing conditions. All along the east side of NC12 is a vegetated buffer and shared-use path. And with the exception of commercial development in the very north end of the corridor, all properties on the east side of the trail are residential. Drive lanes vary, and at the north and south ends, there is a center turn lane, which constrains the road shoulders and limits what design intervention can happen there. On the west side of the road, however, conditions vary and are described in the following sections.

Existing Condition 1

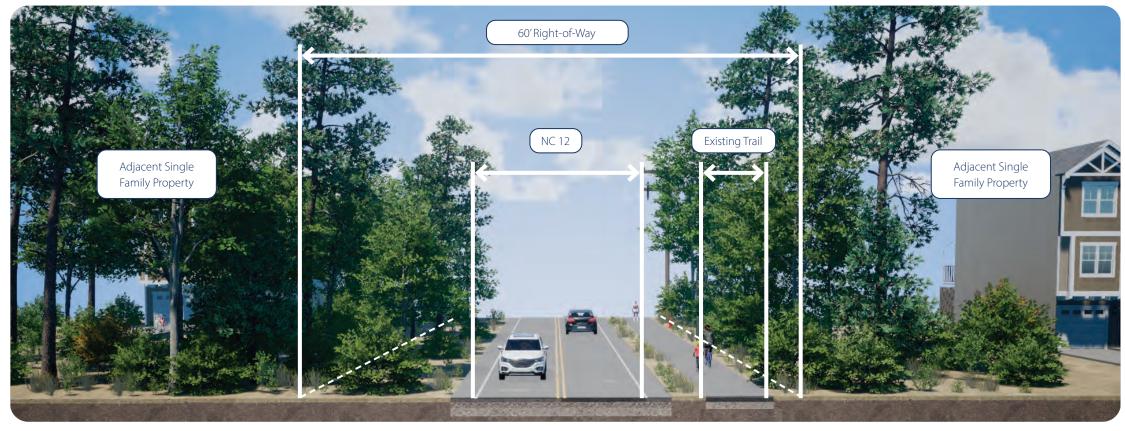
The first condition is characterized by adjacent landform that slopes up from the road and total width of the road. The amount of rise, steepness of overall slope, and density of vegetation varies to some degree when this condition occurs. In some areas, the toe of the dune terminates near the edge of pavement. In others, the toe of the dune is set back from the road, but may still present challenges for developing the most suitable design treatment. In this condition, there are two, non-passable drive lanes which allows for more flexibility to design within the 60' right-of-way.

Existing Condition 2

The second condition is characterized by a more level transition through the shoulder into the adjacent landscape. The density of vegetation varies, but overall, the landform and slopes are relatively flat. Same as the first condition, there are two, nonpassable drive lanes within the right-of-way.



Existing Condition 1

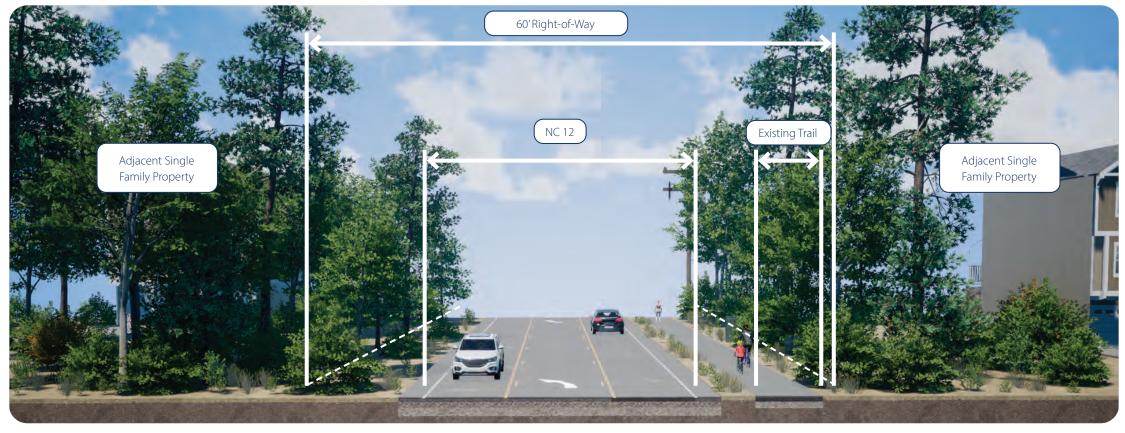


Existing Condition 2

2-6

Existing Condition 3

In the third condition, the roadway contains a center turn lane and two drive lanes. The wider roadway constrains the right-of-way and results in a narrower shoulder. In these areas, the landform is similar to the second condition wherein the adjacent landscape is relatively flat.



Existing Condition 3

Segment 1: Existing Conditions

Segment one, approximately 350 feet long, stretches from the crosswalk/sidewalk directly in front of Aqua to the residence located at 1170 Duck Road (NC12). In total, this segment includes one commercial property and two residential adjacent properties.

Sidewalk Connection

In front of Aqua there is an existing sidewalk that terminates at an intersection that crosses NC12 to the east and guides guests to the business under ample shade. The sidewalk is bordered on both sides with retained landscape areas that contain trees and ornamental plantings.

Visibility and Clearance

In front of Aqua, the existing shrubs may require removal. As one moves south past the residential properties, vegetation encroaching on the right-of-way may require clearing, pruning, or removal depending on the density and growth habit of the existing plants. Additionally, there exists a center turn lane in this segment that reduces the available width to design within the right-of-way.

Utilities

Utility lines run parallel to NC12 in the right-of-way.

Immovable Objects

There is an existing structure on the corner of the Aqua property that must remain in place.

Driveway Crossings

There are four driveway crossings in this segment of the study. One is for a commercial property, the other three are residential.

Slope and Topography

Common to this segment are higher grades in the shoulder both in and outside of the right-of-way.



Segment 1: Existing Conditions Opportunities and Constraints Analysis Map



Segment 2: Existing Conditions

Segment two, approximately 550 feet in length, stretches from 1168 to 1158 Duck Road (NC12). This segment contains five adjacent residential properties.

Slope and Topography

Similarly to segment one, there are steeper slopes and areas of topography that rise away from the roadway. The existing driveways add complexity because their respective transitions to NC12 will need to be considered for any proposed trail alignment.

Visibility and Clearance

Several properties contained in this segment have ornamental trees, formal hedges and herbaceous plantings either near the driveway aprons or in front of the residence. Many of these plantings are located in the right-of-way. There are also young canopy trees needing pruning or complete removal to accommodate the proposed trail alignment. This entire segment has a center turn lane that constrains available space for design interventions in the right-of-way.

Utilities

As is true for segment one, there are several utilities running parallel to the roadway that will require relocation in response to the proposed path.

Driveway/Street Crossings

There are five driveway crossings that will have to be considered and coordinated for any proposed trail alignment. Each varies in configuration, material, and slope. In addition, the Four Seasons Lane intersection with NC12 and has existing crosswalks that carry pedestrians and cyclists parallel to the road. This is an opportunity to increase connectivity on the opposite side of a major intersection in the corridor and to increase safety.



Segment 3: Existing Conditions

Segment three, approximately 540 feet in length, stretches from 1156 to 1152 Duck Road (NC12). This segment contains three adjacent residential properties, one vacant lot with water access, and one feeder street, Amy Lane.

Existing Landscape Features

There is one abandoned telephone pole located in front of the 1154 residence and another, which is still in service, located in front of the 1152 residence which may present challenges for design in these locations.

Visibility and Clearance

Throughout this segment of the study, there is vegetation within the right-of-way. Some are ornamental plantings and others parts are just overgrown patches of vegetative buffer. The center turn lane of NC12 continues through this segment which constrains design opportunities in the right-of-way.

Utilities

Utilities run parallel to the right-of-way and will have to be located and considered for any proposed trail alignment.

Slope and Topography

There are grade transitions in- and outside of the right-of-way that will require consideration. Most of these are swales that drop away from the roadway and the surrounding landscape.

Driveway/Street Crossings

There are two driveway crossings in this segment. Amy Lane also terminates into NC12. This intersection in particular has additional challenges as it is a low spot where ponding occurs after a storm event. This area is suitable for a stormwater intervention to alleviate the local flooding that occurs in this general area.



SEGMENT 3 STARTS HERE

Segment 3: Existing Conditions Opportunities and Constraints Analysis Map

3

AVOID 4 TREES

NEEDED HERE

Utility Conflict Street Crossing Driveway Crossing Vegetation Conflict Slope/Typography Challenges Center Turn Lane **Driveway Transition** Object - Difficult to Move Parcel Boundaries Tree Remove Landscape Feature Poor Sight Lines Stormwater Management Area Possible Retaining Wall •••• Future Crosswalk Study Area IIIIIII Potential Landscape Barrier

LEGEND

RESIDENTS NEED SPACE FOR 10-15 TRASH/RECYCLE BINS IN THIS LOCATION

FUTURE CROSSWALK STUDY AREA

OK TO REMOVE TREE

D

SEGMENT 4 STARTS HERE





Segment 4: Existing Conditions

Segment four, approximately 630 feet in length, stretches from 102 Nash Road to just beyond Settlers Lane and includes about 40' of the corner of one residential parcel (101 Settlers Lane) which will be discussed in Segment 5. This segment contains four adjacent residential properties: two are vacant and two are feeder streets: Nash Road, which is divided at the intersection by a retained landscape island and Settlers Lane. This segment overall is characterized by NC12's two-lane/center-turn-lane transition.

Existing Landscape Features

There is one utility pole located just south of the intersection with Nash Road which may present a challenge for design in this area.

Intersections

This segment includes two intersections on the west side: Nash Road and Settlers Lane, both of which would require crosswalks for the safety of path users and motorists.

Visibility and Clearance

Vacant residential parcels immediately adjacent to NC12 between the Nash Road and Settlers Lane intersections are presenting with dense vegetation that extends into the right-of-way. Nearing the southern end of this segment, the center turn lane disappears and opens up more opportunity for design in the right-of-way.

Utilities

Utilities run parallel to the right-of-way and will have to be located and considered for any proposed trail alignment.

Slope and Topography

There are grade transitions in- and outside of the right-of-way that will require consideration. These transitions vary, but most are rising away from the grade of NC12.



2-11

Segment 5: Existing Conditions

Segment five, approximately 555 feet in length, includes the residential properties from 101 Settlers Lane to 101 Osprey Ridge Road. Notably, half of 101 Osprey Ridge Lane also falls in segment six.

Slope and Topography

There are grade transitions in- and outside of the right-of-way that will require consideration. These transitions vary, but most are rising away from the grade of NC12.

Intersection

This segment includes the intersection with Osprey Ridge Road on the west side. This intersection is characterized by a divided entrance and exit that is separated by a landscaped area that contains the Osprey Ridge neighborhood sign.

Visibility and Clearance

For the most part, this segment of the corridor is relatively clear of vegetation that would impact a proposed trail alignment. There are some instances; however, where some select pruning and clearing may be required to accommodate a proposed trail alignment.

Utilities

Utilities run parallel to the right-of-way and will have to be located and considered for any proposed trail alignment. The landscape adjacent to NC12 in this segment is generally open with gentle slopes up to the residential property at 101 Settlers Lane just beyond the row of magnolia trees pictured here.

As one approaches Osprey Ridge Rd, an existing fence and vegetation growing in the right-of-way becomes a physical and visual constraint.

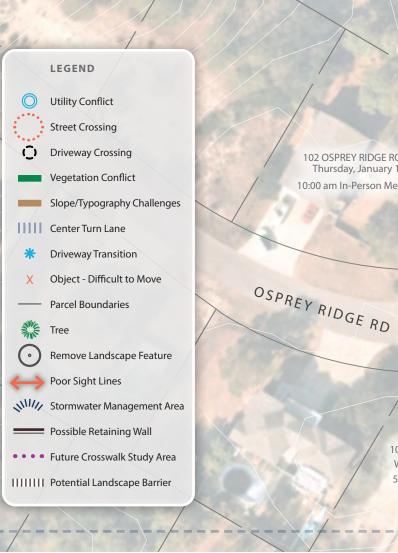
The approach to the Osprey Ridge Road intersection includes consideration for safety and visibility due to the existing fence.



Crossing Osprey Ridge Road involves designing around the landscaped area and neighborhood sign. Additionally, there are many utilities and services that will need coordination. 101 SETTLERS LANE Thursday, January 11 12:00 pm Virtual Meeting

Α

SEGMENT 5 STARTS HERE



Segment 5: Existing Conditions Opportunities and Constraints Analysis Map



Segment 6: Existing Conditions

Segment six, approximately 530 feet in length, extends from 101 Osprey Ridge Road to 101 West Sea Hawk Drive, which includes three residential properties and the intersection of Sea Hawk Drive West and NC12.

Intersection

Sea Haw Drive West intersects with NC12. On the opposite side of the highway, the road continues eastward.

Visibility and Clearance

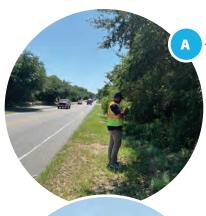
While much of the shoulder of this segment of the corridor is characterized by grasses, there is substantial vegetation that has been allowed to grow--primarily a mixture of young live oaks, pine trees, and coastal shrubs and understory in the right-of-way.

Utilities

Utilities run parallel to the right-of-way and will have to be located and considered for a proposed trail alignment. Additionally, this segment has existing stormwater infrastructure: a series of storm inlets and underground detention units in the right-of-way.

Slope and Topography

There are grade transitions in- and outside of the right-of-way that will require consideration. These transitions vary, but most are rising away from the grade of NC12.



This segment of the study corridor is characterized by a lot of overgrown vegetation that extends into the right-of-way.



The Sea Hawk neighborhood sign, landscaped area, and utility access points will need to be considered for a proposed trail alignment.

In addition to existing utilities, there is stormwater infrastructure in this segment of the corridor (not pictured, just outside of view; yellow arrow).

100 W SEA HAWK DRIVE Wednesday, January 10 12:45 pm In-Person Meeting

TRIM BRANCHES

A

SEGMENT 6 STARTS HERE

FUTURE CROSSWALK STUDY AREA

SEA HAWK DR W

101 W SEA HAWK DRIVE Wednesday, January 10 11:30 am Virtual Meeting

Segment 6: Existing Conditions Opportunities and Constraints Analysis Map



Segment 7: Existing Conditions

Segment seven is approximately 530 feet in length. It includes a private vacant lot at 1128 Duck Road, 108 to 104 Jasmine Court, and half of 102 West Tuckahoe Drive.

Enhance Visibility and Clearance

From the road, this segment is buffered by a nearly-continuous wall of vegetation extending its entire length. To ensure adequate clearance for the path, some vegetation will have to be cleared and pruned. Careful attention to the mature live oak trees will be considered so that impacting those specimens will be minimal.

Utilities

Utilities run parallel to the right-of-way and will have to be located and considered for any proposed trail alignment. Additionally, this segment has existing stormwater infrastructure: a series of storm inlets and underground detention units in the right-of-way.

Slope and Topography

The overall grade generally rises gently away from the grade of NC12 in this segment of the study. The closer one gets to the West Tuckahoe Drive intersection, the more the grade rises. There is a gentle swale in the shoulder and depressions that need to be taken into consideration for optimal drainage and stormwater management.

A CELL TOWER PROPOSI 1128 DUCK ROAD Thursday, January 25 Looking north towards 9:30 am Virtual Meeting West Sea Hawk Drive, a gentle swale exists in the shoulder and thus, the design should be responsive to stormwater management. This segment of the study **108 JASMINE COURT** corridor contains existing Wednesday, January 24 stormwater infrastructure 11:45 am In-Person Meeting in the right-of-way that needs accommodation. VISIBLE DRAINAGE **106 JASMINE COURT** This view looking north Thursday, January 11 shows how existing pines 10:30 am In-Person Meeting function as shade trees and are valuable assets for user comfort on the proposed trail. **104 JASMINE CT** TUCKAHOE DR W Wednesday, January 24 10:30 am In-Person Meeting Looking back to the north, the shoulder has been maintained with a short crop and a wide buffer of **102 TUCKAHOE DRIVE W** vegetation separates Wednesday, January 24 the residences from the right-of-way.

Segment 7: Existing Conditions Opportunities and Constraints Analysis Map

7

SEGMENT 7 STARTS HERE

POTENTIAL BARRIER WITHIN ROW TO PREVENT TRAIL USERS FROM UNAUTHORIZED ENTRY INTO PRIVATE PROPERTY





IN RIGHT OF WAY HERE INTUINING





Segment 8: Existing Conditions

Segment eight is approximately 525 feet in length. It extends from the southern half of 102 West Tuckahoe Drive and includes 100 and 101 West Tuckahoe Drive, and about half of 100 West Bias Drive. This segment of the corridor includes the intersection of West Tuckahoe Drive and NC12.

Intersection

The intersection of West Tuckahoe Drive and NC12 will need a crosswalk to direct path users parallel to NC12.

Slope and Topography

This segment of the study has a gentle swale immediately adjacent to NC12 to convey stormwater to storm infrastructure located here. While much of the topography is generally flat, there are steeper slopes in the right-of-way that will require consideration to accommodate any proposed trail alignment.

Visibility and Clearance

As with the previous segments discussed, there is considerable vegetative growth in the right-of-way adjacent to NC12. Trees and shrubs will need to be pruned and possibly cleared entirely in places, to accommodate a proposed trail alignment.

Utilities

Utilities run parallel to the right-of-way and will have to be located and considered for any proposed trail alignment. Additionally, this segment has existing stormwater infrastructure: a series of storm inlets and underground detention units in the right-of-way.

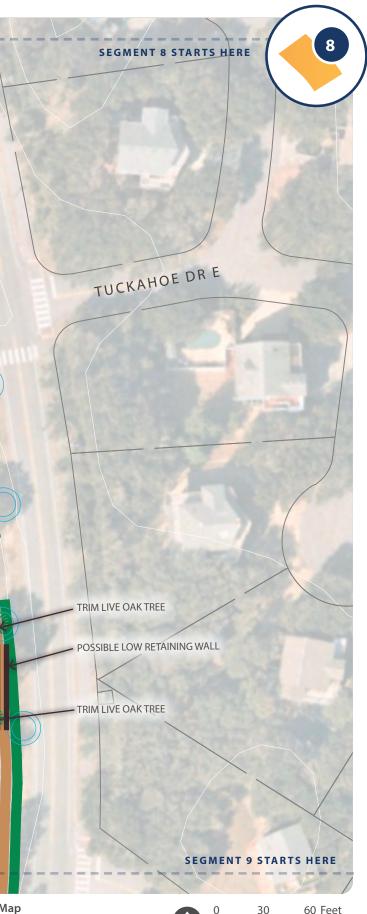
The north side of the West Tuckahoe Drive intersection features a retained landscape area, stormwater infrastructure, and water utilities to be considered for the trail alignment.

The south side of the West Tuckahoe Drive intersection also features a landscaped area around the neighborhood sign, stormwater infrastructure, and lighting to design in response to.

Much of the rest of this segment is characterized by a narrow shoulder, vegetation that has been allowed to encroach on the right-of-way, and slopes that rise up and away.

POTENTIAL BARRIER WITHIN ROW TO PREVENT TRAIL USERS FROM UNAUTHORIZED ENTRY INTO PRIVATE PROPERTY POSSIBLE LOW RETAINING WALL -NC1 100 W TUCKAHOE DRIVE N TUCKAHOE DRW LEGEND В Utility Conflict **101 W TUCKAHOE DRIVE** Street Crossing C Driveway Crossing Vegetation Conflict Slope/Typography Challenges Center Turn Lane **Driveway Transition** Object - Difficult to Move Parcel Boundaries Tree (\cdot) Remove Landscape Feature 102 W BIAS DRIVE Poor Sight Lines Stormwater Management Area Possible Retaining Wall •••• Future Crosswalk Study Area 100 W BIAS DRIVE IIIIII Potential Landscape Barrier Thursday, January 25 9:00 AM In-Person Meeting W BIAS DR

Segment 8: Existing Conditions Opportunities and Constraints Analysis Map





Segment 9: Existing Conditions

Segment nine, approximately 540 feet in length, includes the corner of the 100 West Bias Dr residential parcel, 102 West Charles Jenkins Lane, and 1106 Duck Road. This segment of the corridor study includes the West Bias Drive and NC12 intersection as well as the West Charles Jenkins Lane and NC12 intersection.

Intersection

This segment has intersections with West Bias Drive and West Charles Jenkins Lane.

Slope and Topography

The grade is generally flat through most of the segment; however, notably, there is a gentle swale running parallel to NC12. Close to West Charles Jenkins Lane, there is a stormwater retention area that falls away from the road to collect runoff during a storm event.

Visibility and Clearance

Vegetation that encroaches on the right-of-way will need to be pruned and possibly cleared in order to accommodate the proposed trail alignment to ensure adequate sight lines and safety for path users.

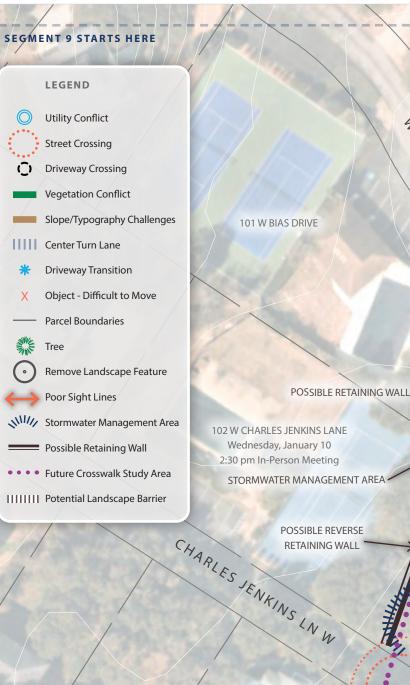
Utilities

Utilities within the right-of-way will need to be located and considered for any proposed design intervention. There is existing lighting at the West Bias Drive intersection. Existing stormwater infrastructure in this segment is located on the north and south sides of both West Bias Drive and West Charles Jenkins Lane. The intersection of West Bias Drive has lighting (yellow arrow) on the north side, stormwater infrastructure on the north and south sides, and a neighborhood sign in a landscaped area on the south side.

This view of the West Bias Drive intersection (looking north) shows a stormwater culvert, lined with outlet protection stone, and how the slope transitions from edge of pavement down to the swale and uphill beyond the neighborhood sign.

Massive live oak trees overhang an existing stormwater retention area. The yellow arrow points to a small footbridge that crosses a swale. Note the utility service boxes on the ridge outside of the retention area.

View looking north at the footbridge highlighted in the image above (C). In the existing condition, stormwater ponds in the roadway.



1106 DUCK ROAD Wednesday, January 10 12:15 pm In-Person Meeting

NEED TO TRIM SHRUBS

100 JAYCREST ROAD Wednesday, January 24 4:00 pm Virtual Meeting

Segment 9: Existing Conditions Opportunities and Constraints Analysis Map





Segment 10: Existing Conditions

Segment ten is approximately 570 feet in length and comprises the south end of Duck to town limits and ends just before the signaled NC12 intersection with Sea Oats Trail/13th Avenue. This segment includes part of the residential parcel at 100 Jaycrest Road, 101 Jaycrest Road, 1100 Duck Road, and 393 Sea Oats Trail in the Town of Southern Shores, NC.

New Crosswalk

As with all instances where the proposed trail alignment crosses an existing road in the study area, a new crosswalk is proposed to ensure the safety of path users and motorists alike. In the intersection with NC12 and Sea Oats Trail/13th Ave, additional crosswalks and signaling would be necessary to ensure safe crossing for the path users and motorists.

Visibility and Clearance

The shoulder of the corridor in this segment is lined with a dense vegetative buffer of young trees and scrubby underbrush. While there are moments where sight lines open up near the southernmost residential driveway that intersects with NC12, overall this segment is characterized by long stretches of grassy shoulder that varies in width, becoming the most narrow near the intersection with Sea Oats Trail/13th Avenue where there is a center turn lane.

Utilities

Utilities within the right-of-way will need to be located and considered for any proposed design intervention.

The signaled intersection in Southern Shores is announced to motorists near the transition between segments 9 and 10 in the study between Charles Jenkins Lane West and Jaycrest Road.

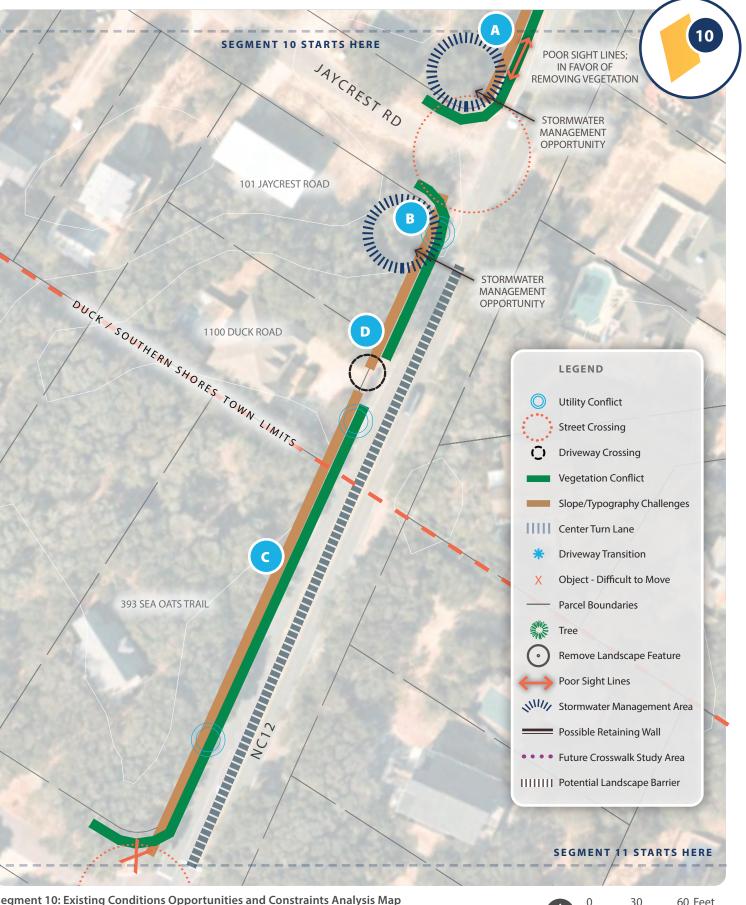
The intersection of Jaycrest Road (looking north) is the last intersection before NC12 widens for a center turn lane. Note the existing pedestrian use of the shoulder as an informal trail (yellow arrow).



Approaching the intersection of NC12 and 13th Avenue/Sea Oats Trail is a sign that warns motorists that the road is subject to flooding.



View of the residential driveway of 1100 Duck Road. The existing landscaped area encroaches on the right-of-way and may require pruning/removal. Note the "Welcome to Southern Shores" (yellow arrow) on the shoulder.



Segment 10: Existing Conditions Opportunities and Constraints Analysis Map





Segment 11: Existing Conditions

Segment eleven, entirely in the Town of Southern Shores, is a focused consideration of what is happening at the NC12 and Sea Oats Trail/13th Ave intersection. While it is obviously outside of the jurisdiction of Duck, the interfacing of the proposed shared-use path with the Town's neighbor to the south is important. A north-south connection on the west side of the highway would have many benefits for the residents of and tourists visiting the Town of Southern Shores as much as it benefits local residents and tourists visiting Duck.

Increasing connections for multi-modal transportation and the quality of the experience in the landscape creates stronger communities, improves quality of life, and strengthens sense of place.

While this section is included in our study, funding and implementation would be through a coordinated effort with Southern Shores.

Intersection

This intersection has two existing crosswalks that carry users across NC12 and 13th Ave. The crossing of 13th Avenue is a connection for the existing trail that runs on the east side of NC12. The crossing of NC12 at this intersection connects 13th Avenue to Sea Oats Trail; however, on the Sea Oats Trail side of the intersection, the crosswalk terminates into a patch of sand and an informal trail into the northernmost residential street in Southern Shores. Enhancing user access to multimodal transportation network on both sides of the road increases safety and the overall capacity of this corridor to serve the community and its users.

Immovable/Difficult to Move Objects

The four signal posts are fixed in the landscape so any proposed trail connection would have to respond to these.

Stormwater

There are low points at this intersection that hold stormwater after a storm event. 13th Avenue floods at the approach to the intersection and in the crosswalk. The corner of Sea Oats Trail and NC12 also ponds after a storm event. These issues have the potential to be resolved, at least in part, if the intersection were included in a proposed trail alignment.



View of the intersection with 13th Avenue/Sea Oats Trail in Southern Shores. Note the crosswalk on the far end of the intersection connecting across NC12.

View looking toward southeast corner of NC12 and 13th Avenue intersection.

View looking north up NC12 from the Southern Shores intersection of 13th Avenue/Sea Oats Trail.

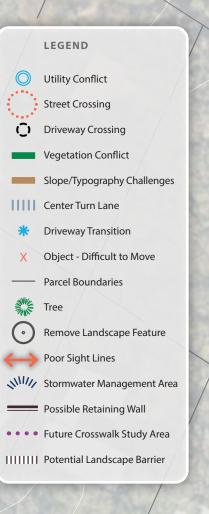


Close up of the corner of the intersection where the proposed trail could terminate.



Segment 11: Existing Conditions Opportunities and Constraints Analysis Map

13TH AVE





11

Duck Pedestrian Improvement Plans Design Criteria

The following criteria have been compiled based on standard engineering practice and the successful application of regulatory standards and guidelines. The North Carolina Department of Transportation (NCDOT), Complete Streets Planning and Design Guidelines, 2012; the American with Disabilities Act (ADA) Design Guidelines; the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning Design, and Operation of Pedestrian Facilities, 2004 edition; the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 2012 edition, (2012 AASHTO Bicycle Guidelines); American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets (AASHTO) A Policy on Geometric Design of Highways and Streets (AASHTO Road Design); and the Manual on Uniform Traffic Control Devices (MUTCD) were the primary references.

Table 1. General

Facet	Reference
 Functional Classification NC12: Major Collector (for all of NC12 north of Seahawk Dr.) ADT 3,900 vpd (2012) 	» <u>http://ncdot.maps.arcgis.</u> <u>com/home/</u> (July 13, 2015)
» Traffic Control	» FHWA, 2009 Manual of Uniform Traffic Control Devices (MUTCD) ¹
 Drainage and Stormwater Management – BMP's sized to treat or by-pass 10 year, 24-hour storm 	 » NCDOT, Roadway Design Manual, Chapter 5² » NCDENR
Inlet Tops and Grates- Grates need to be replaced so that openings are perpendicular to bike travel ways and sidewalks.	 » AASHTO Bike Guide³ » ADA⁴

Table 2. South of Aqua Crosswalk, North of Sandy Ridge Road

Criteria: Shared Use Path		Reference
 » Design Speed (D) – Adjoining Street 	» 25 mph	» As Posted
» Design Speed (D) - Path	 » 20 mph » 20MPH (minimum) Grades <4% » 30MPH (minimum) Grades <4% 	» AASHTO Bike Guide
» Radius Horizontal Curve	» 107 feet minimum	» AASHTO Bike Guide
» Superelevation/Cross Slope	» 2%	» ADA
» Stopping Sight Distance	» 115 feet	» AASHTO Road Design⁵
» Profile Grade	» 5% (or maximum of adjoining roadway)	» ADA » PROWAG ⁶
» Length Vertical Curve – for Bikes	 » Sag – 175 feet » Crest – 50 feet 	» AASHTO Road Design
» Typical Section	 » Pavement width 10 ft. » Shoulder width 2 feet min, 3-5 feet ideal @1'V:6'H or flatter 	» AASHTO Bike Guide
» Clear Zone (for Path)	» 2 feet» 5 feet (inc. shoulder)	 » AASHTO Bike Guide » NCDOT Complete Streets Planning and Design Guidelines⁷
» Clear Zone (for vehicle lane)	» 8 feet with curb» 14 feet without curb	» NCDOT Complete Streets Planning and Design Guidelines
» Vertical clearance	» 10 feet for bicyclists	» AASHTO Bike Guide, p. 3-3
 » Lateral Clearance, Horizontal Curves 	» 2 feet	» AASHTO Bike Guide
» Bridges	» Width same as paved approach, plus 2 ft. clear area on each side	» AASHTO Bike Guide
» Railing	» 54" high preferred, 48" min	» AASHTO Bike Guide

1 FHWA Manual of Uniform Traffic Control Devices (MUTCD), 2009, see http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm

2 NCDOT, <u>https://connect.ncdot.gov/projects/Roadway/Pages/Roadway-Design-Manual.aspx</u>

3 AASHTO, Guide for the Development of Bicycle Facilities, 4th edition, 2012

4 United States Access Board, Americans with Disabilities Act Accessibility Guidelines, 2010

5 AASHTO, A Policy of Geometric Design of Highways and Streets, 2011

6 United States Access Board, Proposed Public Right-of-Way Accessibility Guidelines (PROWAG), 2011, see <u>http://www.access-board.gov/guide-lines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines</u>.

7 NCDOT, Complete Streets Planning and Design Guidelines, 2012

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Table 3. Main Village Area

Criteria: Offset Sidewalks		Reference
 » Design Speed (D) – Adjoining Street 	» 25 mph	» As Posted
» Design Speed (D) - Sidewalks	» 3.5 fps to 4 fps	» MUTCD
» Radius Horizontal Curve	» n/a	
» Superelevation/Cross Slope	» 2%	» ADA, AASHTO Ped Guide ⁸
» Stopping Sight Distance (NC 12)	» 115 feet	» AASHTO Road Design
 » Intersection Sight Distance » (Side streets and driveways) 	» 225 feet	» AASHTO Road Design
» Profile Grade	 » 5%, general » 11% Max vertical grade differential » Up to 12% on short ramps 	» ADA, AASHTO Ped Guide
» Length Vertical Curve	» n/a for pedestrians	
» Typical Section	 » Pavement width: 5 feet (4 feet min), 8-10 feet when on one side of road » Shoulder width: 2 -4 feet planted on street side – overlaps with buffer 	» PROWAG» Duck Ped Plan⁹
» Buffer width	» 2-4 feet including bike lanes	» AASHTO Ped Guide
» Clear Zone (for Sidewalk)	» 2 feet	
» Clear Zone (for vehicle lane)	» 8 feet with curb» 14 feet without curb	 NCDOT Complete Streets Planning and Design Guidelines
» Vertical clearance	» 7 feet for pedestrians	» AASHTO Ped Guide
 » Lateral Clearance, Horizontal Curves 	» 2 feet	» AASHTO Ped Guide
» Bridges	» Width same as paved approach, plus 2 foot clear area on each side	» AASHTO Ped Guide
» Railing	 » 42" railings for sidewalks » Handrails @36" high, if slope >5% 	 » NCDOT Bridge Policy¹⁰ » ADA

Table 5. Crosswalks

Location	Style/Dimensions	Reference
» NC12 crossings with refuges	 » 24 inch bar type- 24 inch space – 12 feet wide » With lighting 	» MUTCD» Duck Ped Plan
» NC12 crossings, no refuge	 » 24 inch bar type- 24 inch space – 10 feet wide » With lighting 	» MUTCD» Duck Ped Plan
» Side Streets	 » 24 inch bar type- 24 inch space – 10 feet wide » With lighting 	» MUTCD» Duck Ped Plan
» Driveways	 » Need pavement if a gravel driveway » Otherwise – no treatment required 	 » ADA » NCDOT driveway aprons¹¹

Table 6. Driveways Location/Element Style/Dimensions » Plan view » Unique to each existin » Surface » Match existing pavem » Concrete preferred for » Slope crossing sidewalk » 2% Max preferred » 5% Max in retro-fit are driveways » Vertical Curves/Algebraic change (A) » No Vertical Curve if A< » Wipe down 2 feet fron » Curbs property side

Table 7. Retaining Walls

Location/Element	Style/Dimensions	Reference
» Materials	» Pressure treated timber	» Matches existing
» Construction type	» Driven sheets with piles and wales exposed	» Matches existing

Table 4. Bike Lanes

Location/Element	Style/Dimensions	Reference
» North of Aqua Crossing	» Paved Shoulder – 4 feet min	» AASHTO Bike Guide
		» NCDOT Complete Streets Guidelines
		» Duck Ped Plan
» Markings	» Add bike markings	» Duck Ped Plan

8 AASHTO, Guide for the Planning Design, and Operation of Pedestrian Facilities, 20049 VHB, Town of Duck Comprehensive Pedestrian Plan, 2014 (Duck Ped Plan)

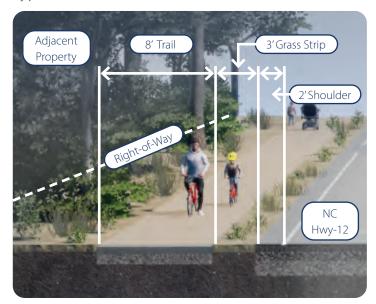
10 NCDOT, Bridge Policy, 2013, p. 6, see <u>https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/Bridge%20Policy.pdf</u> 11 NCDOT, Roadway Standard Drawings, 2012, see <u>https://connect.ncdot.gov/resources/Specifications/Pages/2012-Roadway-Drawings.aspx</u>

	Reference
ng driveway	
nent or new.	
eas with steep	» ADA » PROWAG
<7%	» NCDOT Standard, Drawing 848.02, sheet 2 of 2
m sidewalk on private	» Sidewalk clear zone

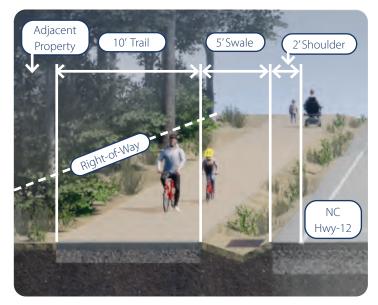
Varying Trail Widths Along the Proposed Alignment

The following sheets have color-coded enlargements of the two sections illustrating how the 8' and 10' proposed trail widths might look. The purpose of these are to help illustrate where along the proposed alignment which type of trail is being considered. The major criteria that determined either width was the available space within the right-of-way, which is generally controlled by whether or not there was a center turn lane present on the road.

Typical 8' Trail



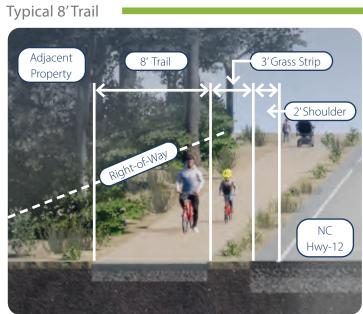
Typical 10'Trail



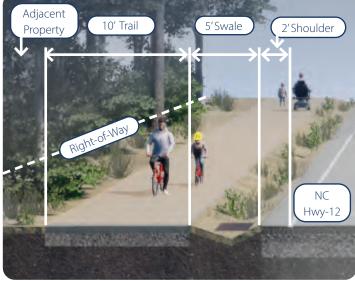


Varying Trail Widths Along the Proposed Alignment (continued)

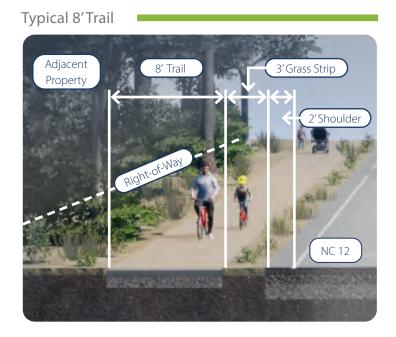




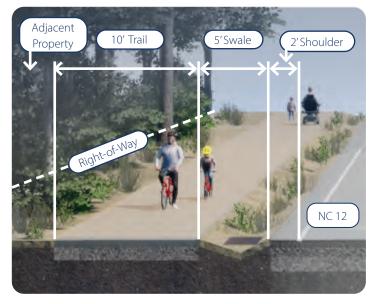
Typical 10'Trail

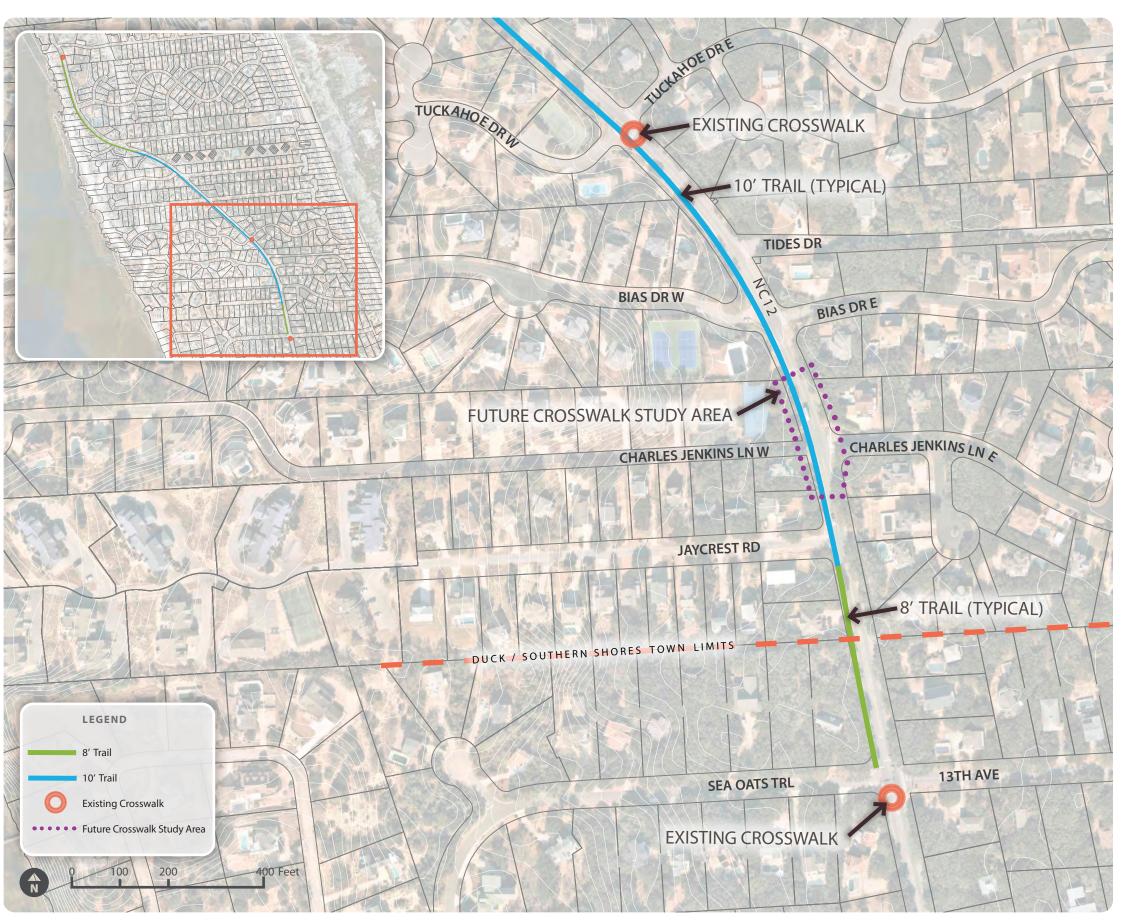


Varying Trail Widths Along the Proposed Alignment (continued)



Typical 10'Trail





Potential Shared-Use Path Design Typologies

Along the corridor, there are opportunities for both 8' wide and 10' wide paths depending on the width of the right-of-way. This section of the study illustrates what the path might look like at a given position, depending on site-specific conditions.

Generally, the proposed path will include a 2' wide shoulder from the white paint marking the drive lane, a small landscape buffer, the proposed path itself, and then a custom design treatment that responds to the existing conditions and ties everything together in the transition between the right-of-way and the adjacent private properties.

In places where the rolling coastal landform meets or encroaches on the right-of-way with dramatic slopes, opportunities for retaining walls and guard rails can enable a path alignment while responding to the existing conditions. Likewise, in areas a stormwater issue has been identified, design interventions will also include treatments to resolve problems with flooding. Throughout the corridor, the design will be considerate of and responsive to existing conditions so that no negative stormwater impacts result from the implementation of any version of the proposed shared-use path. Other factors, such as driveways or feeder street intersections will also require careful consideration. Some driveways, for instance, may need to be regraded--at least in part--in order to meet the grade of the proposed trail.

For any condition found within the corridor, the landscape drivers that enable, restrict, and/or impact the design interventions are:

- » Width of Right-of-Way
- » Topography
- » Utility Placement
- » Existing Stormwater Infrastructure OR Stormwater Issues Needing Intervention
- » Intersections (with Driveways or Feeder Streets)

Proposed 10' Wide Trail

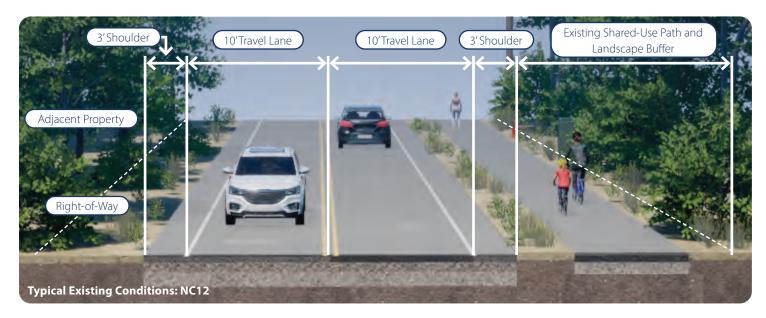
For any condition where a 10' wide alignment is proposed, it could be one of two typologies: with or without a retaining wall, and is dependent on NC12 not having an existing center turn lane. In places where the road consists of just two drive lanes, a 10' wide path is possible to construct.

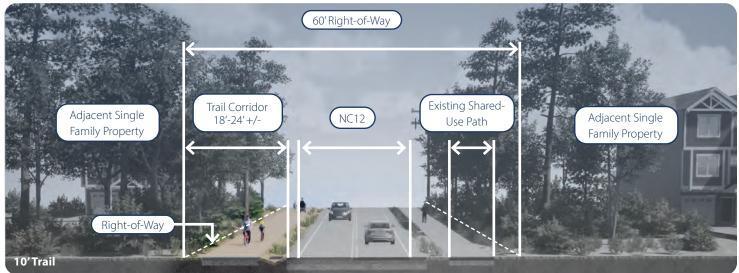
10'Trail

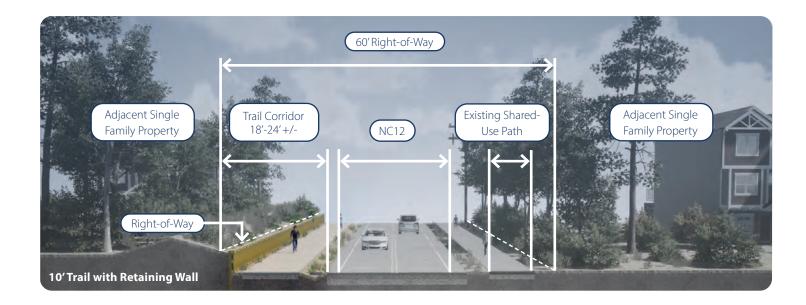
In places where the right-of-way ranges from approximately 18-24 feet from the edge of pavement, a 10' wide trail is possible. In this proposed condition, there would also be a 2' wide shoulder, a 3' wide landscape buffer strip that doubles for stormwater management and aesthetics, the path, and then a buffer of at least 3' wide between the path and the neighboring private, single family property.

10' Trail with Retaining Wall

In a few cases, there are existing conditions where the landform rises up from the shoulder of NC12 and a retaining wall is necessary so that the path can be laid down in the trail corridor. Similar to the 10' wide trial, this version would also include a 2' wide shoulder, a 3' wide landscape buffer, the proposed path, and a retaining wall that responds to the adjacent landform.







Proposed 8' Wide Trail

For any condition where an 8' wide alignment is proposed, it could be one of three typologies and is most constrained by NC12 having an existing center turn lane or transition in width.

8' Wide Trail with Guardrail

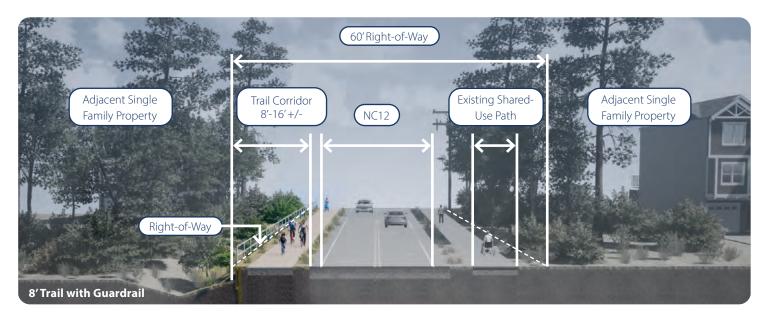
In some cases, the landform transitions at the edge of the right-ofway would require a guardrail in order for a path to be placed in the corridor. In these existing conditions, there are known low spots in either (or both) the right-of-way and the adjacent property which require careful planning. In many cases, these low spots collect and hold runoff after a storm event, so any intervention should aim to resolve or reduce the stormwater issues and create an overall positive effect. A typical section with a guardrail would include a 2' wide shoulder, 3' wide landscape buffer, the trail, and the guardrail, with the rest of the right-of-way being utilized to help reduce negative stormwater issues in the area.

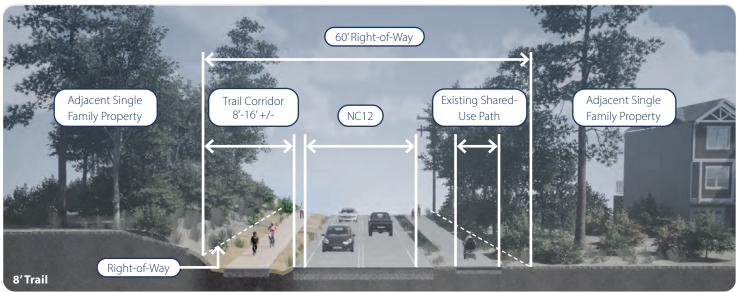
8' Wide Trail

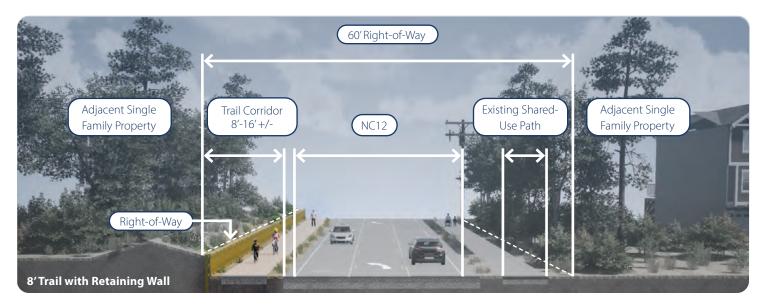
In other areas where the landform is flatter, a simple 8' wide trail would be proposed. This typology includes the 2' wide shoulder, 3' wide landscape buffer, and the trail.

8' Wide Trail with Retaining Wall

Similarly to the landscape conditions that trigger the need for a retaining wall in the 10' wide scenario, there are some existing conditions that are not only constrained by the width of the road, but also the rolling coastal landform in the right-of-way and adjacent property. Even in areas where a retaining wall is necessary, the proposed trail would still include the 3' wide landscape buffer and 2' wide shoulder as seen in the other proposed trail conditions.







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CHAPTER 3 Community Engagement



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COMMUNITY ENGAGEMENT

This feasibility study would not be possible without the sincere, thoughtful engagement from the adjacent property owners and community members of Duck and its stakeholder community. As consultants, we develop draft concepts to give the public something to react to, which helps steer the direction of the project so that through the design process, the ideas become aligned with community vision, goals, and needs. These are essential for a successful project. The community engagement step is critical for generating valuable community feedback and we appreciate the active participation from the Town and community, because this process would not be possible without your voices.

Purpose

The purpose of this step in the feasibility study is to hear back from the community members so their concerns and ideas can be considered and incorporated into the design and planning process. As part of a collaborative design process, it is integral to hear from the community so that:



Community members feel like their voices have been heard and considered



Previously unidentified issues and concerns can be raised, discussed, studied, and thought through

Design interventions can be refined in response to community input

Overall design intervention moving into recommendations can more accurately reflect what a community wants and needs 3-1

Modes of Engagement Community Input

- Overall good ideas, the trail will encourage walking to the shopping area in the Town of Duck and creates less traffic during the busy summer season.
- A pedestrian and bike path along the west side of Rt 12 south of the village is an excellent plan. It will help reduce congestion on the existing east side path, especially during peak summer season. It will also improve public safety by cutting down on jaywalking in that area.
- **6** As full-time residents of Duck, we are absolutely in favor of the west side trail.
- **6** I believe it would increase the safety of the pedestrians and increase property values on the west side.
- [I am concerned about] the mixing of modes of transportation and pedestrians on one path. Pedestrians, runners, bikes, motorbikes, scooters, and golf carts potentially all moving at the same time in both directions on the [10' wide] pathway. I support the proposed width reduction to 8'. This resolved a lot of issues for me.
- I am very much in favor of the west side development of Duck Trail. This will provide safety for west side residents who must cross Duck Road in order to access the now existing sidewalks and bike path. Residents would be able to walk into town safely.

Modes of Engagement

Community engagement for this feasibility study included an inperson live-streamed presentation and Open House event, a series of in-person and virtual interviews with property owners whose parcels are immediately adjacent to NC12, and an open comment period where Duck community members were invited to email their comments and reactions to the proposed trail alignment.

Open House Event

The Town enjoyed a strong turnout from community members on Wednesday, November 29, 2023 from 4:30-6:30 pm at Town Hall. **20 individuals came to the event** to hear the presentation from VHB Landscape Architects and the Town Planning Department.

1:1 Interviews

Across 4 days in January, in-person or virtual meeting sessions between property owners, VHB, and town staff were coordinated so residents could share feedback for the proposed trail alignment on the west side of NC12.

34 of 37 adjacent property owners, or **92%** of households, responded to the invitation to participate in an interview with VHB and Town staff.

E-Mail Comments

An open call for community feedback was opened after the Open House on November 29, 2023 and closed after January 24, 2024. **During the comment period, the team received responses from 37 households in the community and 10 email responses from adjacent property owners**. Of the community responses, 22 of 27 respondents, or **81%, were in support of the proposed west side trail**. Of the 10 adjacent property owners, 3 out of 10, or 30% were not in support, 5 out of 10, or 50% were in support, and 2 out of 10, or 20% were unclear in their correspondence about whether they supported the development of a trail on the west side.

Community Feedback

The feedback offered by community members is essential for the development of any design intervention in a given place. In Duck, there was a strong community response that both the Planning Department and VHB consultants appreciated because it will help steer how design development moves forward.

With respect to this feasibility study, there was a mixed response from respondents. Overall, the development of a west-side shareduse path was favorable to residents, but this opinion was not shared by all.

Over and over again, we heard from excited community members who are delighted at the prospect of a west side trail. Many people feel that this will increase pedestrian safety and reduce the number of stops on NC12 because the trail expands the Town's transportation network and offers people another option for travel to and from Duck Village and the attractions located there. Many west-side residents would prefer to use a trail as opposed to driving, but do not feel safe walking in the shoulder to an available crosswalk nor do they feel safe jaywalking.

At the same time, there are residents who either outright do not support the project, or those who expressed concern over any potential negative impacts of a trail being developed. These important conversations highlighted issues that the consulting and design team can work through in order to provide a solution that is inclusive and considerate.

Overall, the feedback can be categorized into three groups: questions and areas of concern, community support, and other community ideas and concerns. These three groups are summarized in the following section.

Community Response Evaluation Methodology

Evaluation of community responses follows a content-analysis methodology where the substantive content from a given response is coded for its topic or theme, general attitudes, and any evidence or claims that the respondent felt was important to share with the design team.

In this way, responses were sorted first based on their modality and then coded by local address, to determine whether the comments were coming from an adjacent property owner or a community member not immediately adjacent. In some cases, the responses could not be tied to a specific address, so these remarks were grouped with the community at large. This was repeated for all modalities: open house feedback, 1:1 interview comments, email comments given during the open comment period, and email comments that were sent directly to the Town and shared with VHB.

After respondent location was identified, they were read carefully to glean the topics of concern or support, with careful attention to any areas of concern or questions so that the consulting team could respond.

Some respondents utilized multiple modalities to be heard. These were grouped and tied back to the local address with which it was associated.

Community Feedback Results

After the data were recorded and coded, the consulting team learned the following on the next page.

Community Engagement Quick Facts



came to the Open House event

during the comment period

94% of adjacent 78% 0

property owners participated in the 1:1 interviews 78% of adjacent property owners

were in support of the proposed trail

Areas of Concern

Based on feedback given by community members, the following issues were identified as areas of concern:

- » Expense to Town
- » Property damage
- » Negative stormwater impacts
- » Illegal use by ATVs, golf carts, & other motorized vehicles
- » Insufficient property owner consideration
- Pedestrians creating short cuts through private property
- » Negative impacts from increased noise
- » Negative impacts from increased lighting

- » Negative impacts on adjacent residential privacy
- Negative impacts from changes to vegetative screening
- » Negative impacts on sense of place and aesthetics
- Consider alternative interventions:
- Crosswalks with/without signal lights on Duck Road
- Stop lights on Duck Road
- Reduced speed limit on Duck Road
- Extension of Boardwalk on Currituck Sound

Areas of Support

Based on feedback given by community members, the following benefits were identified as areas of support:

- » Increased pedestrian safety
 - By reducing the number of times they have to cross NC12 to get to Duck Village by giving them a direct path north-south on the west side
 - By expanding the trail network, more people will use it because it is convenient and not parking-dependent
 - Clearances for the trail will expand driver visibility in the corridor
- Will spur the creation of additional, organized crosswalks on NC12 and reduce the chaos and risks associated with repetitive, uncontrolled jaywalking



community comments

were in support of the proposed trail

- Encourages walking and biking from the residential areas to the Village and enhances the overall walkability of the Town
- » Increases property values along the west side of Town
- » Reduces the need for many residents and visitors to drive and would reduce congestion on NC12
- » Opportunity to resolve existing stormwater issues







Modes of EngagementCommunity Input

- This proposed project is so important to everyone who lives in the west side area. I live on Jaycrest Rd and I say a little prayer every time I or a family member attempts to cross the street, especially going toward the beach... The proposed project is a much needed one.
- As homeowners in SeaHawk, we are in favor of any improvements to pedestrian and bicycle traffic getting into Duck Village.
- We believe that the West Side Duck Trail is long overdue. It will greatly enhance the usability and safety of properties on the west side of Route 12. Currently it is very difficult and dangerous to cross Duck Road and the addition of a trail with crosswalks at key intersections will alleviate this risk. This will provide an enhancement to the value and marketability of our property. We stand firmly in support of the project.
- I think it is a terrible idea which will intrude on the privacy of a number of homes and intrude into the Entrance way, Tennis Court and Pool of Tuckahoe. It is not needed and will result in Golf carts and ATVs running up and down in a noisy manner.

- We think this is a great idea and will use it almost daily for our morning walks. I especially like the idea of adding a crosswalk at Ocean Crest. Additionally, I think some of the clearance for the sidewalk will help with visibility when turning onto NC12. Thanks for all of the hard work you do for Duck, it is appreciated!
- A great presentation and plan. We are in strong support of it. We have a ... residence on Jaycrest Rd, and find ourselves crossing NC 12 each time when we walk to the village (which is all the time). ...crossing NC 12 at Jaycrest feels dangerous because of the blind curve and much vegetation growing right up to the road, so the drivers have a hard time seeing... pedestrians [and cars]... Having a sidewalk and opening up the view to and from the road would help a lot with 1) crossing NC 12 at the proposed crosswalk at Charles Jenkins (if walking to the ocean), not having to cross at all (when walking or biking to the village) and when turning onto NC 12 with a car and would dramatically improve the safety.
- I think it would be great to have a trail on the west side of Rte 12! It would provide more space for pedestrians and bikes to comfortably navigate in that part of Southern Duck.

- I would love to see a multi-use trail on the West side of NC-12. I think this would cut down on the number of pedestrians needing to cross the street which would also reduce traffic stops/backups. A West side trail would make pedestrian travel easier and safer for those residing on the West side of NC-12.
- **6** I support the west side trail, and think it will improve pedestrian safety and access to Duck.
- I wholeheartedly support this project. As a resident on the westside of Duck Rd, it will keep me and my family from having to cross the busy road multiple times to walk into town and back. This will increase our safety and should cut down on the traffic which would have to stop multiple times to allow pedestrian crossing. I've reviewed the plans in detail and was also happy to see that the easement near our intersection will result in clearing a better site line northward around a blind turn which will also increase safety when crossing 12 to walk or bike to the beach. I'm very excited to see this project get started.

Any project that improves pedestrian safety is a win for all - we are in favor of this project.

3-4

A multipurpose trail on the west side of Duck Road, with all of the associated improvements, would be a huge safety boost for us, and for all of the residents and vacation renters on the west side of Bias Shores and the west side of the other neighborhoods in the area.

Of course, the safety concern is hugely important. But there are also the economic and access considerations: We really, really want people to come to Duck Village to spend money. And it is really helpful if they can come to Duck Village without driving there. It reduces congestion on Duck Road. It reduces the frustration of drivers waiting for a gap in traffic to turn left off Duck Road into a parking lot, and the frustration of drivers waiting for a gap in traffic to turn on to Duck Road from a parking lot or from one of the side streets. And being able to get into the Village without driving there also has the effect of helping people feel like they are part of the town, not stuck out in some isolated neighborhood. That helps bring them back year after year... But we need trails (safely separated from the road) in order take advantage.

As homeowners in SeaHawk, we are in favor of any improvements to pedestrian and bicycle traffic getting into Duck Village.



CHAPTER 4 Evaluation and Recommendations



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EVALUATION AND RECOMMENDATIONS

Toward satisfying the Town's goals and objectives with respect to transportation and stormwater issues, VHB developed a best case design scenario that showed the community what a multi-use path could look like if the Town and citizens wanted to see the widest trail possible in the study corridor. VHB also shared what the possible trail typologies could look like at both the 10' and 8' widths across several scenarios where the topography of the adjacent landscape would need additional design solutions.

Equipped with the community feedback, VHB was able to develop a set of recommendations for Duck that satisfies the Town's Comprehensive Pedestrian Plan, addresses concerns raised during the engagement process, and incorporates the input provided by adjacent property owners.

Evaluation

The initial concept for this feasibility study was developed from a compilation of studying Duck's previous planning documents (summarized in Chapter 1), which outlined goals and objectives for long-term planning, issues that the Town wanted to address, and recommended infrastructure improvements. In addition to using these planning documents to steer this study, VHB studied existing conditions surveys, conducted field visits to the site where landscape features were identified and mapped, and consulted with Duck's Town Planners. The initial concept was developed based on the extent of what the Town could accomplish in the right-of-way towards satisfying the goals and objectives of the previous planning documents, using the American Association of State Highway and Transportation (AASHTO) and North Carolina Department of Transportation (NCDOT) design criteria (see Chapter 2). This initial draft concept was presented to the public in a Town Hall meeting which occurred on November 29, 2023. A public response period then followed where residents could share their thoughts and concerns about the plan. Additionally, interviews were conducted with 34 of 36 property owners immediately adjacent to and impacted by the proposed trail alignment.

VHB evaluated the strengths and weaknesses of the concept plan based on feedback from community members and the feedback from adjacent property owners. The majority of respondents reported strong support for the trail, even when there were expressed questions or concerns about the proposed trail alignment. VHB recognizes that any responses expressing concern or disapproval of all or part of the initial draft concept plan carries valuable feedback because these are opportunities to respond with improved design interventions that satisfy both the comprehensive planning documents in place for Duck as well as the residents, property owners, and tax payers. The design team considered these concerns and issues, responded to them by making revisions to the concept plan, and have developed a position for recommendations of future work.

Design Alternatives for the Shared-Use Path

This study presented to the public a best-case scenario for accommodating the widest path possible throughout the study corridor on the west side of NC12. While a 12-14' wide shared-use path is ideal, an 8' wide path is allowable. An 8' wide path currently exists on the east side of NC12. The following section summarizes the overall character, pros, and cons of the two alternatives that were developed for this feasibility study.

Alternative A

Alternative A was developed to maximize the trail width throughout the corridor. The right-of-way is most constrained by center turnlanes and thus, this was the major defining characteristic of the trail typologies selected for this design alternative. This alternative begins with 1,756 feet of 8' wide trail, transitions to 10' wide for 3,037 feet, and then transitions back to 8' wide for the last 427 feet as it exits Duck and connects with Southern Shores

PROS:

- » Most desirable user experience by offering the most space for pedestrian and cyclist traffic
- » Provides safe travel route on the west side of NC12 for pedestrians and cyclists
- » Introduces safe, defined crosswalks over NC12 that will reduce hazardous- and traffic-slowing jaywalking by pedestrians
- » Advances the Town's Comprehensive Pedestrian Plan

CONS:

- » Added cost for wider trail for a portion of the proposed alignment
- » Perceived increased impact to adjacent property owners on the west side of NC12
- » Reduces green space in the right-of-way that could be used as a landscape buffer for aesthetic and stormwater purposes in certain areas

Alternative B

Alternative B was developed as the complement to Alternative A, where the maximum trail widths of 10' were reduced to an 8' width throughout.

PROS:

- » Reduced cost to build a narrower trail throughout the alignment
- » Provides safe travel route on the west side of NC12 for pedestrians and cyclists
- » Introduces safe, defined crosswalks over NC12 that will reduce hazardous- and traffic-slowing jaywalking by pedestrians
- » Allows for more green space in the right-of-way to introduce stormwater management and aesthetic design intervention
- » Mirrors the character of the trail on the east side of NC12
- » Advances the Town's Comprehensive Pedestrian Plan

CONS:

- » Reduced trail width potentially constrains flow of traffic along the trail
- » Less desirable user experience for approximately 58% of the

proposed alignment

Recommendations

In response to the Community Engagement and following the policy guidelines of the feasibility study, VHB has recommendations for the alignment of the shared-use path as well as other improvements to resolve existing stormwater issues and increase safety for pedestrians, cyclists, and motor vehicles. Alternative B is the stronger choice because it achieves the Town's goals, offers a design solution that mirrors the character of the existing trail on the east side of NC12. There are also recommendations for the Town and adjacent property owners in advance of design and future construction.

Shared-Use Path Design Recommendations

- » 8' Shared-Use Path throughout
- » New Crosswalks (to be determined following a pedestrian/ cyclist/traffic study in the corridor)
- » Retaining walls/guardrails where necessary to respond to existing rises or drops in landform
- » Pruning and clearing of vegetation in right-of-way to enhance visibility and clearance
- » Stormwater improvements throughout the corridor in response to excessive ponding and flooding
- » Relocated utilities to accommodate the proposed path alignment

Town Recommendations

» Bury overhead utilities

While the majority of utility conflicts can be resolved during construction, overhead utilities still present a challenge for design development. This has several practical and aesthetic benefits, including:

- Improving visual character of the NC12 corridor
- Removes risk of damage to utility lines by high winds and storms
- Removes risk of collisions with a pole, regardless of mode of transportation
- Allows for a trail alignment that can hug the right-of-way more closely and results in not having to encroach on adjacent private property

There are some challenges for coordinating this improvement in advance of the construction:

- Long lead times in negotiating with Dominion to bury utilities
- Time is required for Dominion to produce a cost estimate for the work to put the utilities underground

Depending on the work order queue with Dominion, the lead times for these activities could range from several weeks to months, and the earlier this is set into motion, the more likely the Town is to have it settled so that the optimal window for shareduse path construction can be secured.

» Conduct a pedestrian/cyclist/traffic study within the corridor to identify optimal locations for future crosswalks

As a similar study was completed for the Town's 2014 Comprehensive Pedestrian Plan, where volunteers stationed themselves along different points in the area of interest along NC12 and counted adult and child use by transportation type, whether they utilized an existing crosswalk, and whether they engaged in a mid-block crossing. Repeating this study for the area of interest south of the Village to the town line will help to guide the design team on recommendations for future crosswalk placement.

Adjacent Property-Owner Recommendations

» Locate your property lines using existing survey pins/ markers present

Understanding the relationships between one's existing property lines, existing structures, existing vegetation, and the existing right-of-way will offer some spatial clarity on where one could expect there to be disturbance.

» Plant a vegetative screen

Preparing for and planting a vegetative screen in advance of any shared-use path construction will go a long way toward increasing the visual and physical buffer between private property and the right-of-way. Introducing plants as soon as possible enables them to become established and will give adjacent property owners a head start in terms of preparing for a loss of the vegetative screening that has historically been provided by an overgrown vegetation in an underutilized right-of-way. Property owners should site any new screening plants in such a way that they have plenty of room to mature and are not harmed or damaged during or after construction.

Additional Considerations

Limits of Construction Window

The peak tourism season and use of NC12 is well documented. As Duck's tourism season extends between May and September, the construction activities within the corridor should occur outside of peak times, otherwise risking compounding existing traffic issues along the route.

Segment 1 Recommended Trail Corridor Improvements

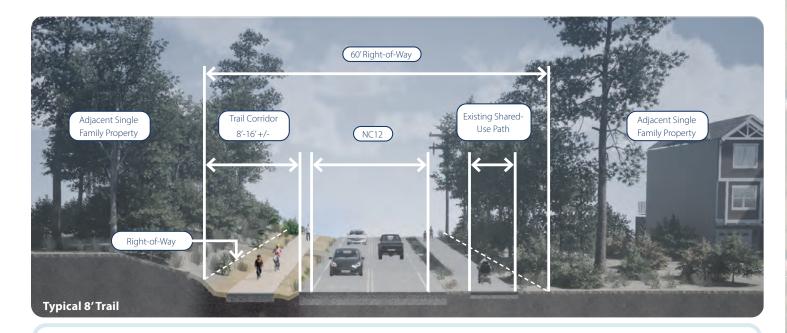
In segment one, the following improvements are being considered: developing an 8' wide shared-use path, improving and enhancing visibility, sight lines, and clearance on the path, and the relocation of utilities.

Enhance Visibility and Clearance

Existing vegetation in this segment consists of several mature and young live oak trees and pine trees; small shrubs, featuring wax myrtles, boxwoods, and other standard landscaping varieties such as perennial grasses and flowering roses. While many of the trees within this segment are far enough from the right-of-way that they will not be significantly impacted by development, there are many which will require protection to minimize impact to the root zone, and others that will need to be completely removed to create adequate clearance for the trail alignment and clear sight lines for drivers and shared-use path users.

Relocate Utilities

Utility lines run parallel to NC12 in the right-of-way. Due to conflicts with the utility access points, these would need to be relocated to accommodate the proposed trail alignment.



IMPROVEMENTS LEGEND Enhance 8' Shared New Retaining Visibility and Use Path Wall Crosswalk NEW Clearance Future Stormwater Relocate Crosswalk Utilities Improvements Study Area

1174 DUCK RD 172 DUCK RD 170 DUCK RD

Segment 1 Proposed Trail Alignment



Segment 2 Recommended Trail Corridor Improvements

In segment two, the following improvements are being considered: 8' shared-use path, future crosswalk study, visibility and clearance enhancements, retaining walls, and utility relocation.

Retaining Wall

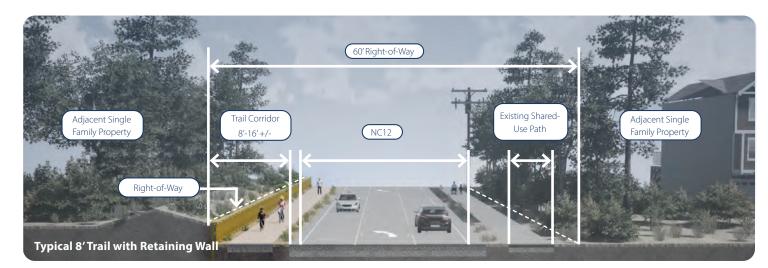
The landscape condition in this segment of the trail is such that the driveways to reach the private residences are sloped in a way that presents design challenges for available space in the right-ofway for a shared-use path. In order to accommodate the difference in grades, two retaining walls are being proposed. The first, approximately 82' in length, extends from the driveway shared with the residence at 1168 Duck Road to approximately 2/3 of the way across the front of the 1166 Duck Road property. The second retaining wall, approximately 95' in length, extends from just beyond the driveway entrance for the 1162 Duck Road residence, across the front of this parcel, and in front of about 15' of the 1160 Duck Road residence, ending before the driveway.

Enhance Visibility and Clearance

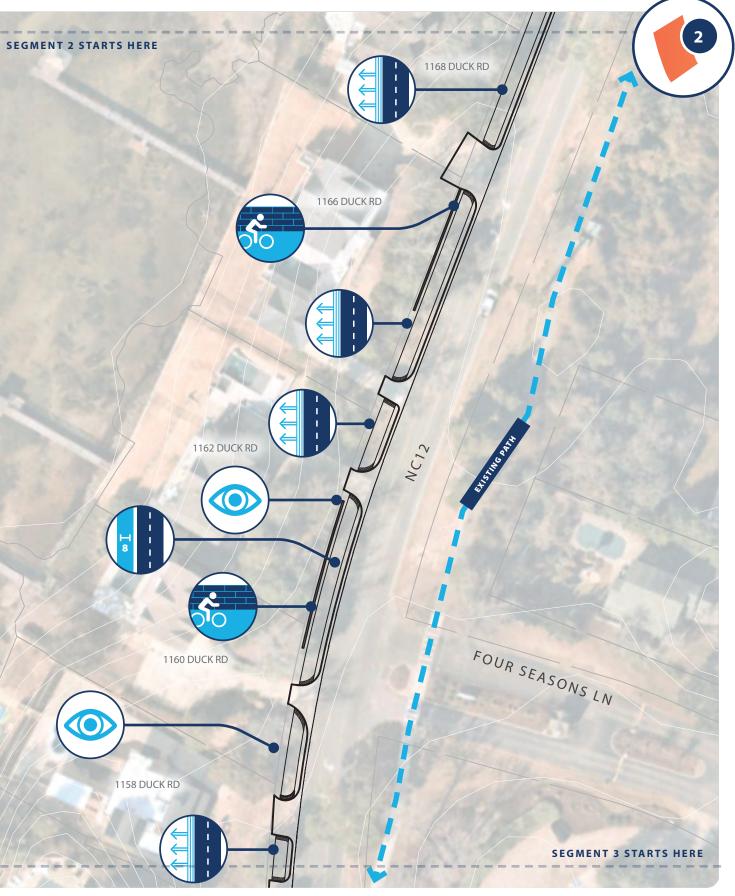
Several properties contained in this segment have ornamental trees, formal hedges and herbaceous plantings either near the driveway aprons or in front of the residence. Many of these plantings are located in the right-of-way and will have to be removed for path construction. There are also young canopy trees, including live oak trees, and many of these specimens will have to be pruned or removed completely to accommodate the footprint for the path and retaining wall.

Relocate Utilities

As is true for segment one, there are several utilities running parallel to the roadway that will require relocation in response to the proposed path.







Segment 2 Proposed Trail Alignment



Segment 3 Recommended Trail Corridor Improvements

Within segment three, the following design improvements are being proposed: 8' shared-use path, a new crosswalk on Amy Lane, visibility and clearance enhancements, a reverse retaining wall, stormwater management, and utility relocation.

8' Shared-Use Path

An 8' wide path is proposed here. Due to topography challenges in this segment, reverse retaining walls are proposed.

New Crosswalk

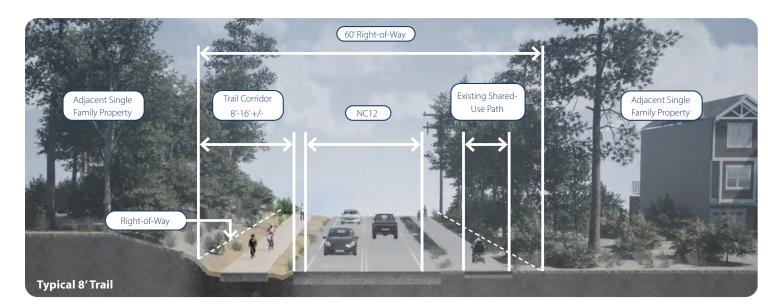
Amy Lane needs a crosswalk for safety reasons. This segment is a strong candidate for a future crosswalk study to consider where an optimal location for a new crosswalk across NC12 could be.

Enhance Visibility and Clearance

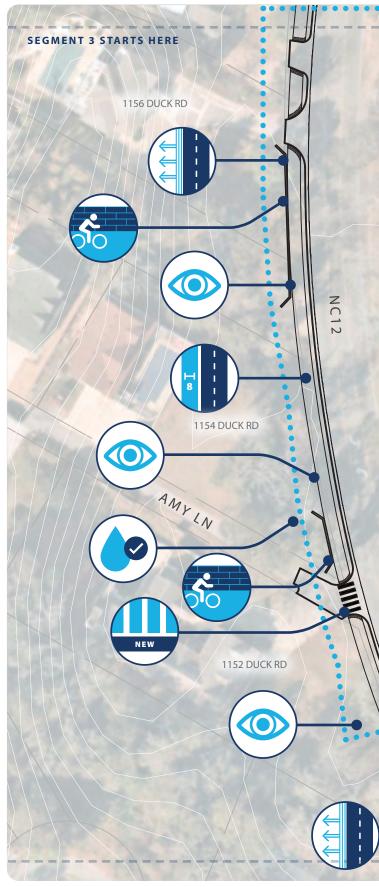
Pruning and clearing of undergrowth in this segment will be necessary to enable appropriate clearances for trail users and adequate sight distances for drivers.

Relocate Utilities and Stormwater Enhancements

Utility conflicts in this segment will need to be addressed so that services are accessible for maintenance and repair after the proposed trail is constructed. An existing telephone pole located near 1152 Duck Road and 102 Nash Road presents a design challenge. It is recommended to either bury the utilities or shift the pole away from the road. The drawing shows what routing around the pole might look like. Due to low lying areas and local flooding, there are opportunities to improve drainage and reduce future flooding here.







Segment 3 Proposed Trail Alignment



Segment 4 Recommended Trail Corridor Improvements

Improvements being proposed in this segment of the corridor include the 8' shared-use path, new crosswalks, a retaining wall, visibility and clearance enhancements, and utility relocation.

8' Shared-Use Path

The proposed shared-use path is 8' wide, although with a wider right-of-way, there are more opportunities for stormwater management; pragmatic interventions, such as a retaining wall and aesthetic interventions.

New Crosswalk

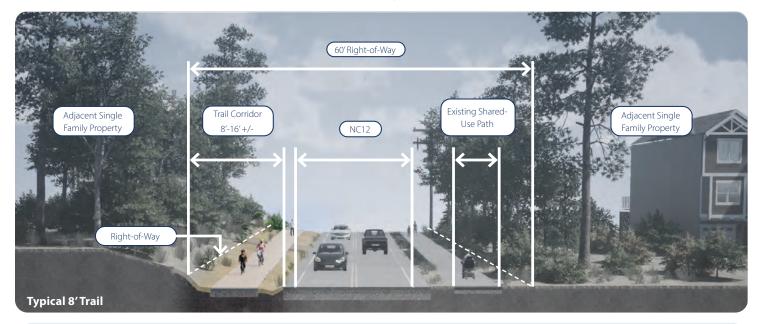
This segment includes two intersections on the west side: Nash Road and Settlers Lane, both of which will require crosswalks for the safety of path users and motorists. Additionally, a future crosswalk study should be conducted around the Nash Road and Plover Drive intersection.

Enhance Visibility and Clearance

The existing vegetation for portions of this segment are dense immediately adjacent to NC12 between the Nash Road and Settlers Lane intersections. Selective clearing and pruning will be required to provide adequate clearance for the proposed trail.

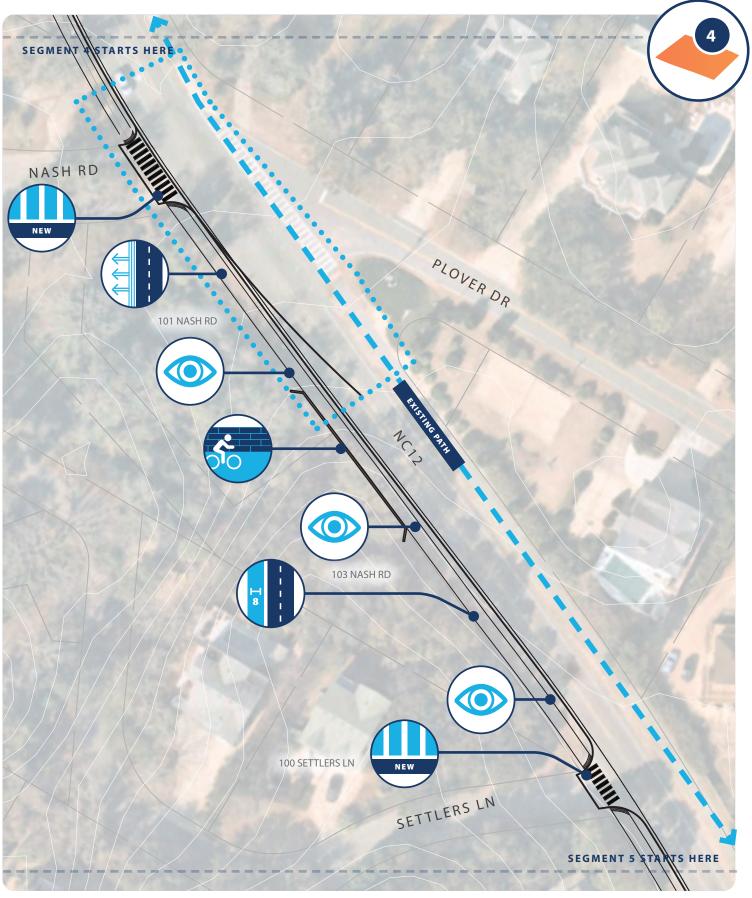
Relocate Utilities

Similar to the rest of the study corridor, the existing utility access points will need to be moved for the proposed alignment. The trail alignment in the adjacent graphic illustrates a route that avoids conflict with a telephone pole should burial of utilities not be prioritized.



IMPROVEMENTS LEGEND





Segment 4 Proposed Trail Alignment



Segment 5 Recommended Trail Corridor Improvements

Improvements in this segment include an 8' shared-use path, a new crosswalk, enhancing visibility and clearance, and relocation of utilities.

New Crosswalk

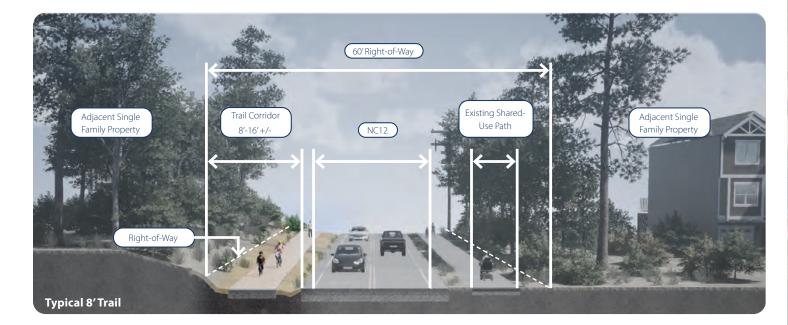
The trail crossing at Osprey Ridge Road will require a crosswalk to ensure path-user and motorist safety in the intersection.

Enhance Visibility and Clearance

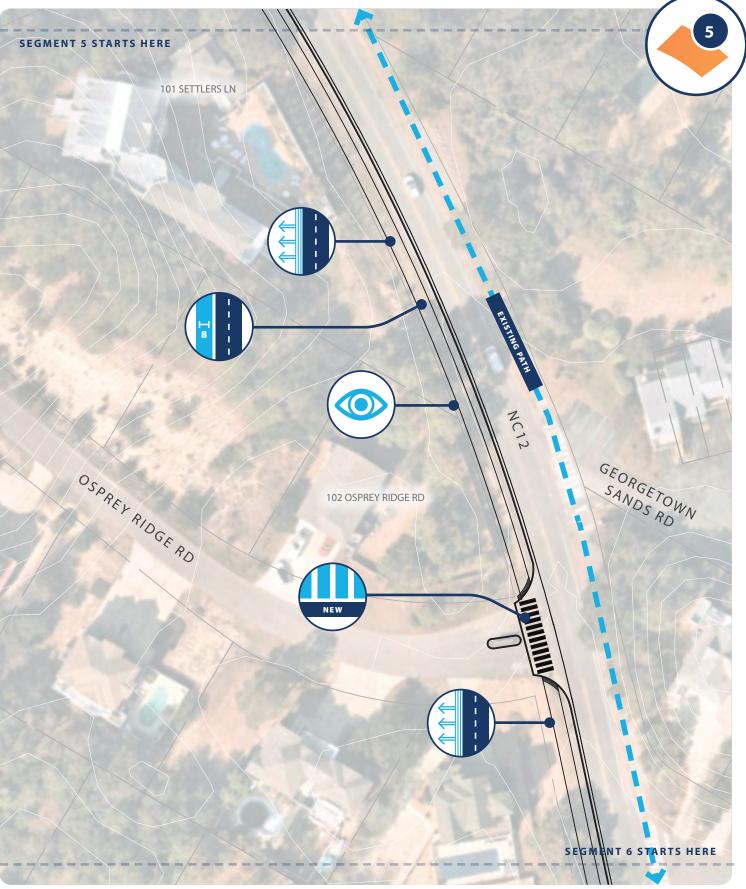
Most of segment five is relatively clear with respect to vegetation in the right-of-way. The landform does slope up and away from NC12 and there are existing trees, shrubs, and grasses located on the slope; however, most of these will not be impacted by the proposed trail alignment. Some areas may require clearing and pruning to accommodate the proposed alignment.

Relocate Utilities

Utility conflicts in this segment will need to be addressed so that services are accessible for maintenance and repair after the proposed trail is constructed.



IMPROVEMENTS LEGEND Enhance 8' Shared New Retaining Visibility and Use Path Wall Crosswalk NEW Clearance Future Stormwater Relocate Crosswalk Utilities Improvements Study Area



Segment 5 Proposed Trail Alignment

Segment 6 Recommended Trail Corridor Improvements

Proposed improvements in this segment include the 8' shared-use path, new crosswalk, stormwater improvements, enhancing visibility and clearance, and utility relocation.

New Crosswalk

There will need to be a crosswalk installed at the intersection of Sea Hawk Drive West. Additionally, a future crosswalk study is recommended to identify a preferred location for safe pedestrian passage across NC12.

Stormwater Improvements

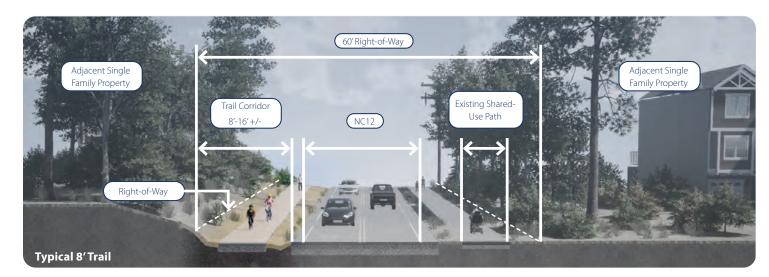
This segment has existing stormwater infrastructure, characterized by a series of storm inlets and underground detention. A new stormwater feature is being proposed on the north side of the Sea Hawk Drive West and NC12 intersection. It would increase capacity for stormwater storage and would have the ability to treat runoff for suspended sediment and pollutants.

Enhance Visibility and Clearance

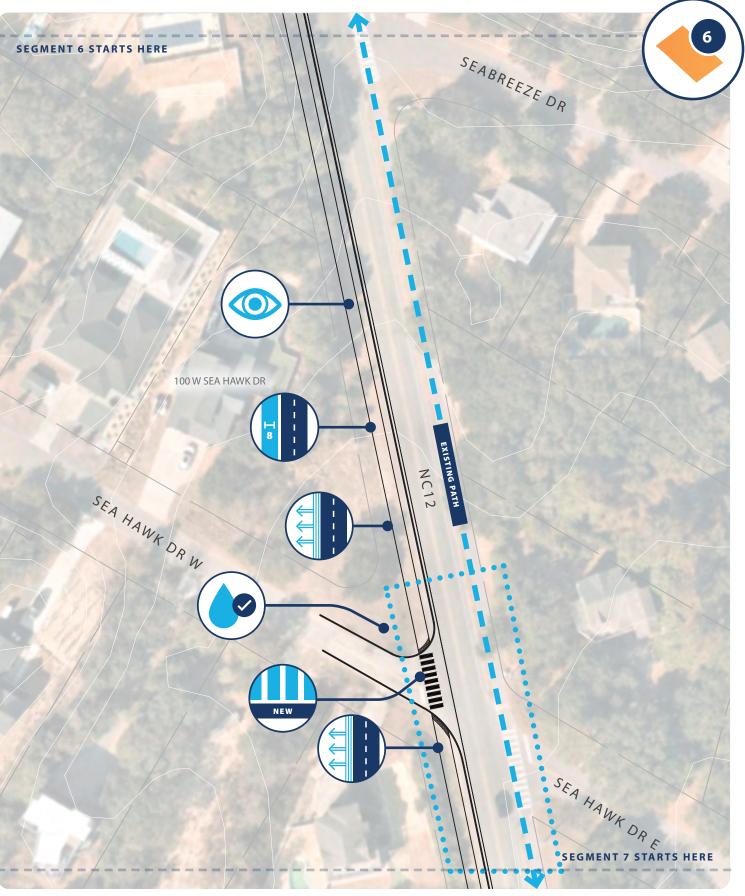
Much of the shoulder of this segment is characterized by grasses and a mixture of young live oaks, pine trees, and coastal shrubs that have become overgrown. Some amount of pruning and clearing of vegetation is needed for sight lines and to accommodate the proposed alignment.

Relocate Utilities

Utility conflicts in this segment will need to be addressed so that services are accessible for maintenance and repair after the proposed trail is constructed.







Segment 6 Proposed Trail Alignment



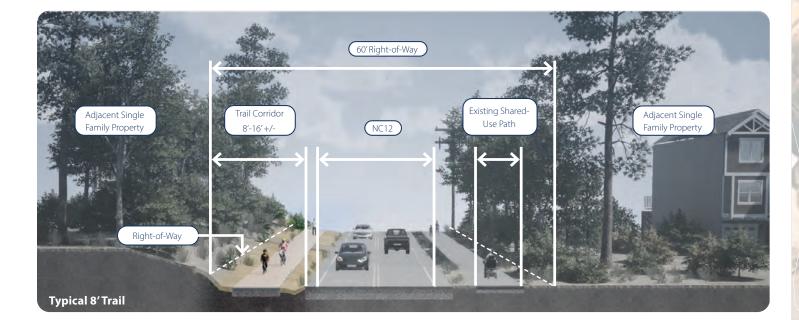
Segment 7 Recommended Trail Corridor Improvements

Improvements in this segment of the trail include a 8' shared-use path, enhancements to visibility and clearance, and the relocation of existing utilities.

Enhance Visibility and Clearance

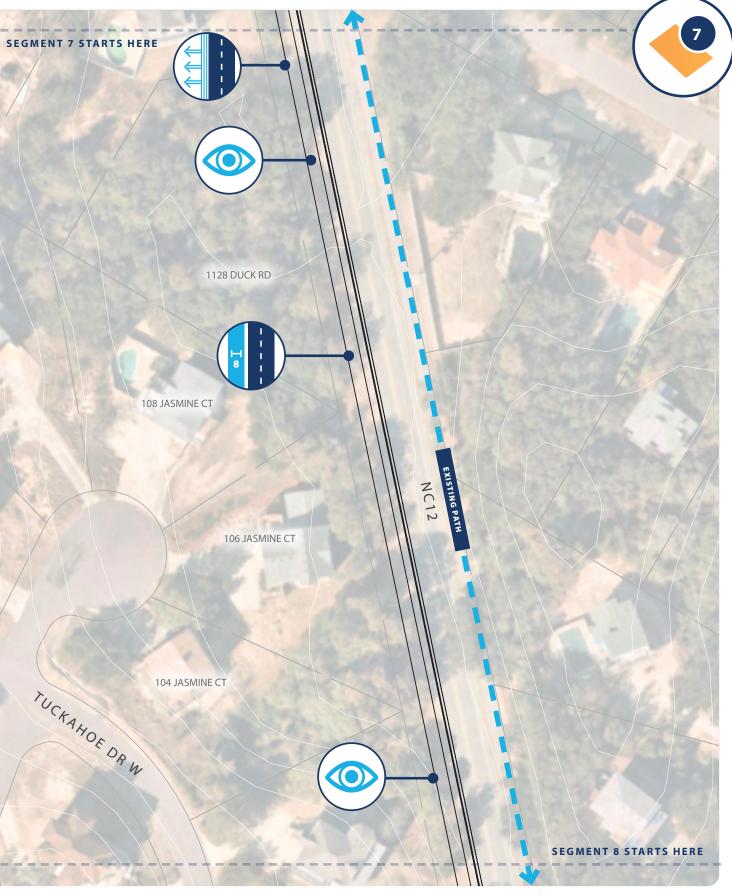
Relocate Utilities

From the road, this segment is buffered by a nearly-continuous wall of vegetation extending its entire length. To ensure adequate clearance for the path, some vegetation will have to be cleared and pruned. Close attention to the mature live oak trees will be observed so that impact to those slow-growing specimens will be minimal. Utility conflicts in this segment will need to be addressed so that services are accessible for maintenance and repair after the proposed trail is constructed.









Segment 7 Proposed Trail Alignment

Segment 8 Recommended Trail Corridor Improvements

Segment eight proposes several landscape interventions to improve landscape function and accommodate the proposed trail alignment. These include an 8' shared-use path, a new crosswalk, a low retaining wall, visibility and clearance enhancements, and utility relocation.

New Crosswalk

In response to creating the shared-use path, there is a new crosswalk proposed for the intersection of Tuckahoe Drive West.

Retaining Wall

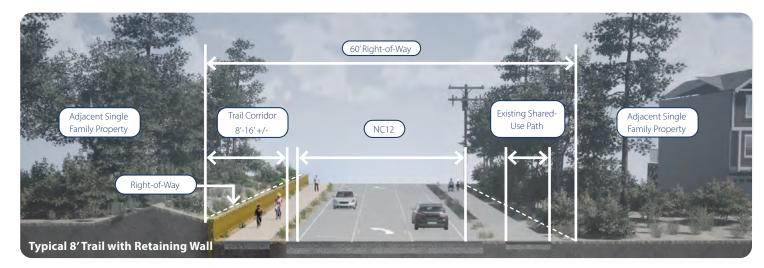
Two retained areas--a wall and either a high curb/low wall are proposed in this segment of the feasibility study. The first is a retaining wall, approximately 120'long, and is required to accommodate a dramatic rise in slope where the 100 West Tuckahoe Drive parcel meets the right-of-way. The second retained area, approximately 335' in length, is sited just south of the Tuckahoe Drive West intersection and extends from about half way down 101 West Tuckahoe Drive almost all the way to the intersection of West Bias Drive into segment nine. This second area must clear the stormtech stormwater infrastructure and should have the lightest touch in terms of grading the dune to accommodate the trail.

Enhance Visibility and Clearance

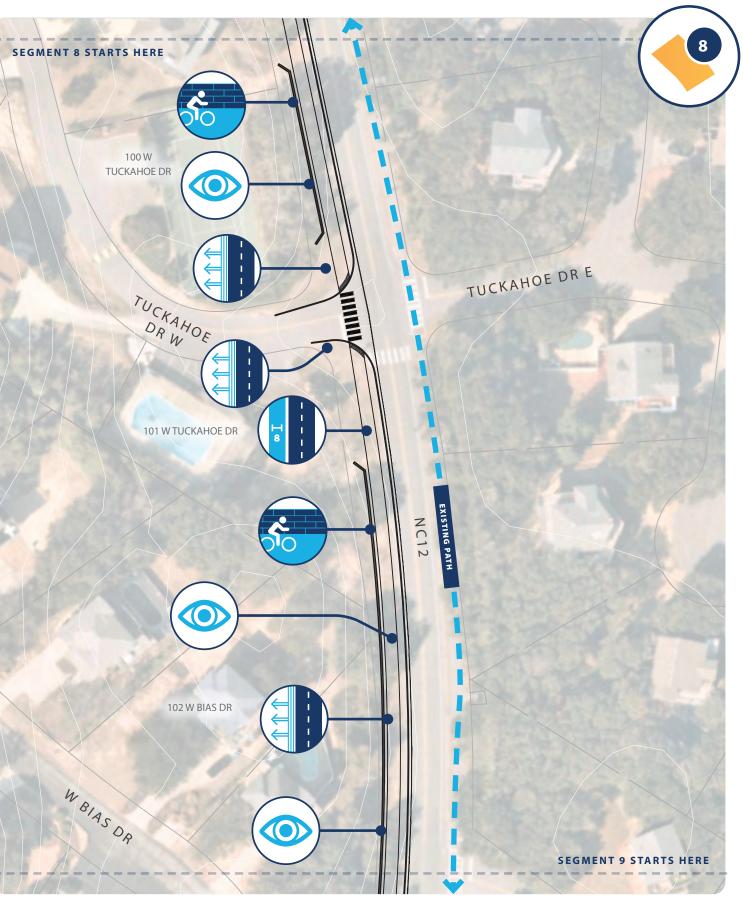
As with the previous segments discussed, there is considerable vegetative growth in the right-of-way adjacent to NC12. Trees and shrubs will need to be pruned and possibly cleared entirely in places, to accommodate the proposed trail alignment.

Relocate Utilities

Utility conflicts in this segment will need to be addressed so that services are accessible for maintenance and repair after the proposed trail is constructed.







Segment 8 Proposed Trail Alignment

Segment 9 Recommended Trail Corridor Improvements

Improvements proposed for this segment of the corridor include the 8' shared-use path, new crosswalks, retaining walls, stormwater improvements, enhancements to visibility and clearance, and relocated utilities.

New Crosswalk

The West Charles Jenkins Lane trail crossing requires a crosswalk and it is recommended to include the Charles Jenkins Lane intersection in a future crosswalk study.

Stormwater Improvements

Existing stormwater infrastructure and retention areas, specifically on the north side of the West Charles Jenkins Lane intersection will be enhanced to resolve existing stormwater issues.

Retaining Wall/Guardrail

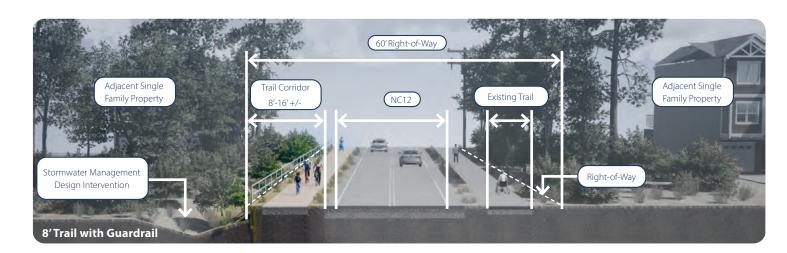
The retaining wall that started in segment eight, extends approximately 75' into the view here in segment nine. A low retaining wall may be needed at 101 West Bias Drive and it should also be noted that the proposed alignment between West Bias Drive and West Charles Jenkins Lane will include a reverse retaining wall/guardrail in the design so the path can respond to the proposed stormwater management improvements.

Enhance Visibility and Clearance

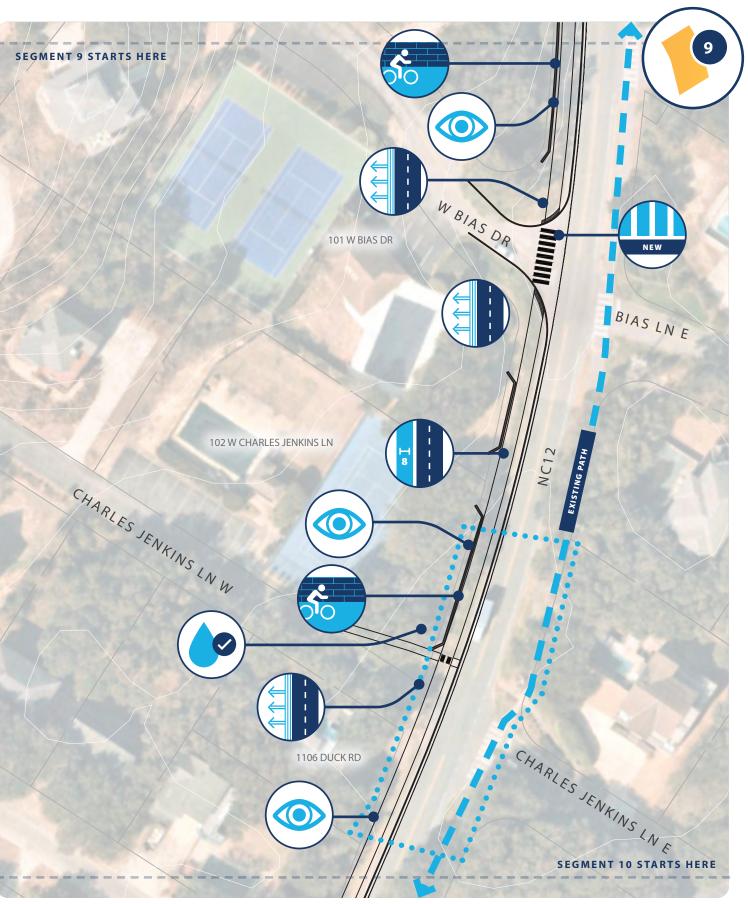
Some pruning and clearing will be required to accommodate the proposed trail alignment to ensure adequate sight lines and safety for motorists and path users.

Relocate Utilities

Utility conflicts in this segment will need to be addressed so that services are accessible for maintenance and repair after the proposed trail is constructed.







Segment 9 Proposed Trail Alignment

Segment 10 Recommended Trail Corridor Improvements

In this segment of the corridor, improvements include the 8' wide shared-use path. There is also a new crosswalk being proposed for Jaycrest Road. As with the previous segments of the study, there will be enhancements to visibility and clearance as well as utility relocation.

New Crosswalk

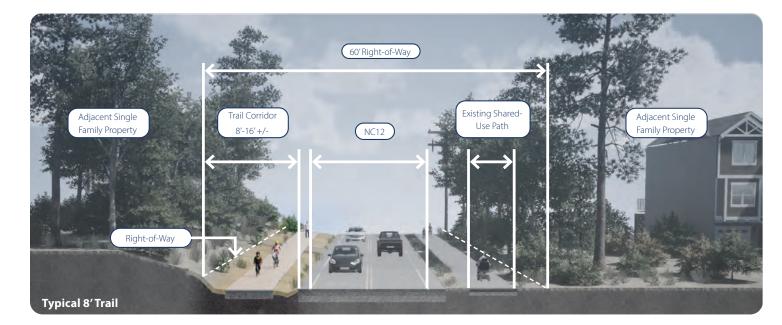
Jaycrest Road needs a crosswalk to create a safe path crossing.

Enhance Visibility and Clearance

Dense vegetation in and adjacent to the shoulder of the right-ofway means that select clearing and pruning will be required to accommodate the proposed trail alignment. As with other segments discussed in this study, the dominant tree species present is live oak; which, due to its slow growth and sprawling habit, should be pruned with care to reduce the overall impact to the plant and visual character of the corridor.

Relocate Utilities

Utility lines run parallel to NC12 in the right-of-way. Due to conflicts with the utility access points, these would need to be relocated to accommodate the proposed trail alignment.





SEGMENT 10 STARTS HERE 101 JAYCREST RD 1100 DUCK RD 393 SEA OATS TRL

Segment 10 Proposed Trail Alignment

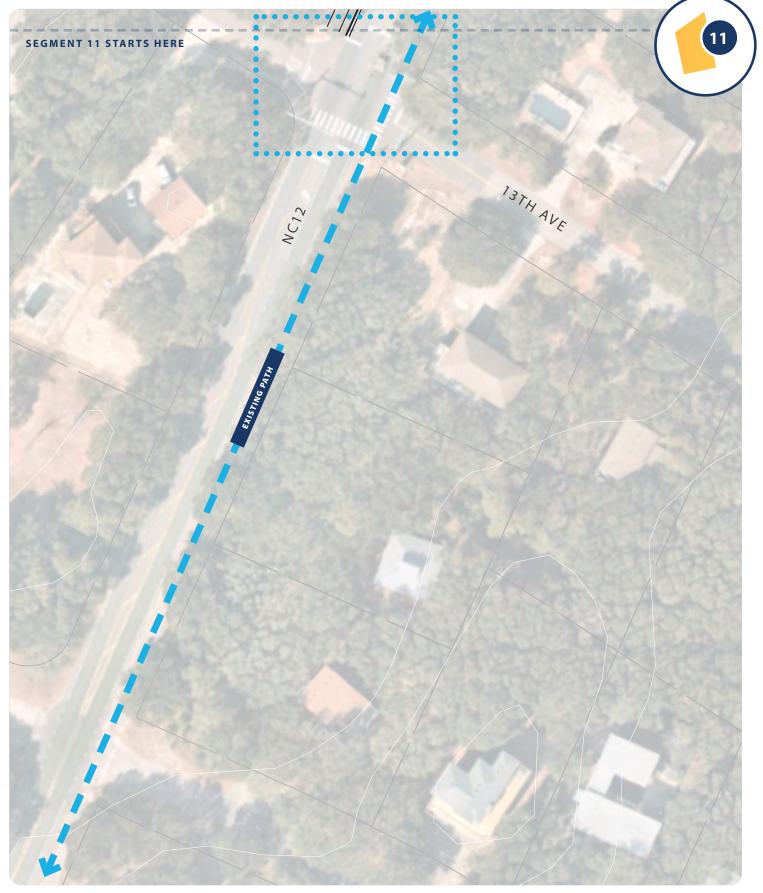


Segment 11 Recommended Trail Corridor Improvements

In this focused segment, there are more questions around collaboration with the Town of Southern Shores than there are proposed interventions at this time. The existing traffic signal poles on each corner of the intersection would be cost-prohibitive to move. If a shared-use path did come all the way to the intersection, we would propose new crosswalks to connect Sea Oats Trail and 13th Avenue on the north end of the intersection as well as on the west side where NC12 crosses Sea Oats Trail.

We also recommend this intersection being included in the future crosswalk study to determine whether it would be beneficial to add additional crosswalks in this area to strengthen the local multi-modal transportation network.





Segment 11 Proposed Trail Alignment

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4-14



CHAPTER 5 Implementation



Executive Summary

Chapter 1. Introduction

Chapter 2. Study Considerations and Alternatives Development

Chapter 3. Community Engagement

Chapter 4. Evaluation and Recommendations

Chapter 5. Implementation

Appendix A. Complete Record of Community Comments







IMPLEMENTATION

The proposed multi-use trail project is working to complete missing segments of the pedestrian and non-motorized vehicle transportation network by connecting Duck Village to the Southern Shores border along the NC12 corridor.

This study addresses missing infrastructure on the westside of NC12 and further promotes pedestrian and bicycle connectivity as identified in the **2014 Comprehensive Pedestrian Plan**, the **2020 Comprehensive CAMA Land Use Plan**, and a stated goal in the **Duck 2032 Vision Statement**.

This chapter recaps the study goals and highlights the community engagement efforts before presenting a proposal on recommendations on phasing, an implementation plan with detailed action items, and feasibility study-level estimated project costs.

Study Goals

Advance Roadway Safety. Through the development of the multi-use trial, pedestrians and bicyclists will be removed from the roadway and given a separate space. This will allow for safer mobility options for all users.

Improve Stormwater Safety. The multi-use trail alternatives have been designed to consider the environmental constraints along NC12. The overall designs strive to advance and improve stormwater management strategies.

Introduce Alternative Modes of Transit. By developing the multi-use trail, residents will be provided with new infrastructure that will allow them to walk or bicycle to the village. Thus, creating more opportunities for increased mobility options that were unavailable before.

Provide Connectivity. One of the primary objectives associated with the project is to provide Duck residents with a safe means to access the town village. Through providing this access, residents will have increased transit and mobility options.



Community Engagement

Community engagement is essential for project success. It is conducted so that community members voices are heard and considered; so that previously unidentified issues and concerns can be raised, discussed, studied, and thought through; so that design interventions can be refined in response to community input; and so that the overall design interventions proposed can more accurately reflect what a community wants and needs.

This feasibility study had a strong response rate during the 1:1 interviews with adjacent property owners, open town hall event and through the open call for emails. These opportunities to hear community voices offered the consulting team valuable feedback and insight to help steer this proposed implementation plan.

In Review of Community Engagement Efforts, the Consulting Team Found:

- » **94%** of adjacent property owners chose to participate in the 1:1 interviews
- » **78%** of adjacent property owners were **in support** of the proposed trail
- » 14% of adjacent property owners were not in support of the proposed trail
- 8% of adjacent property owners were uncommitted
- » 81% of comments gathered were in **support** of the proposed trail
- » **37** households opted in to the call for email comments
- » 20 individuals went to the Town Hall event

General Areas of Concern

- » Expense to the Town and Taxpayers
- » Negative impacts on stormwater management
- » Negative impacts to screening and privacy
- » Pedestrians creating "short-cuts" through private property

Recommended Phasing

For the least amount of disruption as possible, the phasing of construction should occur during the tourist off-season. Together with Town Planners, the construction schedule should be coordinated so that trail improvements fall after utilities can be placed underground and after a study of pedestrian and cyclist traffic in the corridor to identify optimal locations for future crosswalks.

With these imperatives in mind, the consulting team recommends four phases toward the accomplishment of the multi-use trail along the westside of NC12.



Major Utility Relocation

Phase I: Aqua Restaurant to Plover Dr

Phase II: Plover Dr to Tuckahoe Dr

Phase III: Tuckahoe Dr to Southern Shores

Implementation Plan

To be positioned for the recommended pre-construction and construction phases of the multi-use trail, there are key steps the Town needs to take:





1 Apply for Grant Funding

The consulting team identified several sources of funding that would help ease the burden of cost in the form of awards ranging from local, state, and federal sources:

Transportation Alternatives

- » The Transportation Alternatives (TA) program works to provide funding opportunities for generally smaller-scale transportation projects. Covering:
- Pedestrian and bicycle facilities
- Vegetation management
- Environmental mitigation related to stormwater
- Recreational trails
- Safe routes to school
- Vulnerable road user safety assessments
- » Controlled by the NCDOT and requires applicants to match funding; Federal Highway Administration (FWHA) supported
- <u>https://www.fhwa.dot.gov/environment/transportation_alternatives/</u>

Recreational Trails Program

- » The Recreational Trails Program (RTP) allocates funding for the maintenance and creation of trails for both motorized and non-motorized users.
- Reimbursement grant program; funds must be spent and then reimbursed upon completion of deliverables
- Reviewed by the North Carolina Trails Committee, recommendations are made to the Secretary of the Department of Natural Resources; the Secretary makes the final determination on grant awards
- Controlled by the FHWA and requires applicants to match funding
- https://trails.nc.gov/trail-grants

Highway Safety Improvement Program

- » The North Carolina Highway Safety Improvement Program (HSIP) is a program that analyzes traffic issues throughout the state.
- » Provides a continuous and systematic process to identify and review specific traffic safety concerns
 - A system of safety warrants is developed to identify potentially deficient locations
 - Active projects include installation of sidewalks, pedestrian signals, high visibility crosswalks, curb ramps, and other improvements
 - <u>https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx</u>

Spot Safety Program

- » The Spot Safety Program is used to develop smaller improvement projects to address safety and operational issues
- » Project criteria used to select projects for recommendation include, but are not limited to:
 - Frequency of correctable crashes
- Severity of crashes
- Delay
- Congestion
- Effect on pedestrians and schools
- Division and region priorities
- Public interest
- » Controlled by NCDOT; A Safety Oversight Committee reviews and recommends Spot Safety projects to the Board of Transportation for approval and funding.
 - Maximum award per project is \$400,000
 - <u>https://connect.ncdot.gov/resources/safety/Pages/NC-</u> <u>Highway-Safety-Program-and-Projects.aspx</u>

Outer Banks Visitors Bureau

- » The Tourism Impact Grant (TIG) is designed to help Dare County nonprofits and governments with programs or services needed due to the impact of tourism
- » Projects may include beach accesses, walkways, attraction capital projects
- » Specific criteria must be met to qualify and receive grant funding
 - Match required for the TIG is based on total amount of award
- Projects receiving funding must be completed in 1 year with the possibility of extensions if approved in writing by the Board
- https://www.outerbanks.org/grants/

Powell Bill Funds

- » State funds primarily for the resurfacing of streets within the corporate limits of the municipality, may also be used for:
- Planning, construction, and maintenance of bikeways, greenways, and sidewalks
- Traffic control devices and regulatory signs
- <u>https://connect.ncdot.gov/municipalities/State-Street-Aid/</u>
 <u>Pages/default.aspx</u>

State Planning and Research Funds (SPR)

- » Funds planning and research activities for highway and public transportation developments
- » Program aims to advance transportation resilience, reduce stormwater impacts, and boost travel and tourism
- » https://connect.ncdot.gov/projects/planning/Pages/ Transportation-Planning-Program-and-Services.aspx







The Outer Banks

outerbanks.org

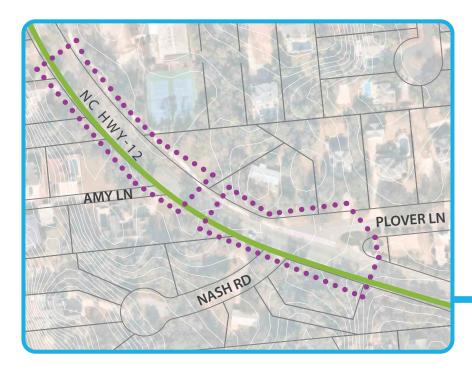


2 Transportation Planning Study

The consulting team identified four intersections along the project corridor which could be good candidates for a crosswalk location. The future study area locations that were identified are called out in the graphics to the right. A study would support the decisionmaking process such that Duck, its residents, and tourists have maximum benefit from the future design interventions. Recommendations to inform final design and planning efforts comes from a transportation planning study that uses criteria and methods from the <u>North Carolina Pedestrian Crossing Guidance</u> <u>manual</u> (2015). This document describes four general steps:

- » Step 1: Document Existing Characteristics
- » Step 2: Unsignalized Crossing or Midblock Crossing Assessment
- » Step 3: Additional/Alternative Treatments Assessment
- » Step 4: Pedestrian Hybrid Beacon (PBH) Assessment

These steps are coupled with key information gathered about pedestrian and vehicular volumes, roadway cross-section and design attributes, vehicular speed, and other factors. When the data are gathered, a series of flow charts for each assessment and their respective thresholds and outlined criteria are engaged to develop a set of recommendations. Once the exercise is complete and recommendations for crosswalks or other improvements to reduce pedestrian-vehicular conflicts, hazards, and fatalities are generated, decisions can be made about which strategies will be incorporated into the final design.









Obtain On-Ground Topographic Survey

An on-ground topographic survey involves detailed measurements and mapping of the natural and man-made features of a given area of land, as well as elevations and contours. The primary elements involved in conducting a survey are:

- » Preparation and planning
- » Permissions and access
- » Equipment and tools
- Total station optical instrument
- GPS receivers
- Drones
- Measuring instruments, stakes and markers
- Software for collection, processing, and mapping of raw topographic information
- » Data collection
- Horizontal positioning
- Vertical positioning
- Feature identification
- Boundary marking
- » Field notes and documentation
- Keeping detailed field notes, sketches, and photographs of the survey area
- Documenting the condition, type, and position of all significant features
- » Post-processing
- Data verification: checking accuracy and completeness of the collected data
- Data reduction: raw data conversion into a usable format
- Creating maps and profiles
- » Quality control and assurance

Obtain Subsurface Utility Survey

A subsurface utility survey involves the detection, verification, and mapping of underground utilities, such as pipes, cables, and other infrastructure. This type of survey is essential for construction planning, infrastructure maintenance, and mitigating risks of utility damage. The key elements of a subsurface utility survey are:

- » Preparation and planning
- » Permissions and access
- » Equipment and tools
 - Ground penetrating radar
 - Electromagnetic locators
 - Acoustic locating devices
 - Magnetic locators
- » Data collection
 - Surface marking of detected utilities on the ground with paint standardized with color codes for different utility types
 - 3D data capture using ground penetrating radar and/or other tools to collect three-dimensional data about utility locations and depths
 - Supplementary sources that integrate data from utility records and as-built drawing to verify findings
- » Verification and validation
 - Cross-checking data with existing records to ensure accuracy
 - Potholing/verification using vacuum excavation to physically expose utilities at critical points to confirm their positions
- » Post-processing
 - Data analysis using software to analyze ground penetrating radar- and electromagnetic locator-created data, generate subsurface profiles, and identify utility conflicts
 - Map creation of detailed utility information and profiles showing the locations and depths of detected utilities
- » Quality control and assurance







5 Utility Relocation

Utility relocation is often a straightforward improvement that is easy to undertake during construction. Most instances of relocation will be shifting utility pedestals away from the trail alignment concurrently with each phase's construction. When utility relocation is more than just moving a simple pedestal, it becomes a more involved design challenge. Many factors influence decision-making, including the existing landscape topography, vegetation, physical structures, type of utility under consideration, and property owner input and preferences. The consulting team identified three possibilities for utility relocation.

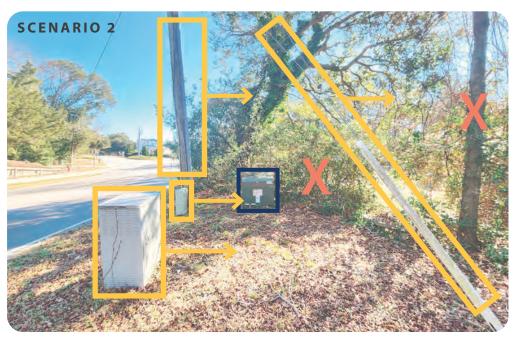
At 1152 Duck Road, there is one utility line crossing NC12 overhead. The pole receiving the wire is located within the first couple of feet of the right-of-way. In the first scenario, if the utility pole were to remain where it is now, it would mean designing the trail alignment around the pole and it's guide wires. Doing this would have a significant impact on the adjacent properties because the Town would need a large easement to accommodate the trail just to avoid the pole. In this scenario, several trees and shrubs would need to be removed to provide adequate clearances, impacting shade and screening on 1152 Duck Road and into 102 Nash Road, the two impacted parcels.

Alternatively, there are two options available for either relocating or removing the utility pole. If the pole and its guide wires were relocated, they would shift westward into the adjacent property, which would allow for a trail alignment to hug NC12 with a landscape strip between the roadway and the trail. In the other option where the utility pole is removed, the utility wires would be placed underground, eliminating the visual and physical obstacle altogether. In both of these scenarios, the utility pedestals would shift westward away from the road, but their compact footprints would fit within the right-of-way and not require an easement into private property.

The property owners of the parcels at 1152 Duck Road and 102 Nash Road met with the consulting team and discussed these options and anticipated impacts in all three scenarios. Both property owners support the proposed trail, but prefer that its alignment be as close to the road as possible so they conserve as much of their private property as possible. Both property owners preferred utility relocation by way of shifting the pedestals westward and either moving the utility pole westward as well or by removing the pole and sending the utility wires underground.



Utilities remain in place, avoiding the right-of-way conflicts by using an easement for the trail alignment, indicated in black. In this scenario several trees and shrubs are removed.



Utility relocation where all conflicts shift westward, indicated in yellow. The transformer, indicated in navy, is not expected to be a conflict for the trail and will remain in place. Some vegetation removal may be required. The trail alignment stays close to the road. One of the two preferred scenarios for adjacent property owners.

Coordination and Combining Utility-Related Land Disturbance Activities with Trail Construction

The decision of relocating utilities underground or shifting them away from the road both have implications for land disturbing activities and construction phasing. While the utility relocation phase is listed in advance of Phase I design development and Phase I construction, the utility relocation could very easily be combined with the construction phases. It is a common time- and cost-saving practice to schedule these immediately following each other. When workers are wrapping up the burial of existing utilities or the shifting of their position in the landscape, trail construction and stormwater improvements could immediately follow.

From a community and traffic disturbance perspective, this means that improvements along NC12 are streamlined so that there is the least amount of inconvenience to the public as possible. This also saves time and reduces the overall impacts on budget and public perceptions of project activities being on schedule.



Utility relocation where both pedestals shift westward, indicated in yellow. The transformer, indicated in navy, is not expected to be a conflict for the trail and will remain in place. The utility pole and guide wire are removed. The trail alignment stays close to the road. One of the two preferred scenarios for adjacent property owners.

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Develop the Final Design for 6 **Phase I: Aqua Restaurant to Plover Dr**

The consulting team works through a collaborative, iterative design process to develop final design plans and construction documents for approval by the Town. When plans are complete, they will be bid out for construction and the Town can prepare for construction of Phase I from Agua Restaurant to Plover Drive.

Construct Phase I & Develop the Final Design for Phase II: Plover Dr to Tuckahoe Dr

During the construction of Phase I, all utility relocation will be folded into the workflow with the exception of the overhead lines/ utility pole issue that was described in Step 1. During construction, VHB consultants will follow the progression of construction and provide Construction Administration services for the project while simultaneously developing the final design for Phase II from Plover Drive to Tuckahoe Drive.

Construct Phase II & Develop the Final Design for Phase III: **Tuckahoe Dr to Southern Shores**

Likewise with the construction of Phase I, all utility relocation will be folded into the workflow during the construction of Phase II. During the ongoing construction effort, VHB consultants will provide Construction Administration services for the project while simultaneously developing the final design for Phase III from Tuckahoe Drive to Southern Shores.

Construct Phase III: Tuckahoe Dr 9 to Southern Shores

The final phase of the construction process, Phase III will wrap up construction from Tuckahoe Drive to the Town of Southern Shores. During the ongoing construction effort, VHB consultants will provide Construction Administration services for the project. After all phases of the project are complete, VHB will follow-up with the "As Built" drawings for the newly installed multi-use trail on the westside of NC12.

Estimated Project Costs

A large part of the feasibility study is understanding estimated project costs so that the consulting team, the Town Council, and Town Planners can work together to make take the design from the planning phases and make them reality. Estimated project costs allow for the team to figure out what grants at what amounts they wish to pursue and develop applications to acquire funding and appropriate Town resources in anticipation of required funding matches dictated by the various grantawarding agencies.

The following cost estimate was developed by averaging the costs given by contractors on recently bid and won work on comparable projects in North Carolina. The figures used to estimate the costs of each line item in this estimate were averaged from true numbers given by contractors on successful bids for project work.

Each phase of this project is different from its counterparts. Prior to trail construction, there will be major utility reconstruction in an area that is part of Phase I. Phases I, II, and III each have similar features but differ greatly in terms of length, number of roads and driveways crossed, topography, utility and vegetation conflicts, type of landscaping that will need to be repaired, and whether or not subsurface stormwater infrastructure is expected to be impacted and/or installed. Thus, there is anticipated and expected variance in what each respective Phase will cost to design and construct.

The cost estimates are generated from a general total of quantities, lengths, and volumes based on Alternative B detailed in Chapter 4. The final cost estimate may change based on Town preferences during the final design development stage. This cost estimate includes a generous contingency figure that should have the capacity to reflect any variance between the development of this estimate and the final cost estimate that is produced after the final design. The cost estimate includes fees for design development and construction administration costs. The estimate does not include costs for any potential easement acquisition.



Feasibility Level Cost Estimate

Project Phase	Cost
Major Utility Relocation	» ~\$150,000
Phase I: Aqua Restaurant to Plover Drive	» ~\$995,000
Phase II: Plover Drive to Tuckahoe Drive	» ~\$1,220,000
Phase III: Tuckahoe Drive to Southern Shores	» ~\$840,000
Estimated Project Total	» ~\$3,205,000
* Includes a 30% contingency at a Feasibility	Level Plan

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APPENDIX A Complete Record of Community Comments



Executive Summary

Chapter 1. Introduction

Chapter 2. Study Considerations and Alternatives Development

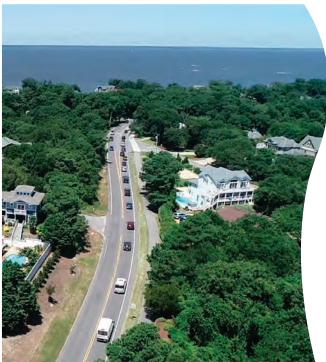
Chapter 3. Community Engagement

Chapter 4. Evaluation and Recommendations

Chapter 5. Implementation

Appendix A. Complete Record of Community Comments





APPENDIX

This appendix contains:

- » Comments submitted via comment form during the open call in Fall 2023
- » Comments emailed to Town Council members during the open call in Fall 2023

Open Call Comments

Timestamp	Comment	Name	Address
12/4/2023 18:17:38	I think it's a GREAT idea to allow better flow of people using the Duck trail.	Ben	104 Sea Hawk Drive West
12/4/2023 19:17:08	I believe this is a very good project that is truly needed and I hope you can move forward towards design & construction as soon as feasibly possible.	Farid Hamad	107 Frazier Court
12/6/2023 15:54:38	I think it is unnecessary, expensive and will cause significant damage to properties along the route. The REAL problem is the lack of control off pedestrian crossings which slow weekend traffic all the way back to the bridge; It will come within a few feet of some houses and decks as well as worsening the water problems from the road. In addition, this project, if it goes ahead will damage the entry way to Tuckahoe and the space near the pool and tennis courts Next I expect golf cards and ATV's to drive on it. The Eastern trail is sufficient for walkers and bikers.	John Hasteadt	112 Jasmine Court
	The REAL problem in Duck is too many pedestrian walkways with no controls. This allows pedestrian to cross at will and backs up traffic all the way to the bridge on the weekends.		
	This project is not in the best interest of Duck property owners and tax payers.		
	Based on what I have seen so far the views of owners is not being given proper consideration.		
12/12/2023 16:32:46	I watched the presentation and feel that the Westside Trail is terrible idea. It will "citify" the area and result in significant undesirable traffic such as golf cards and ATV's on this trail.	John Robert Hasteadt	112 Jasmine Court
	Of far greater importance it will severely damage the privacy and property values of those Owners and Taxpayers whose homes are near to the road. It will come within a few feet of there homes and decks. In addition the Trail is unnecessary since the Eastside Trail handles the walkers and bikers very well. The excess attention to pedestrians has already resulted in a major traffic problem that causes weekend backups all the way to the bridge. This problem can and must be solve by controlling pedestrian traffic interruptions with crossing guards or traffic lights. No consideration has been given to property owners and HOA's whose property will be intruded upon.		

Timestamp	Comment	Name	Address
12/29/2023 15:46:30	I think it is a terrible idea which will intrude on the privacy of a number of homes and intrude into the Entrance way,, Tennis Court and Pool of Tuckahoe It is not needed and will result in Golf carts and ATV running up and down in a noisy manner	J. R, Hasteadt	112 Jasmine Court
12/7/2023 19:47:50	We think this is a great idea and will use it almost daily for our morning walks. Especially like the idea of adding a crosswalk at Ocean Crest. Additionally, I think some of the clearance for the sidewalk will help with visibility when turning onto NC12. Thanks for all of the hard work you do for Duck, it is appreciated!! -Dan and Jen	Daniel Snyder	139A Jaycrest Road
12/10/2023 7:45:06 PM	1. Design of the Multiuse pathway where it crosses the Tuckahoe entry. Two drains that drain water out of the entry area are below the top of the route 12 berm and would have to be raised as they are in the way of the pathway. My guess is they would want to curve the path to the west, regrade our entry to blend with the rerouted path and modify the drains to take care of any pockets. Similar solutions were used in spots on the existing paths. A picture in the open House slide presentation presents a "new shortcut" pathway improvement addition" that goes to the Tuckahoe Tennis court. This shortcut goes west from route 12 through the utility easement on the south side of lot eighty-four to the Tennis court. It indicated that this was an existing non-formal shortcut. (this "path" was developed during the route 12 lake Tuckahoe modifications to provide access to the lower area of lot eighty four when the construction work blocked access from the roadside. It is not used for access to the tennis courts. Making it a public pathway would have a significant impact on the my family's privacy as well as reducing the value of the my home.)	Monty Davis	102 Tuckahoe West
	Redoing this intersection could affect areas around the pool, Tuckahoe sign, Tennis court and the rainwater water drainage system.(See slide 16 "Segment 8 in the charts from the open house for more details on these issues)		
	2. The impact on Four the homes all on the edge of the road right of way. Lots eighty four, eighty two lot eighty two and lot eighty one all will have less vegetation screening . One possibly two will have the pathway very close to the house.		
	3. The longer-term potential for the 10 wide paved pathway to become a motor way as golf carts, scooters and electric bike become more and more popular.		
	4. The mixing modes of transportation and pedestrians on one path. Pedestrians, runners, Bikes. Motor bikes, scooters, and golf carts potentially all moving at the same time in both directions on the pathway		
1/24/2024	I have 2 additional comments to add to my list.	Monty Davis	102 Tuckahoe West
2:21:34 PM	1 I support the the proposed width reduction to 8 feet. This resolved a lot of issues for me.		
	2 It is my preference to have some sort Architecturally acceptable impediment to easy access (walk in) to my yard from the new pathway, that would also potentially provide some noise reduction and privacy improvement. Probably something 4 to 6 feet high.		
12/11/2023 18:14:20	Not needed	James Cofield	101 East Bias Lane
12/15/2023 17:11:36	Any project that improves pedestrian safety is a win for all - we are in favor of this project.	Lynn Osman & Christopher Wallis	134 Plover Drive
12/22/2023 8:16:11	I believe it would increase the safety of the pedestrians and increase property values on the west side.	Judith Flagge	122 South Snow Geese Dunes
12/26/2023 14:17:14	As a full-time resident of Duck, we are absolutely in favor on the west side trail.	Shawn & Irine Devroude	134 Olde Duck Road
12/28/2023 15:30:29	We believe that the West Side Duck Trail is long overdue. It will greatly enhance the usability and safety of properties on the west side of Route 12. Currently it is very difficult and dangerous to cross Duck Road and the addition of a trail with crosswalks at key intersections will alleviate this risk. This will provide an enhancement to the value and marketability of our property. We stand firmly in support of the project.	Andrew and Wendy Rountree	1100 Duck Road
1/4/2024 14:38:24	I previously reached out to the Town of Duck to inquire about adding a crosswalk at Jaycrest and/or W. Charles Jenkins Drive, which is where I cross NC-12 to get to the beach. When traffic is heavy, I often have to wait for a kind person to stop to let me cross. I use the walkway on the east side of NC-12 to walk into town. What we need is more crosswalks to provide a safe way to cross the street. There's already a sidewalk/ bike path along NC-12. Adding one on the west side would be nice, but it makes more fiscal sense to create additional crosswalks instead, so we can safely cross NC-12 to access the path that is already in place.	Constance Crowley	124 Jaycrest Road, Unit 2
1/5/2024 18:55:19	A great presentation and plan. We are in strong support of it. We have a secondary residence on Jaycrest Rd, and find ourselves crossing NC 12 each time when we walk to the village (which is all the time). Every single time we do it, crossing NC 12 at Jaycrest feels dangerous because of the blind curve and much vegetation growing right up to the road, so the drivers have hard time seeing you (the pedestrian). Much the same is true for turning onto NC 12 (from Jaycrest) with a car. Having a sidewalk and opening up the view to and from the road would help a lot with 1) crossing NC 12 at the proposed crosswalk at Charles Jenkins (if walking to the ocean), not having to cross at all (when walking or biking to the village) and when turning onto NC 12 with a car and would dramatically improve the safety.	Monika Kukar-Kinney	104 Jaycrest Road, Unit 5

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Timestamp	Comment	Name	Address
1/8/2024 12:59:32	I may add a few comments at a later time if I am able to but for now, I would like to ask (again) that a "cross walk" be painted on Duck road to enable people trying to cross Duck Road from Charles Jenkins Street (from the west side of Duck Road where the tennis courts and pool are) to the Charles Jenkins Street (on the east side of the road, if this is called Charles Jenkins or is this Oceancrest Road?). In season there are a lot of people trying to cross Duck Road from Charles Jenkins, and also from Jaycrest, that are trying to cross Duck Road in this area, to go to the ocean, that I have seen almost get hit because even though traffic should be 35mph on Duck Road, people travel faster, they don't watch and they refuse to stop to let people cross (I live on the corner of Charles Jenkins and Duck Road and I've seen more than a few kids get hit because of no "cross walk" painted on Duck Road; a sign would be great, too). Also, please do something about the water that "pools" at the bottom of the west side of Charles Jenkins Road; it was almost up to my floor boards a few times this past year and I drive a SUV; some of my friends do not and couldn't even turn up my street to come to my house. This situation really does need addressed and asap! Thank you!	Lory Patrick	1106 Duck Road
1/8/2024 16:14:44	"As part-time residents of Nantuckett Village on Jaycrest Road, my wife and I welcome a west side path to Duck Village. Currently, there is no crosswalk at Charles Jenkins to cross the the east path and cars are typically traveling above the 35mph speed limit and seldom stop for us to cross. At Jaycrest Road there is no crosswalk or groomed access to the east path and crossing is made more dangerous by the overgrown vegetation to the north which makes even vehicular crossing dangerous. We would welcome an extension of the boardwalk to our area to make access even safer but know that isn't part of this study. "	Matthew and Estelene Boratenski	112 Jaycrest Road
1/8/2024 17:02:08	"It would appear this is a very nice project for a community that is not dependent on tourists and a transient community for existence, no cars just people who bike, walk, relax and not have to commute long distances to and from job sites, second homes, rental property etc. Traffic now is a big problem not only for those visiting Duck but also those who have to pass through the town of Duck to get to and from residences north of Duck. On weekends during tourist season with a few thousand cars, people, etc. going up and down Duck road, the traffic is bad enough without adding more pedestrian traffic (walking, biking, etc.) crossing the road and providing further delay. As we all know there is there is a BIG traffic problem already on the weekend AND often times during the week. To compound it even more by adding another trail/side walk on the other side of Duck road down to the town limits, invites additional problems and with stop and go traffic. How about looking into extending the sound board walk? This would appear to be a more attractive alternative to the permanent/transient residents and tourist alike. I would also like to mention the big problem of flooding down in lower areas of Duck road. The re-do of the side drainage area around Seahawk, Tuckahoe area did not cure the flooding problem and a ""new trail"" paved or otherwise will certainly add to the problem.	Bill Perry	117 East Sea Hawk Drive
	Thanks for listening.		
1/8/2024 19:48:08	As homeowners in SeaHawk, we are in favor of any improvements to pedestrian and bicycle traffic getting into Duck Village.	Julie and Stuart Logan	128 East Sea Hawk Drive
1/9/2024 9:46:27	I think that a sound side path is a very bad idea & a waste of taxpayers' money. There is a good path on the opposite side of the road & the only thing on the sound side is houses. I do not see how it will encourage more people to walk/cycle into the village since there is already a good path on the opposite side of the street. The only thing that it might benefit is the owners/renters of the houses on the sound side, who very probably will just cross the road wherever they want anyway! I think that this would be a total waste of taxpayers' money & absolutely unnecessary.	Rainie Sadler	161 Buffell Head Road
1/9/2024 13:03:16	I would love to see a multi-use trail on the West side of NC-12. I think this would cut down on the number of pedestrians needing to cross the street which would also reduce traffic stops/backups. A West side trail would make pedestrian travel easier and safer for those residing on the West side of NC-12.	Deanna Murray	115 Sea Hawk Drive West
1/9/2024 20:47:37	A walking path on the west side of duck road would be a great addition to our walkable town. Crosswalks are more spread out once you leave the village, being able to move north to south on the west side of the road safely to access crosswalks would make pedestrian travel much safer. This is an excellent project.	Marc Murray	115 Seahawk Drive West
1/10/2024 9:43:25	Our main question is where will the 10ft start? From the edge of the existing road or will there be a small grass buffer before it starts like on the existing trail on the East side across the way?	Jessie Fanning	100 Sea Hawk Drive West
1/11/2024 16:54:54	Overall good idea as the trail will encourage walking to the shopping area in town of Duck and creates less traffic during busy summer season.	Un Chin	1156 Duck Road
1/12/2024 6:31:16	I am very much in favor of west side development of Duck Trail. This will provide safety for west side residents who must cross duck road in order to access the now existing side walks and bike path. Residents would be able to walk into town safely.	Gloria Lynn Murray	113 West Sea Hawk Drive
1/14/2024 15:24:21	I think it would be great to have a trail on the west side of Rte 12! It would provide more space for pedestrians and bikes to comfortably navigate in that part of Southern Duck.	Miriam Rollin	149 Plover Drive

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Timestamp	Comment	Name	Address
1/15/2024 13:26:12	"My wife and I own the parcel at 1152 Duck Road. We lived in Duck for 5 years and understand the desire for the town to continue to provide improvements that will both benefit the residents and tourists that come in season. Duck is a destination precisely because of the planning and execution of all of the value add projects to date. This project will improve the town and the safety of all, yet again. The West Side trail does affect negatively the property owners along the roadway. However, as far as I can see, we are the only home that has a front yard that is cleared and faces 12, so the project will have a much larger impact on us then others. That being said, we are supportive of the trail.	Jason Garick	1152 Duck Road
	Our yard leading to the house and property creates a grand feeling for the home and the trail will impact that. The main concern I have is that in the planning process, the town design the trail so that it stays tight to the road in the yard. In our conversations we agreed to take down one tree which needs to be removed in the middle of the yard that is touching the road which will help. If the path winds around the telephone pole and transformers it will have to cut in further. Taking another tree. If we can minimize the distance and stay close to those items as well it will help and we are supportive.		
	We support the trail provided the goal planning and execution minimizes the impact to the property and the trail stays close to 12. Please proceed with the project. Thank you. "		
1/15/2024 15:36:42	A pedestrian and bike path along the west side of Rt 12 south of the village is an excellent plan. It will help reduce congestion on the existing east side path, especially during peak summer season. It will also improve public safety by cutting down on jaywalking in that area.	Michael Rollin	149 Plover Drive
1/15/2024 16:01:46	the proposed pedestrian trail is needed for the west side of NC12; the information provided in the PowerPoint presentation and answers given during our virtual meeting were helpful; at this point, any specific information we didn't learn at this time will be addressed during the next phase (engineering study) of the project	Robert and Joy White	101 Nash Road
1/16/2024 23:12:49	I support the west side trail, and think it will improve pedestrian safety and access to duck.	Zephyr Mays	102 Osprey Ridge Road
1/22/2024 19:21:11	This proposed project is so important to everyone who lives in the west side area. I live on Jaycrest Rd and I say a little prayer every time I or a family member attempts to cross the street, especially going toward the beach. It is impossible to see a car approaching until it gets around the curve. I am so afraid that a car will be going to fast going around the curve as I start to cross. I would walk to the light on Sea Oats if there were a side walk! I know this is the same issue for residents all along the West side as there is no sidewalk or safe way to cross. The proposed project is a much needed one.	Martha Lyman	115 Jaycrest Road
1/23/2024	"As mentioned in our meeting, we are excited about this project. There are two items we brought up:	Jeffrey Broitman / Caroline	1158 Duck Road
10:35:52	1/Try to integrate our stamped concrete aprons into the sidewalk.	Uzel	
	2/ Try to offer protection to our center garden from pedestrians stepping off sidewalk.		
	Thanks,		
	Jeff & Caroline"		

A-4

imestamp	Comment	Name	Address
/23/2024	We are not in support of constructing a new west side sidewalk on Rt 12 and have comments as both year-round residents and as homeowners directly impacted by the potential project.	Pat and Edie Mullally	106 Jasmine Court
8:00:48	We are full-time residents of Duck who reside on the west side of Rt 12 - close to the Southern Shores town line (Tuckahoe subdivision). We walk into the Duck village several times a week and are quite familiar with the pedestrian traffic conditions and use of the existing pathway along the east side of Rt 12. In the summer months when it is most utilized, the east side pathway is more than adequate to accommodate both pedestrians and cyclists south of Duck village. The pathway is minimally used the rest of the year – particularly towards the southern end of town.		
	Vehicular traffic coming into the village on Rt12 is a major issue during the peak summer months when many visitors come to Duck. It is not an issue at any other time of the year. The traffic is caused by the reduced road speed and many people using the numerous pedestrian crosswalks in the downtown village area. As for the pedestrians crossing Rt 12 south of the village contributing to any road traffic issues, it is not the case. Most of this pedestrian traffic south of the village heads to and from the beach and not into the village. Adding an additional sidewalk will not change that traffic pattern.		
	In our opinion, adding the proposed West Side sidewalk will not alleviate existing vehicle traffic conditions on Rt 12 during the summer. It will not make pedestrian travel more convenient or safer than using the sidewalk that already exists on the east side of the road. It will erode the quaint seaside aesthetics of the town.		
	As property owners who will be directly impacted by the installation of a proposed ten-foot-wide sidewalk a few feet from our home, we have additional concerns.		
	Specifically:		
	1. There was major reconstruction of Rt 12 to alleviate a significant flooding issue on Rt 12 and surrounding properties in the Tuckahoe area – ours included. A large (close to 15 feet) swale and drain system was installed on the west side of Rt12. A 10-foot-wide sidewalk will essentially cover this entire area and not provide enough permeable area (as currently designed) for drainage needs. Our concern is that the rain runoff will have no natural place to go other than onto Rt 12 and onto our property.		
	2. Our home is only a few feet from the proposed walkway, so we have privacy and noise concerns. As noted during a recent site visit with the town planner and a project engineer, we have two potential paths from the proposed walkway behind our home into Jasmine Court in Tuckahoe. If a sidewalk is installed, putting pedestrians right behind our house, these potential paths will become a tempting shortcut through our yard. A pedestrian (destined for the sound side of Tuckahoe) can cut off about 5-10 minutes of additional walking time by cutting through our yard instead of entering/exiting Tuckahoe through the community entrance to the south. We are very concerned about the prospect of pedestrians cutting through our private property. Tuckahoe HOA rules do not allow for fencing on our property, so we cannot address this issue with fencing that we construct on our property.		
/23/2024 1:10:01	My wife and I have our second home on West Bias Lane and are in Duck a couple of times a month. We like to walk into Duck Village, and we like to ride our bikes into Duck Village. We also like to walk from our house across Duck Road to the beach, then turn around and cross the road again and walk to the Sound before returning home. Plus, we walk the dog in the morning and at night, frequently crossing Duck Road.	Dan Kurtenbach	110 West Bias Drive
M	There is a semi-blind curve just north of the Bias intersection where cars headed south are accelerating after leaving the 25 mph zone. The vegetation on the northwest corner of the intersection is often overgrown, further reducing our ability to see southbound cars on Duck Road.		
	There is no marked crosswalk at the Bias Lane intersection. There is no way to walk safely on the west side of Duck Road to get to a crosswalk in order to reach the trail on the east side of Duck Road. But even crosswalks are not particularly safe without a stop sign or stop light, or a pedestrian-activated crosswalk light. How often do we see people standing on the west side of the road waiting to cross sometimes parents with strollers, often kids on foot or on bikes. But drivers have to see them in time to stop safely, and all too often we don't see them waiting until we are too close to do anything about it.		
	Anyway, to get to the beach or the Village, our only option from the west side of Bias Shores is to cross Duck Road at the Bias Lane intersection. Ironically, the safest times to cross the road are at night when we can see light from the headlights of southbound cars from a distance, and on summer weekend days when traffic is crawling and it is easy for cars to stop for us.		
	A multipurpose trail on the west side of Duck Road, with all of the associated improvements, would be a huge safety boost for us, and for all of the residents and vacation renters on the west side of Bias Shores and the west side of the west side of Bias Shores and the west side of the west side of the vest side of Bias Shores and the west side of the west side of the vest side of Bias Shores and the west side of the west side of the vest side of Bias Shores and the west side of the west side of the vest side of the vest side of Bias Shores and the west side of the vest side of the vest side of Bias Shores and the west side of Bias Shores and the west side of Bias Shores and the west side of Bias Shores		
	Of course, the safety concern is hugely important. But there are also the economic and access considerations: We really, really want people to come to Duck Village to spend money. And it is really helpful if they can come to Duck Village without driving there. It reduces congestion on Duck Road. It reduces the frustration of drivers waiting for a gap in traffic to turn left off Duck Road into a parking lot, and the frustration of drivers waiting for a gap in traffic to turn on to Duck Road from a parking lot or from one of the side streets. And being able to get into the Village without driving there also has the effect of helping people feel like they are part of the town, not stuck out in some isolated neighborhood. That helps bring them back year after year. With the advent of electric bicycles, electric skateboards, and electric scooters, it is becoming easier than ever for residents and vacationers to get to Duck Village from farther away without taking a car. But we need trails (safely separated from the road) in order take advantage.		
/24/2024 0:35:51	I fully support the expansion of the Duck Trail along the west side of NC12. This addition will greatly enhance pedestrian and Duck Sweep volunteer safety and it is fully supportive of the Community Goal of Enhance Moveability.	Bob Wetzel	141 Betsy Court
24/2024 2:01:29	Thank you for taking the time to explain the scope of this project. When we are visiting, we usually choose to walk to Duck Village so we are excited that this will be safer and easier, especially at night. We are also happy to hear that cross walks will be painted across Route 12 and Sea Hawk Dr. to again make it safer while walking and riding bikes. I look forward to receiving further updates.	Kathleen Keefe	101 West Sea Hawk Drive
24/2024 :30:31	I wholeheartedly support this project. As a resident on the westside of Duck Rd, it will keep me and my family from having to cross the busy road multiple times to walk into town and back. This will increase our safety and should cut down on the traffic which would have to stop multiple times to allow pedestrian crossing. I've reviewed the plans in detail and was also happy to see that the easement near our intersection will result in clearing a better site line northward around a blind turn which will also increase safety when crossing the 12 to get walk or bike to the beach. I'm very excited to see this project get started.	Jason Wheeler	123 West Bias Drive

Timestamp	Comment	Name	Address
1/25/2024 12:33:15	We love the idea. How wide do they estimate the sidewalk will be? Clearing that area making it more visible to the North of Duck Road will help everyone using that path to get to the beach access in Ocean Crest and those walking to Duck Village!	Fay Andrea Ponton and James T. Ponton, JR	100 Jaycrest Road
1/25/2024 14:55:57	"As one of the lot owners in Duck directly affected by the proposed westside trail, I must express my dismay at this intended intrusion along the property located at 1128 Duck Road. While the lot has remained undeveloped for a long time, the future plan after our parent's deaths was to either build on it or sell it. I fear the value will be negatively affected with this unnecessary trail running in front of it. There is no other way to get to 12 than to exit directly onto it from our lot. Why is this trail even needed? There is already a trail on the eastside. There is only a small window of time throughout the year with increased pedestrian traffic to even remotely warrant this project: July through August. If people on the westside feel they cannot "safely walk their dog to the boardwalk" then put in a couple of crosswalks to the eastside trail and be done with it. The speed limit in town is already 25 and 35 leading up to the village. It's not like people are zipping along at 50 mph. With rising sea levels, shouldn't the town's focus be on saving the quickly eroding beaches? They are so narrow now as compared to the '70s when I first came to Duck, NC. I am not happy with this plan and if asked would vote a resounding no. I also own a condo in Nantucket Village and have no trouble crossing the road to walk to the village any time of the year."	Joanne Callahan	1128 Duck Road
/25/2024	"We are completely supportive of the west side trail extension, and look forward to using it. We do have some concerns.	Bob Webb	1166 Duck Road
15:27:10	1)It is difficult now to get out of our driveway, especially in the Summer. How will the town address the pedestrian and bicycle traffic, regarding the warning to them of the driveways in the Four Seasons area. Will there be any warning signs at each driveway, or stop signs on the trail? And has any consideration been given to how renters using the west side houses are educated about the pedestrian/bike traffic.		
	2)We are eager to learn exactly where the west edge of the path will be on our property, and where a retention wall will be constructed, if there is one.		
	3)Will there be a crosswalk added to the area between Aqua and Amy Lane. We are hoping there will be.		
	Thanks for giving us the opportunity to supply comments. Gail Plucker & Bob Webb"		

Email Comments

Timestamp	Comment	Name	Address
8/28/2023 15:01:52	We give permission to allow access to the CAD file of the survey. However, my wife and I want it known that we are not in support of this project. As it is now, our house is very close to Rt12 - probably the closest west-side house south of the center of Duck. Our house is several feet below RT12 with a slope coming into our property. We are very concerned about any project that will negatively affect drainage between our house and road. We are also concerned about the potential lack of privacy and value decline in our property as a result.	Patrick Mullally	124 Jaycrest Road, Unit 2
	Thanks.		
11/29/2023	We are out of town for the holidays and cannot attend today's meeting in person.	Edie and Pat Mullally	106 Jasmine Court
10:10 am	We want to let you know we oppose the west side trail in Duck. We have owned our home since September 2020 and have lived full time in Duck since May of 2022. Our home is along the proposed trail. In our many years bacationing in Duck, and as homeowners now, we have not seen foot or bike traffic that warrants the need for a new trail. South of the village, the vast majority of sound side bike and pedestrian traffic is people crossing route 12 to go to the beach. Creating a trail on the west side will do nothing to alleviate the existing vehicular traffic or beachgoer safety concerns. The existing trail is adequate. The construciton of a new trail on the west side is a pointless and unnecessary disruption and expense.		
	We have specific concerns related to our property. The trail will impact the privacy and noise level at the back of our house. Will the town put a noise/privavy fence on their easement? More significantly, how will drainage impact us? When the road was raised due to flooding, ti made the road above the level of our back yard. By adding more impermeable width and removing vegetation, we are oncnerned about runoff into our backayard and flooding in heavy rain.		
	Please address these Concerns.		
10/9/2023 9:09:55	It was good to see you at our Tuckahoe meeting. I was very surprised to hear about the project to build a trail on the West Side of Duck Road. I think this is a terrible idea which will do devastating damage the property and privacy of a number of properties including several in Tuckahoe. In my over 30 years of being part of Tuckahoe I have never seen people walking on the West-side. The East-side has always been the place where people walked and cycled even before the the Trail and the current trail is adequate for that.	Bob Halesteadt	112 Jasmine Court
	The money planned for this could better be used repairing the dangerous loose railings on the boardwalk.		
11/21/2023 2:32 pm	I just received information about the Open House meeting to review and discuss the idea of a West Side Trail. There is no information on how I can participate in the Open House remotely since I am here in New York for the Holiday season.	John Robert Halsteadt	112 Jasmine Court
	In fact it seems strange to me that they would ahve such an important meeting during the Holidays when many people are traveling and unavailable to participate.		
	I want to tell you that I am strongly opposed to the Westside Trail. In my 35 years as a property owner and taxpayer in the Tuckahoe Association in Duck I have not observed sufficient walking or biking traffic on Rt. 12 to justify a Western Side Trail. In addition it woul have a disastrous effect on several of the Tuckahoe homes in Jasmine Court. The negative effect on their privacy and property values would be terrible. The project will also potentially damage the Tuckahoe Tennis and Pool areas of Tuckahoe.		
	In addittion this project would further contribute to the major water issues of these owners, which resulted from the raising of the road.		
	That is just the major problems in Tuckahoe. As I drive from the Town line toward Duck, I see a lot of homes and even just lovely landscaping that will be adversely effected as well as moving utilities etc.		
	This is a very expensive and Bad idea that must be stopped.		
	Thank you,		
1/25/2024 7:49:27 am	Thank you for meeting with us. These efforts are very important to us since our Jasmine Court is dramatically effected by this trail. It will have a negative effect on our home values, privacy and security due to how close it will be to our homes and the potential for people to enter or shortcut through our properties.	Robert Halsteadt	112 Jasmine Court

A-7

Timestamp	Comment	N
11/19/2023	Hi. My wife and I are non-resident (Virginia) owners of a house on teh west side of the Bias Shores neighborhood. We don't use the house as a vacation rental anymore, but use it as a second home and try to get own there a couple of times a month. At a recent HOA meeting, there was discussion of difficulties for pedestrians crossing Duck Road at the intersection with Bias Lane, and the need for a crosswalk. I have also had issues as a driver attempting to turn onto Duck Road from Bias Lane West because the foliage on the northwest corner grows out and blocks the view of accellerating traffic from the north. (That is a problem that could partially be resolved with a couple of chainsaws.)	Da
	I just read the article on the Town of Duck website about the multi-use trail feasibility study. Unfortunately, the article is somewhat vague about what is being studied. I'm scratcing my head over "developing connectivity on the westbound side of Route-12," "missing critical infrastructure," " expand transportation options," "address environmental concerns," and "alternative development options." But it seems like you're talking about building a walking/biking trail on the west side of Duck Road. Is that right?	
	We can't be at the Open House on November 29. But because we like to walk or ride our bikes into the Village, we would definitely support a trail on the west side of Duck Road. Or, at least, a crosswalk at Bias Lane. Or a trail or sidewalk on the west side of the road in the direction of the Village that would get us to a crosswalk. And pedestrian-activated lights at the crosswalks. Another thing that would really help would be to lower the speed limit to 25 miles per hour between the border with Southern Shores and the north end of Ships Watch. Folks just love speding up on that big curve that starts at Tuckahoe.	
	One other thing I would love to see are signs throughout the Village area telling drivers to let other vehicles turn onto the road. We have to overcome the notion that Duck is an annoying bottleneck for Route 12 trafic, and replace it with the understanding that everybody wins when it is easy for residents and vacationers to get around. A few minutes of slowdown in Duck is good for the economy.	
	Thanks!	
11/29/2023 17:38:45	The presentation came across well online. Ocean Crest is certainly in favor of a west side trail. Thanks for keeping the drainage at Charles Jenkins in mind. Let us know how we can help. Regards,	Da
1/16/2024	I just read the article in the Voice about the extension of the path south of Aqua on the west side of NC-12, and I want to give you my thoughtsfor what they're worth!	Jo
15:08:00	1) Consider the fact that there is nothing on the west side of NC-12 for pedestrians or bikers north of the old Resort Realty property. I know there aren't as many people west of NC-12 to the north, but the speed limit is higher. So, if you use the rationale that it's unsafe for pedestrians to cross NC-12 to get to the multi-use path on the east side south of Aqua, the same is true north of Sunset Grill.	
	2) Whatever you do, it doesn't need to go all the way to the border with Southern Shores. The shoulder gets bigger south of Plover. I used to be a bike rider, and my concern was always when the shoulder disappeared past Aqua until if widened again south of Plover.	
	3) Creating space on the east side of NC-12 is problematic, but part of the answer (surely for southbound bike riders and probably for northbound walkers) is to reclaim or rebuild the shoulder of the road. That might mean invading what property owners have taken as their own, but it isn't as invasive as building a 6-8 ft multi-use path. Southbound pedestrians shouldn't be on that side of the road, so that's still a problem.	
	4) One solution to widening the shoulder would be to stop the middle turn lane south of the island around 1166 Duck Rd and adjust the driving lanes accordingly. The shoulder gets wider when there isn't a turn lane.	
	5) Another solution for safer pedestrian travel is to create more pedestrian crossings. As you know, there are none south of Aqua except at Tuckahoe Rd. There will be lots of moaning and complaining, but pedestrians will be safer. (Have you ever thought of crosswalks with pedestrian-activated flashing lights?)	
	Thanks for letting me pass on my thoughts.	
1/17/2024 12:00:00	Quick introduction, my name is Kevin Zygler and I live at 117 Osprey Ridge Rd with my wife Porsche and our 3 school age children. We moved to Osprey Ridge in April of 2023 and now live here year-round. Prior to living in Duck we lived in Southern Shores.	Ke
	I just finished watching the trail feasibility meeting on YouTube. The trail seems like a great idea and would seemingly provide benefits to all Duck & Southern Shores residents.	
	From what I can report today, Osprey Ridge currently has 4 year-round households. Regarding any impact on the Osprey Ridge signage at the end of the road, my understanding is Osprey Ridge has no formal HOA, so I'd personally be very interested in discussing the possible impact.	
	The only question I have is: What material being used for the walkway, will it be concrete or blacktop?	

A-8

Name

Dan Kurtenbach

Address

110 Bias Lane West

Dave Connor

John & Lynda Park

Kevin Zygler

117 Osprey Ridge Road

20:07 summer, we respectively residents. We respectively residents. We have of Tuckahoe The instal Therefore populatio Study Pow of how m sustained We also p mph spectively dedicated pedestria feasibility However, lots that a	newwers who are part-time off season residents of the Tuckahoe neighborhood in Duck, who also rent out our home during the summer season but vacation at our home for two weeks during the er, we are opposed to the construction of a west side trail along Route 12 in Duck. pectfully request that the comments submitted by Bruce Lindsey which he stated represented the Tuckahoe HOA, not be construed as to reflect our feelings as Duck homeowners and Tuckahoe not with property at 108 Jasmine Court. ve owned our home since 2008 and have found the existing east side trail to be a completely adequate and safe means for both pedestrians and cyclists to access the Town of Duck from our west side to eneighborhood. stallation of a crosswalk from the west to east side of Route 12 has without doubt enhanced the expediency and safe crossing for residents and visitors. ore, we propose that rather than the construction of an additional west side trail, that additional strategically placed crosswalks be constructed that would allow the majority of the west side trai for Bow. The criteria for the placement of additional crosswalks was not defined in the 11/22/23 West Side Trail Feasibility PowerPoint presentation although 2 locations were specifically noted on the plans (Four Seasons and Sea Hawk) with another verbally referenced (Charles Jenkins) during the presentation. Regardless or many crosswalks may ultimately be located in Duck, and regardless of their location along Route 12, the safe crossing of Route 12 for pedestrians and bicyclists must be paramount versus the ted flow of vehicular traffic. o propose for pedestrian and cyclist safety that the speed limit from entry into Duck at the Southern Shores border be reduced from 35 miles per hour to 25 miles per hour to atthe the posted 25 peed limit approaching Duck town limits. In lieu of being able to lower the speed limit. Regardless of the means, maintaining a slow speed of vehicle's is necessary to assure a both train and bicyclists safety. In fact, we would encourage
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Tuckahoe The instal Therefore populatio Study Pov of how m sustained We also p mph spee dedicated pedestria feasibility However, lots that a	noe neighborhood. stallation of a crosswalk from the west to east side of Route 12 has without doubt enhanced the expediency and safe crossing for residents and visitors. Fore, we propose that rather than the construction of an additional west side trail, that additional strategically placed crosswalks be constructed that would allow the majority of the west side ation safe access across Route 12 without drastically impeding vehicular traffic flow. The criteria for the placement of additional crosswalks was not defined in the 11/22/23 West Side Trail Feasibility PowerPoint presentation although 2 locations were specifically noted on the plans (Four Seasons and Sea Hawk) with another verbally referenced (Charles Jenkins) during the presentation. Regardless / many crosswalks may ultimately be located in Duck, and regardless of their location along Route 12, the safe crossing of Route 12 for pedestrians and bicyclists must be paramount versus the hed flow of vehicular traffic. o propose for pedestrian and cyclist safety that the speed limit from entry into Duck at the Southern Shores border be reduced from 35 miles per hour to 25 miles per hour to match the posted 25 peed limit approaching Duck town limits. In lieu of being able to lower the speed limit, a permanent electronic device announcing the posted speed limit and flashing a vehicle's current speed plus a ted police presence could be a viable alternative to having vehicles pay heed to the 35 mph speed limit. Regardless of the means, maintaining a slow speed of vehicles is necessary to assure a both trian and bicyclists safety. In fact, we would encourage that the issue of speeding vehicles for the sake of pedestrian and cyclist safety be addressed immediately, regardless of the outcome of the
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lots that a	
1 (700)	/er, if the study deems that a west side trail is feasible, then we have several concerns that we feel need to be addressed, specifically along the stretch of Route 12 that affects the Tuckahoe residential at are directly adjacent to Route 12 and/or have site line of vision to Route 12.
I. STORIV	PRM WATER MANAGEMENT
due dilige	ring our on site meeting on Wednesday 1/24/23 with Sandy Cross, Senior Planner and Ricky, project engineer with Vanesse Hangen Brustlin, we understand and feel confident that VHB would perform ligence to ensure that the existing storm management system along Tuckahoe's stretch of Route 12 is not compromised. It is also our understanding that the addition of a newly proposed storm water gement solutions would further enhance the existing storm water management system.
	PORT OF PROPOSED CONDITION #4; that is, an 8' trail with guardrail (and/or other types of barriers) Once again, as a result of our on site meeting as mentioned above, we would support an 8' trail with een space that would include the storm water management swales and 2' of asphalt with the following considerations:
a. That no	t no vegetation on private property be removed or be compromised by the excavation of land to construct the trail
the Tucka barrier (g existing ri the 3 larg and 106 J Court, 104	a suitable wooden timber barrier be erected and maintained by the Town of Duck on the right of way property (which would not violate or challenge Tuckahoe HOA's covenants) that would afford ckahoe residents of Jasmine Court and 102 West Tuckahoe Drive the assurance of preventing unwanted shortcuts through said lots for access to the Tuckahoe neighborhood and its amenities; that a ' (guardrail) would provide a safety measure along the stretch of Route 12 in front of 1182 Duck Road (an empty lot) to the north edge of 106 Jasmine Court that has a steep 3-1/2 ' - 4' drop off from the g right of way to the existing ground level of said properties; that a barrier would protect Tuckahoe homeowners' privacy and sound reduction as well as providing a safety barrier at the location of arge electrical boxes on 108 and 106 Jasmine Court that are directly adjacent to the proposed trail; that a higher barrier would also ensure a level of privacy, refuge and safety which the homes at 108 Of Jasmine Court currently provide their residents; that a barrier would also alleviate litter from being deposited onto private Tuckahoe property; that a guardrail barrier to the south of 106 Jasmine 104 Jasmine Court and 102 West Tuckahoe Drive would also be an effective safety measure due to the steep ditch that would be adjacent to the prosed trail and would safeguard the open private noe property that would be directly adjacent to the trail.
(Continue	nued on next page)

Name

Address

Robyn Cartwright & Richard Rennolds 108 Jasmine Court

Timestamp	Comment	
(continued from previous)	NOTES:	
	Although our personal space at 108 Jasmine Court has previously been compromised by unwanted intruders, a trail without barriers would exponentially increase our exposure to Route 12 and the threat of being invaded.	
	It was mentioned to Sandy Cross that Duck Police Officer Joe Knight was aware of footprints in the sand beneath a house window in our backyard that suggested someone had been peering into the house, presumedly by walking to our home from Route 12 through the wooded area behind our home.	
	Also, even though it was not reported to the police nor mentioned to Sandy during our meeting, our friend who was at our home in September of 2023, had items valued in excess of \$100 stolen from our backyard walkway during the days, again presumedly gaining access to our house from Route 12.	
	In conclusion, we do not feel that it is necessary to reiterate in depth the issues that were discussed and addressed in good faith during the 1/24/24 on site meeting with Sandy and Ricky, however, we do want to mention them:	
	That if the feasibility report supported the construction of the Duck west side trail:	
	1. The Town of Duck would support an 8' trail in the area of the Tuckahoe neighborhood	
	2. The Town of Duck would provide viable solutions to the water management issues is said area	
	3. That the trail construction would not encroach on Tuckahoe private property	
	4. That the town of Duck would support the installation of necessary and/or justifiably requested barriers along the proposed west side trail	

Name

Robyn Cartwright & Richard Rennolds

Address

108 Jasmine Court Duck, NC

Timestamp Comment

Tuckahoe HOA West Side Trail Comments 10JAN 2024

Questions

1. What does a "10 ft trail" mean? Is it measured from the side of the current road?

2. What constitutes a "10 ft trail"? 2 feet for professional bicyclers plus 2 feet for vegetation divide plus 6 feet wide pavement? Same question for an 8 ft Trail.

Tuckahoe HOA does NOT support Condition #1 with an 18-24 ft requirement - that exceeds State HWY 12 Right of Way and would negatively impact Tuckahoe HOA.

Tuckahoe HOA does NOT support Condition #4 with a guardrail system - that is incoherent with the natural beauty of the Town of Duck PLUS it restricts animal crossings. Tuckahoe HOA does NOT support any Plan that requires the cutting down of any trees - the closest tree is 17.5 ft from edge of current road.

Based on the 4 Conditions presented in the Feasibility Study. Tuckahoe HOA may support Conditions 2 and 3 pending more clarification by the engineers/architects/planners.

West Side Trail Goals;

1. Advance Roadway Safety.

a. Plan must incorporate historical Deer crossings vis-a-vis NO fences along the path (Tuckahoe does NOT allow fences within 10 feet of property boundaries); place Deer Crossing signs at appropriate locations.

b. Plan must incorporate definable criteria for crosswalk placement - (see below discussion)

2. Improve Stormwater Management.

a. Plan must integrate current stormwater management infrastructure - the grates on the current storm water drains may be safe for bicycle transit. If not, manufacture grates with closer openings to support bicycles without having to move the current storm water drains.

b. Plan must NOT cause Tuckahoe Property Owners issues with stormwater - this will require a lot of work on the North portion of Tuckahoe. The drainage system needs to have water flow into the current stormwater drainage system and NOT into the Property Owners' lots. Tuckahoe was built in the early 1980s with swales designed to protect property owner land from flooding. Any changes must enhance storm water management and not degrade what is currently in place.

c. As a part of the Plan. Town of Duck must Improve its Maintenance of current and improved Stormwater drains - currently, this is NOT being done satisfactorily.

3. Introduce Alternative Modes of Transit.

a. Plan must have Lane Markings (next to street) for bicyclers who ride for sport

b. Plan must have sight impaired roadway crossings

c. Plan must ensure motorized conveyances such as motorized bicycles use the "professional bicycle" section of the trail next to the roadway.

d. Plan must ensure no Golf Carts allowed on the Trail. Low Speed Vehicles mustuse HWY12.

4. Provide Connectivity.

a. Plan needs to coordinate Duck efforts with Southern Shores' effort vis-a-vis (1) hold a Mayor to Mayor meeting to discuss how to connect Duck West Side Trail to Southern Shores West Side Trail. If this is not conducted, then the West Side Trail is "early to need."

Tuckahoe HOA opposes:

1. Issue. Always ON lighting for cross walks.

Rationale. Tuckahoe supports the Dark Skies initiative: A Dark Sky Community is a town, city, municipality, or other legally organized community that has shown exceptional dedication to the preservation of the night sky through the implementation and enforcement of a quality outdoor lighting ordinance, dark sky education, and citizen support of dark skies. Dark Sky Communities excel in their efforts to promote responsible lighting and dark sky stewardship, and set good examples for surrounding communities.

Recommendation. Switch Crosswalk listing to Push to Light or Sense to Light but not what is currently employed which is always ON from sunset to sunrise.

2. Issue. Too many crosswalks

Rationale. There was no discussion about the criteria for a crosswalk. Normal logic would hold that a West Side Trail would "reduce" the number of crosswalks and not increase the number as pedestrians could not walk to the nearest crosswalk to get across the road. Therefore, what is the criteria? Is it distance? Is it every other street? Jay Crest, Osprey Ridge, Settlers Ridge Lane, Amy Lane have no Beach Access; therefore, no crosswalks should be installed at those locations. Do NOT concur with a crosswalk at Four Seasons; rather, install a crosswalk at Nash Lane.

Name

Address

Timestamp	Comment		Name	Address	
(continued from previous)	Recommendation. If additional Crosswalks are installed they should go at Sea Hawk, Nash Lane and Charles Jenkins Lane. The crosswalk at Nash Lane better serves Four Seasons Owners gaining access to the sound and gives access to the sound and gives access to the nearest crosswalk reasonable.				
	Tuckahoe West Side Trail Measurements (all measurements are from current road edge):				
	NORTH of entrance to Tuckahoe				
	Fire Hydrant - 16 ft	EAST SIDE TRAIL			
	Water Access - 15 ft	Water drain - i 5 fi			
	Road sign - 17 ft	Power oole - 11 ft			
	It appears 15 ft is where sign wall begins	Bulkhead- 13 ft			
	It appears a retaining wall required for tennis court - should be NO impact to trees and brush.	Bulkhead - 16 ft Sea Hawk Owner lot fence - 19 ft NO FENCES ALLOWED in TUCKAHOE			
	Will require additional 12-18 inches to build and maintain 10 ft path.				
	Clean out is 7 ft from road				
	Cable towers are 21 ft from road				
	Pine Trees are 19 and 18 ft from road				
	Water clean out - 1 Oft				
	Water drain - 10 ft				
	Pine tree - 18 ft				
	Pine tree - 20 ft				
	Transformers road edge - 26 ft				
	(Note: boundary line by transformers - 17.5 ft)				
	(Note: transformers impinge 15 ft into property owners lots)				
	Non maintained clean out - 12 ft				
	Water drain - 10 ft				
	Tuckahoe HOA				
	Pine trees by Robyn - 20 ft				
	Cable box - 17 .5 ft				
	West Side Trail Comments				
	SOUTH of entrance to Tuckahoe				
	Water drain -10 ft				
	(Note: requires bulkhead - do NOT damage live oak there'				
	CROSSWALK at Tuckahoe				
	Far Edge of current path is 12 ft from road				

A-12



TOWN OF DUCK West Side Multi-Use Trail Feasibility Study

https://www.townofduck.com/westside-path-feasibility-study/







APA FORESIGHT:

Agenda Item 6b

How to use this report

This Trend Report is intended to be used as a tool or reference when planning for the future of our communities. Planners can use the trends listed in this report to augment their long-range and current planning processes, to use futures in community visioning processes, to create scenario planning exercises, to organize futures literacy labs, or simply to inform decision-making about the future.

To determine and prioritize the most important trends to consider, planners can evaluate and rate the trends based upon (1) the expected extent and severity of the potential impact, and (2) how certain or uncertain it is that a trend will occur in a community. The Trend Prioritization for Planners graph demonstrates how these two factors interact in trend evaluation. Trends in the upper right quadrant of the graph high impact and high certainty represent top priorities for planners to pay special attention to. Trends in

the lower right-high impact and low certainty—are specifically well suited for exploratory scenario planning exercises.

In addition to APA's PAS Quick-Notes 94, "Planning With Foresight," which briefly describes how you can use the multiple trends of this report in a foresighted approach, we developed an interactive online course on how you can make sense of the future, train your futures-literacy muscles, and use foresight in your work: Using the Future to Create Dynamic Plans. The course offers approaches on how you can identify trends and signals in your community together with your community members, how you can prioritize and focus on the most important trends, how you can imagine what the future might look like, and how the practice of foresight can help you create dynamic plans that allow you to pivot along the way while the future is approaching.

Trend Prioritization for Planners						
Include these trends in your work, but they won't be crucial.	These trends are top priority for you and your communities.					
	HIGH IMPACT					
LOW IMPACT						
It's okay to dismiss these trends.	Keep on watching these trends or signals and learn more about them.					
LOW CERTAINTY						

Using the Future to Create **Dynamic Plans** CM | 6 This upskilling course, Using the Future to Create Dynamic Plans, gives planners the ability to imagine mul-

tiple plausible futures, use the future in our work, and plan with the future. This interactive self-paced training includes how to use strategic foresight in planning with applicable tools and methodologies to equip planners with the essential skills needed to navigate change and understand how future uncertainties may impact communities.

Agenda Item 6b

An Inclusive Approach to Futures

"A society grows great when old men plant trees in whose shade they shall never sit." —Greek proverb



USING FUTURES can result in more resilient and equitable plans, but if our

future imaginings aren't developed through an inclusive approach, they won't lead to a truly equitable future. APA's <u>PAS QuickNotes</u> <u>110</u>, "Decolonizing the Future: An Inclusive Approach to Futures," explains how and why we must rethink our approach to imagining and discussing futures.

This approach challenges past and present systems, envisioning multiple, diverse futures, and ensuring the outcomes are translated into actions. It is about creating safe spaces for historically marginalized worldviews and cultural identities, moving away from one dominant perspective, and encouraging the imagination and co-creation of many possible futures. It promotes continuous learning, unlearning, and action.

Planners can start by asking the following three questions.



IMAGINING THE FUTURE IS ABOUT GAINING THE POWER

TO SHAPE IT. Limiting our view to the dominant perspective risks replicating the mistakes of the past. Futures thinking is about the people who will be living in the future. Planners must understand the diverse cultural views of those whose futures we are imagining and integrate different worldviews and their interconnections.



THE FUTURE BELONGS TO THOSE WHO WILL INHABIT IT. This includes children—and those who aren't yet born. Including far-out futures in today's planning is challenging when the present is overwhelming. While local planning does not yet often address future generations, some communities have started to involve children and youth in their planning processes. We need to continue fostering these approaches and integrating them into planning.



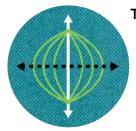
"Using futures for collaboration of people in the present." —Adam Kahane, Reos Partners

PLANNERS CAN USE THE FUTURE TO BRING PEOPLE TOGETHER IN THE PRESENT.

They can empower community members to imagine their futures and engage them in creating change. They can create spaces for meaningful conversations and synthesize collective visions into actionable plans. Decolonization is a strategic action for the present, not just an idealized future.

Agenda Item 6b

APA's Trend Universe



The <u>Trend Universe</u> is the place to find all of the trends and signals that APA has identified as part of our foresight practice. The trends here are dynamically updated, reflecting

the accelerating pace of change of today and tomorrow. Here, you can find existing trends (act on them now), emerging trends (start preparing for them), and potential future trends (keep watching and learn more about them) organized around eight general categories.

Transportation and Infrastructure

Emerging trends and shifts within the <u>transportation and</u> <u>infrastructure sectors</u> are changing how we get around, how we access critical services, and where we live and work.

Economic Development

Global and local shifts in <u>economic development</u> are not only changing the type of work that people do but are impacting the built environment and our communities as well.

Technology

Emerging and evolving <u>technological trends</u> are manifesting in how and where people live, work, and play, and are leading to changes in how we structure and build our cities and communities.

Social Change

<u>Social change</u> is often reflected in not just how we plan and structure our communities, but also in the practice of planning itself.

Climate, Energy, and the Environment

From the impacts of climate change to innovations in energy production and grid modernization, existing and emerging <u>environment trends</u> shape both the built and natural environments.

Future of Work and the Workplace

Broad economic restructuring, including income inequality, job growth and creation, and workforce participation, is reshaping <u>the future of work and workplaces</u> while simultaneously creating or exacerbating existing disparities and segregation.

Politics and Geopolitical Dynamics

<u>Political and geopolitical trends</u> shape and are shaped by changes across the societal landscape and are intensified by the acceleration of political polarization and emerging global challenges.

Housing

Emerging trends in the <u>housing</u> sector point to the critical role that planners will likely play in future decades.