



Appendix A: Existing Transportation Conditions Summary



EXISTING TRANSPORTATION CONDITIONS SUMMARY

Prepared for:



Prepared by:



February 2022

TABLE OF CONTENTS

1.0 Introduction	1-1
1.1 Previous and Related Studies	1-2
1.1.1 SCDOT Studies	1-2
1.1.2 Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) Studies	1-3
2.0 Existing Transportation Infrastructure.....	2-1
2.1 Roadway Features	2-1
2.1.1 Existing Typical Sections	2-1
2.1.2 Shoulder Widths	2-2
2.2 Major Structures	2-4
2.2.1 Bridges	2-4
2.2.2 Interchanges	2-4
2.2.3 Existing Crossroads	2-5
2.3 Functional Classification and Design Speeds	2-5
2.4 Roadway Condition	2-8
2.4.1 Pavement Condition	2-8
2.4.2 Bridge Condition	2-9
2.4.3 Utilities	2-9
Transit, Bicycle, and Pedestrian Facilities	2-10
3.0 Freight Infrastructure.....	3-1
3.1 Freight Generators	3-2
3.2 Freight Delays and Bottlenecks	3-2
3.3 Freight Movement in the BCD Region.....	3-2
3.3.1 Truck	3-2
3.3.2 Rail	3-3
3.3.3 Port	3-5

LIST OF TABLES

Table 2-1: Functional Classification, Posted Speed Limit, Recommended Design Speed, Recommended Posted Speed Limit.....	2-7
Table 3-1: TRANSEARCH Truck Summary, 2016.....	3-3
Table 3-2: BCD Region Rail Summary, 2016.....	3-4
Table 3-3: USACE WCS Port of Charleston Tons, 2016-18	3-6
Table 3-4: FHWA FAF4 Charleston District, Foreign Water Growth, 2016-2045	3-6

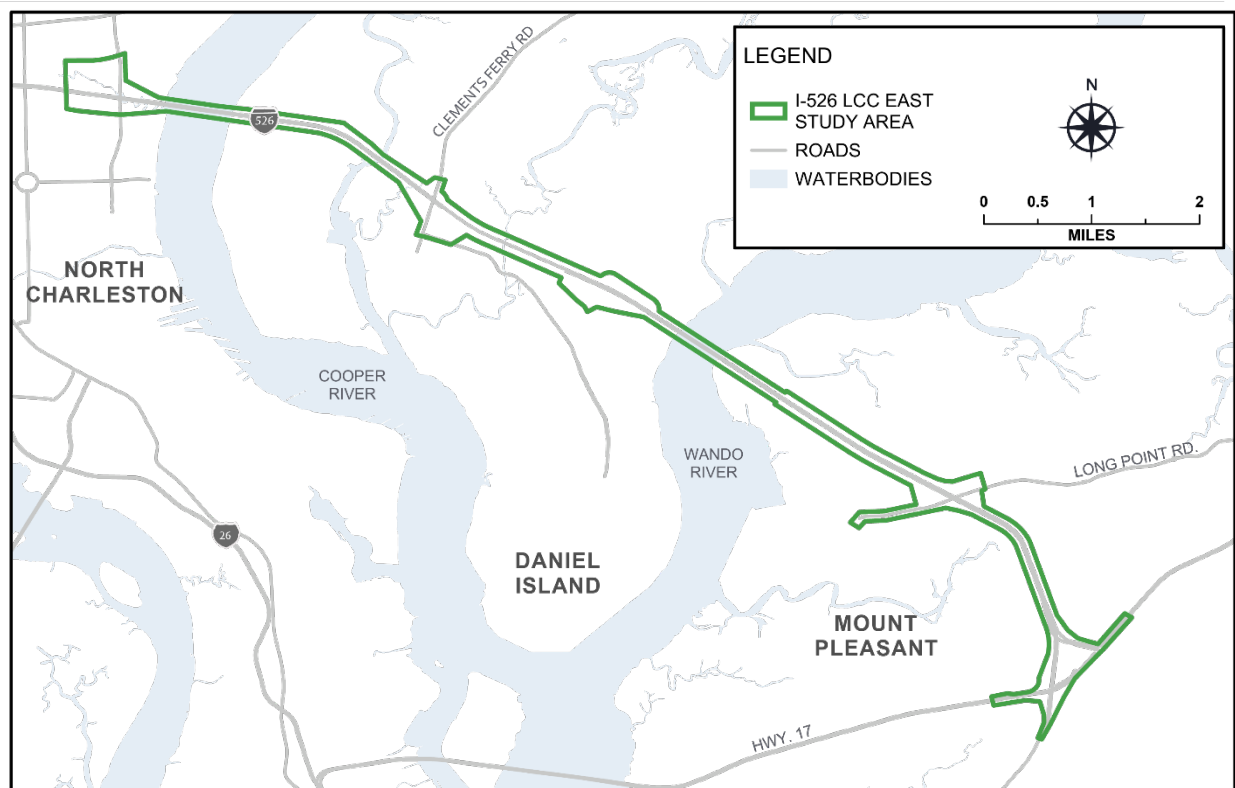
LIST OF FIGURES

Figure 1-1: Project Study Area	1-1
Figure 2-1: I-526 LCC EAST Corridor.....	2-1
Figure 2-2: Existing Typical Sections of I-526.....	2-2
Figure 2-3: Existing Bridge Characteristics on The I-526 LCC EAST Corridor	2-4
Figure 2-4: Functional Classification	2-6
Figure 2-5: Posted Speed Limits within I-526 LCC EAST Corridor	2-7
Figure 2-6: Pavement Condition	2-8
Figure 2-7: Utilities.....	2-10
Figure 3-1: Freight Network and Freight Facilities.....	3-1
Figure 3-2: BCD Freight Truck Density in Tons, 2016.....	3-4
Figure 3-3: Freight Rail Density in Tons, 2016	3-5

1.0 INTRODUCTION

The South Carolina Department of Transportation (SCDOT) is conducting a Planning and Environmental Linkages (PEL) study for the Interstate 526 (I-526) Lowcountry Corridor (LCC) EAST project. The project study area extends approximately 10 miles along I-526 from Virginia Avenue in North Charleston, South Carolina to U.S. 17 in Mount Pleasant, South Carolina (**Figure 1-1**). The project study area is approximately 1,183 acres and has varying widths around existing interchanges, connecting routes, and existing frontage roads. The project study area traverses multiple jurisdictions including the City of Charleston, the City of North Charleston, the Town of Mount Pleasant, Charleston County, and Berkeley County.

Figure 1-1: Project Study Area



I-526 is an interstate facility that provides a partial beltway around Charleston and acts as a bypass for traffic on U.S. 17 through downtown Charleston. This corridor serves as a major commuter corridor and a major economic connector in the lowcountry, linking the goods to and from the South Carolina Port Authority Wando Welch Terminal with Interstate 26 (I-26) and other integral components of the state's freight network. The corridor is also heavily used by tourists traveling to Sullivan's Island, Isle of Palms, and other Charleston area destinations. Major trip generators in the area include the Volvo Car Stadium, the Family Circle Tennis Center, the Central Island Square development, Wando Welch Terminal, and the East Cooper Medical Center.

This Existing Transportation Conditions Summary describes previous and related studies, transportation infrastructure, and transportation conditions present within the I-526 LCC EAST study area.

1.1 PREVIOUS AND RELATED STUDIES

State, regional, and local agencies have developed several transportation studies and plans that relate to the study corridor in various capacities. The plans related to the I-526 LCC EAST are summarized below:

1.1.1 SCDOT Studies

I-526 Lowcountry Corridor WEST Environmental Impact Study (EIS) (Anticipated 2022) – The SCDOT, in association with the Federal Highway Administration (FHWA), is preparing a Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the I-526 LCC WEST project. The project begins at Paul Cantrell Boulevard in West Ashley and spans approximately 9.7 miles ending at Virginia Avenue in North Charleston coinciding with the beginning of the I-526 LCC EAST corridor.

The goal of the I-526 LCC WEST project is to increase capacity and improve operations at the I-526 and I-26 interchange and along the I-526 mainline. Improvements within the project corridor include interchanges improvements at North Rhett Avenue and Virginia Avenue, Rivers Avenue, minor ramp repairs at other service interchanges, and widening the mainline from 4 to 8 lanes. Operational and capacity improvements along the I-526 LCC WEST corridor may improve the facility's level of service (LOS) leading to an increase in drivers along all of I-526. The I-526 LCC EAST corridor must also be able to accommodate the potential increase in traffic volumes from drivers opting to drive on I-526.

Mark Clark Extension Final Environmental Impact Statement (FEIS) (Anticipated 2022/23) – The SCDOT, in association with the FHWA and Charleston County, is preparing a FEIS and ROD to address the environmental impacts of the proposed construction of a new roadway. The Mark Clark Extension Project consists of a new 7.9-mile-long parkway, with an additional 1.6 miles of connector roads on Johns Island, for a total length of 9.5 miles, which includes 4.5 miles of structure and two crossings of the Atlantic Intracoastal Waterway. A multiuse path for bicycle and pedestrian use is included along the entire length of the roadway. The Mark Clark Extension Project extends from the existing interchange at I-526/U.S. 17 to Johns Island with a four-lane parkway then traverses James Island just north of the James Island County Park and ends at the existing James Island Connector/Folly Road interchange.

The goal of the Mark Clark Extension is to increase the capacity of the regional transportation system and enhance mobility to and from the West Ashley, Johns Island, and James Island areas of the Charleston Metropolitan Area. This project is an extension of the existing I-526 facility in West Ashley to the James Island Expressway on James Island. This project will allow commuters living in West Ashley, Johns Island, and James Island access to I-526 providing them a more efficient route to I-526 and destinations on Daniel Island and Mount Pleasant.

South Carolina Statewide Freight Plan Update (2020) – The SCDOT updated the Statewide Freight Plan to accommodate measures included in the 2015 Fixing America's Surface Transportation Act. The plan contains the inventory of transportation assets that support the movement of goods in South Carolina. The plan identified the Statewide Freight Network and compiled and summarized data for historical and forecasted tonnages and commodities. The plan will be used to support SCDOT in the prioritization

decisions regarding investments in transportation infrastructure across the state. The Statewide Freight Plan identified congestion issues and oversize/overweight truck issues along I-526 LCC EAST corridor.

South Carolina 2040 Statewide Multimodal Transportation Plan (July 2020 Update) – The SCDOT, in partnership with the SC Department of Commerce, SC State Ports Authority, FHWA, Federal Transit Administration, and other key stakeholders updated the SC Multimodal Transportation Plan (MTP), "Charting a Course to 2040". The MTP is updated every 5 years to reflect the latest information on travel and growth trends, goals and objectives, infrastructure conditions, future deficiencies, and estimated funding. The MTP was adopted by the SCDOT Commission in 2014 and updated in July 2020. The MTP identified needed interchange improvements and widening along the I-526 corridor.

1.1.2 Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) Studies

Berkeley-Charleston-Dorchester (BCD) Regional Freight Mobility Plan (2022) – The BCDCOG Regional Freight Mobility Plan will provide an evaluation of the region's freight conditions, trends, challenges, and opportunities. The plan incorporates freight data across multiple modes, establishes freight performance measures, and identifies opportunities to incorporate Intelligent Transportation System (ITS) efforts and emerging technologies into freight planning. The plan will be used to help to guide and prioritize future freight investments, policies, and strategies to support economic development goals in the region. The plan recommends a smart corridor study for the I-526 LCC EAST corridor to look at integrating Transportation Systems Management Operations (TSMO) and smart vehicle technology.

2018-2023 Berkeley-Charleston-Dorchester (BCD) Region Comprehensive Economic Development Strategy (CEDS) (2018) – The BCD CEDS document guides effective economic development in the region through a locally-based, regionally-driven economic development planning process. The 2018 BCD CEDS states that local roadway congestion including along I-526 is a concern for residents and businesses.

CHATS 2040 Long Range Transportation Plan (2019) – The BCDCOG serves as the Charleston Area Transportation Study (CHATS) Metropolitan Planning Organization and is responsible for creating a comprehensive plan for the CHATS planning area. The Long-Range Transportation Plan (LRTP) reflects the multimodal needs, current and projected area conditions, and local/state/federal priorities for the CHATS MPO planning area in 2040. The CHATS 2040 LRTP identified the widening of I-526 as well as the I-526 interchanges as committed roadway project.

CHATS Congestion Management Process (CMP) Report (2019) – The CMP is a federally required element of the long-range planning practice for metropolitan planning areas. The CMP provides an assessment of baseline (current) conditions, identifies existing needs, and identifies congestion related improvements from the region's long-range transportation plan and a monitoring schedule to evaluate the effectiveness of these recommendations. In accordance with federal guidance and best practices, the CMP considers a variety of transportation characteristics and factors, including partnerships, community livability, individual corridor conditions, and multimodal measures. The CMP is required to consider "reasonable" demand management and operations strategies for a corridor in which single-occupant vehicle capacity increases are projected. To provide the baseline condition of the transportation network and define the regional approach to address congestion and mobility needs if no new projects are undertaken, the CHATS 2019 CMP identifies committed roadway improvement projects from the CHATS long-range transportation plan. These committed projects make up the

committed portion of the existing plus committed (E+C) roadway network. This baseline condition serves to identify network deficiencies, inform future needs of the network, and evaluate future recommended improvements to the system.

Our Region Our Plan (2012) – *OurRegion OurPlan* is the Vision Plan for future growth, development and infrastructure improvements in the BCD region. Led by the BCDCOG, the plan is a 30 year guide and provides a broad context in which local and regional decisions can be made to foster a healthy environment, a vibrant economy, and a high quality of life for all residents. The plan notes that the I-526 corridor is a regional arterial relied on for commuting and freight movement. Goal 1 of the plan is to “Promote alternate modes of travel.” An indicator of its success: “Strategic planning for Express bus and/or bus rapid transit service between Charleston and Folly Beach, Ravenel, Mt. Pleasant, and Moncks Corner; along Interstate 526 between Mt. Pleasant and Savannah Highway; and between Moncks Corner and East Edisto.”

Regional Transit Framework Plan (RTFP) (2018) – The BCDCOG RTFP serves as the foundation for future high-capacity transit investment in the region through 2040. The I-526 Corridor from Mt. Pleasant to West Ashley was identified as a high-capacity Transit Corridor. The I-526 corridor is recommended for Express Bus in dedicated lanes, HOV lanes, or bus-on-shoulder. The recommends continued coordination with SCDOT and other regional partners to ensure commuter bus service is not precluded along I-526 if managed lanes are explored in the corridor. One of the service recommendations is for express service on I-526 to link Connect high-capacity transit corridors with Wando Crossing, the Airport, and at Citadel Mall.

BCDCOG Lowcountry Rapid Transit Purpose and Need Technical Memorandum (2018) – The Lowcountry Rapid Transit project is a proposed 21.5-mile bus rapid transit system between Charleston, North Charleston, and Summerville that would provide reliable travel, connect communities, and energize economic opportunities along the corridor. The proposed rapid transit corridor extends from Downtown Summerville to the City of Charleston along the US 78 and US 52 corridors. Implementation of this rapid transit project would provide improved transportation access in the region. The project is led by the BCDCOG and has an anticipated completion year of 2025.

Lowcountry Go – Lowcountry Go is a regional partnership of the BCDCOG, SCDOT, FHWA, employers, and stakeholders in the Tri-County region. The program focuses on reducing traffic congestion and managing future traffic volume. Lowcountry Go developed a web-based or mobile application that serves as a comprehensive multimodal trip planner: www.ridelowgo.com. Lowcountry Go connects commuters with carpool and vanpool options and modal options such as public transit, biking, and walking.

Transportation Demand Management Study (TDM) (2016) – The BCDCOG conducted an online survey of employers and employees along the I-526 and I-26 Corridor to understand their travel patterns and willingness to try alternative modes of transportation.

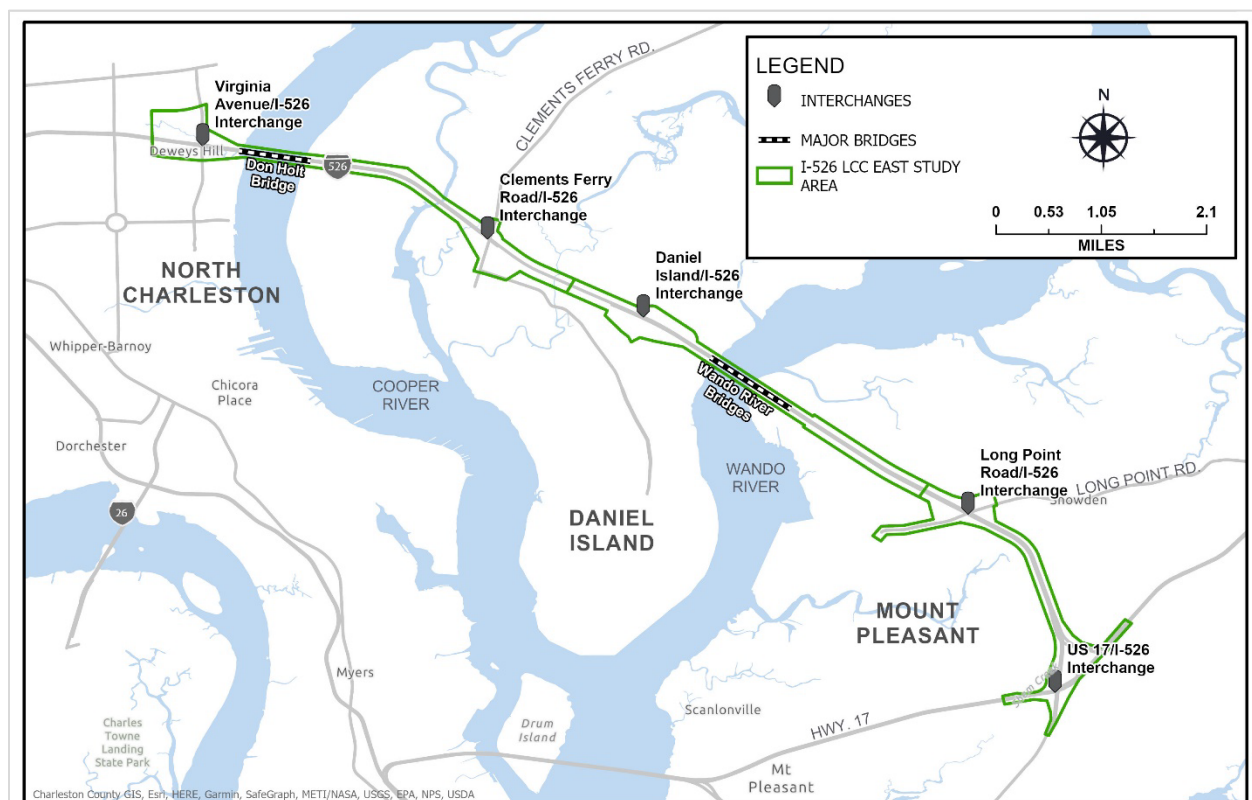
Walk + Bike Berkeley-Charleston-Dorchester (BCD) (2017) – The plan focuses on guiding short-term and long-term transportation planning decisions in an effort to connect walking and biking infrastructure to support regional health, safety, economic development, and quality of life goals. The study highlighted interstates and waterways as one of the major barriers limiting bike and pedestrian connectivity in the region. The study outlines a multi-phased approach to implementing a network of paths, bike lanes, and sidewalks and culminates in an action plan that includes proposed programs and policies.

2.0 EXISTING TRANSPORTATION INFRASTRUCTURE

2.1 ROADWAY FEATURES

The existing I-526 facility consists of two general purpose lanes in each direction, separated by a median that varies in width between 34 and 60-feet. Truck climbing lanes are provided across the Don Holt and Wando River bridges. The I-526 LCC EAST corridor includes five interchanges and approximately 60 percent of the project corridor is on elevated bridge structure. I-526 is a hurricane evacuation route for the coastal communities of the Town of Mount Pleasant, Isle of Palms, and Daniel Island areas. **Figure 2-1** provides an overview map of the I-526 LCC EAST corridor, identifying interchanges and major bridges.

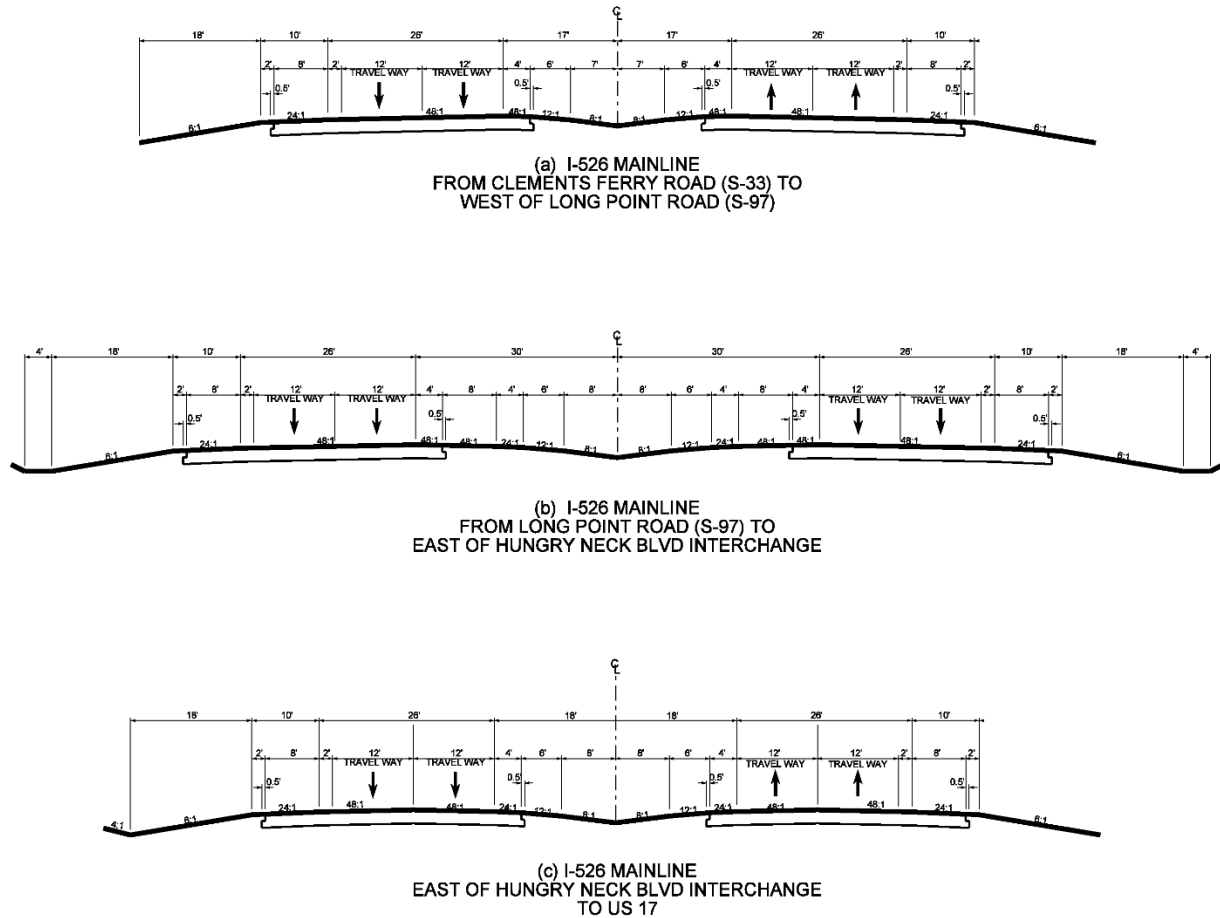
Figure 2-1: I-526 LCC EAST Corridor



The I-526 LCC EAST corridor contains two general purpose lanes in each direction from west of Rhett Avenue to U.S. 17. Auxiliary lanes are present in both directions between the Rhett Avenue and Virginia Avenue interchanges joining the westbound on-ramp from Virginia Avenue to the North Rhett Avenue off-ramp and the eastbound on-ramp from North Rhett Avenue to the Virginia Avenue off-ramp. Truck climbing lanes are present in each direction along the Don Holt and Wando River bridges.

The lane widths are standard 12-feet throughout the study corridor in each direction and are separated by a grass or concrete barrier median, with shoulders on each side of the travel lanes. The inside shoulder width throughout the corridor ranges from 4 to 10 feet. The existing typical sections for the I-526 LCC EAST corridor are shown in **Figure 2-2**.

Figure 2-2: Existing Typical Sections of I-526



Within the I-526 LCC EAST corridor, there are four truck climbing lanes spanning the Cooper River and Wando River bridges.

- **Wando River Bridge:** The eastbound truck climbing lane over the Wando River begins where I-526 crosses over Island Park Drive. The lane continues for 4,777 feet east. The westbound truck climbing lane begins about 1.75 miles west of Long Point Road and continues 5,403 feet west of the Wando River Bridge.

2.1.2 Shoulder Widths

Shoulder widths vary throughout the I-525 Corridor:

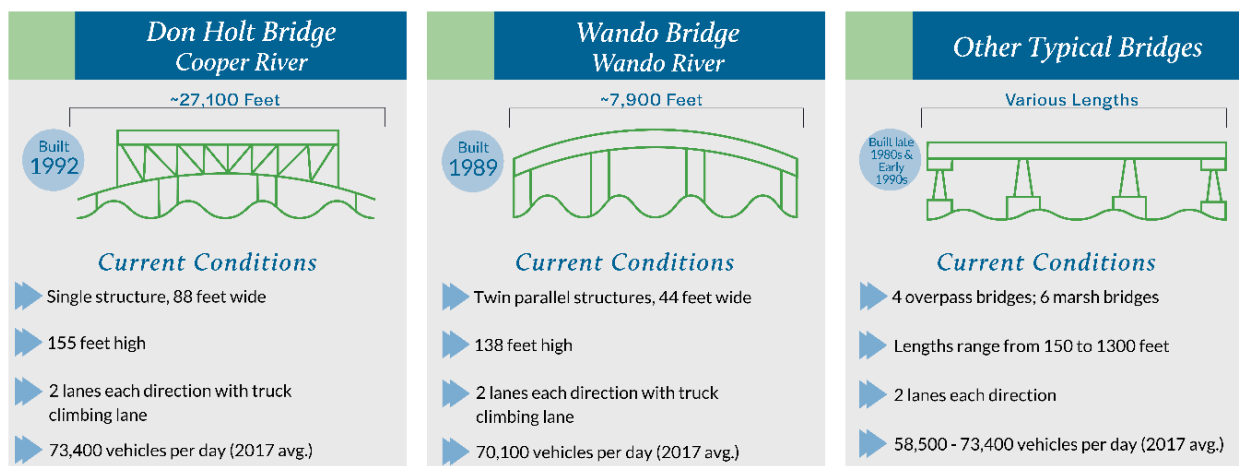
- **North Rhett Avenue to Virginia Avenue** – Generally, the shoulder widths are ten feet for both inside and outside shoulders. The exception is the area near the I-526 on-ramp from North Rhett Avenue and off-ramp to North Rhett Avenue. The shoulder widths in this vicinity are eleven feet on the inside.
- **Virginia Avenue to Western Side of Cooper River** – The shoulder widths approaching the Cooper River on the eastbound side of I-526 vary due to the beginning of the truck climbing lane. Prior to the eastbound truck climbing lane, the outside shoulder width is 17 feet and the inside width is 4 feet. Once the truck climbing lane reaches its maximum width, the outside shoulder is 6 feet, and the inside shoulder is 4 feet. The eastbound shoulder width under the truss is 10 feet for the outside shoulder and 4 feet for the inside shoulder. On the westbound part of this section, the truck climbing lane ends. Under the truss of the Don Holt bridge, the outside shoulder width is 6 feet, and the inside shoulder width is 4 feet. Before crossing over Virginia Avenue, the outside shoulder width is 10 feet and inside shoulder width is 7 feet. After Virginia Avenue, the inside and outside shoulder width is 10 feet.
- **Cooper River to West of Clements Ferry Road** – To the east of the truss of the Don Holt bridge, the truck climbing lane on the eastbound side ends. At this point, the outside shoulder is 10 feet and the inside shoulder is 4 feet. The westbound lanes at this point have an outside shoulder of 6 feet and an inside shoulder of 4 feet. Continuing eastbound towards Clements Ferry Road, the inside and outside shoulders are both 10 feet. On the westbound side, the truck climbing lane begins, and the outside shoulder is 6 feet while the inside shoulder is 4 feet.
- **Clements Ferry Road Interchange** – West of Clements Ferry Road, the shoulders vary due to the on- and off-ramps to and from Clement Ferry Road. The shoulders to the west of these ramps are 10 feet except for the westbound outside shoulder, which is 12 feet. The mainline to the east of these ramps all have shoulders of 10 feet on the east and westbound sides.
- **Daniel Island Interchange** – The eastbound outside shoulder width near the Daniel Island interchange area is 11 feet, with an inside shoulder width of 4 feet. The westbound outside shoulder has a width of 9 feet and the inside shoulder has a width of 4 feet.
- **Between Daniel Island Interchange and Long Point Road** – On the Wando River bridge within the truck climbing lane area, the outside shoulder width is 6-feet in both directions and the inside shoulder width is 4-feet in both directions. East of the Wando River bridge outside the truck climbing lane area, the inside and outside shoulder widths are 10-feet in both directions.
- **Between Long Point Road and U.S. 17** – Within the Long Point Road Interchange, the inside shoulder is 4-feet wide in both directions and the outside shoulder is 10-feet wide. Those same shoulder widths continue to the east of Long Point Road to the I-526 termini at U.S. 17 except on a pair of bridges where the inside shoulder width is 10-feet, not 4-feet.

2.2 MAJOR STRUCTURES

2.2.1 Bridges

Two exceptionally large bridges are present within the I-526 LCC EAST corridor. The Don Holt bridge crosses the Cooper River connecting North Charleston and Daniel Island. The Don Holt bridge is a single structure bridge, 88 feet wide. The James B. Edwards bridge, commonly referred to as the Wando River bridge, crosses the Wando River connecting Daniel Island and Mount Pleasant. The Wando River bridge consists of twin parallel 44 feet wide structures. In addition to the large bridges, four overpass bridges and six marsh bridges are present within the I-526 LCC EAST corridor. **Figure 2-3** shows details for all existing bridges within the corridor.

Figure 2-3: Existing Bridge Characteristics on The I-526 LCC EAST Corridor



Source: CDM Smith, 2020

2.2.2 Interchanges

- **Virginia Avenue** is a partial access interchange consisting of an entrance ramp westbound and an exit ramp eastbound. Virginia Avenue traffic bound for eastbound I-526 must enter I-526 headed westbound and exit at North Rhett Avenue via the loop ramp and re-enter I-526 headed eastbound. Westbound I-526 drivers desiring to exit at Virginia Avenue must continue west past Virginia Avenue and exit at North Rhett Avenue, re-enter headed eastbound toward Virginia Avenue, and exit at Virginia Avenue.
- **Clements Ferry Road (S-33)** is a partial cloverleaf interchange with a single loop eastbound exit ramp to northbound S-33.
- **River Landing Drive/Seven Farms Drive** is a full-access directional interchange consisting of four directional ramps.
- **Long Point Road (S-97)** is a partial cloverleaf interchange with two loop entrance ramps to I-526 WB from NB S-97 and I-526 EB from SB S-97.

- **U.S. 17** consists of two interchange areas. The first consists of east and westbound flyover ramps accessing north U.S. 17/Hungry Neck Boulevard. The easternmost interchange area at the project terminus is a partial cloverleaf interchange with U.S. 17 (Johnnie Dodds Boulevard), consisting of two directional ramps, one diagonal ramp, and two loop entrance ramps I-526 WB from NB US 17 and to I-526 EB from SB US 17.

2.2.3 Existing Crossroads

Existing crossroads along the corridor include:

- **Virginia Avenue** is a five-lane curb and gutter section crossing under I-526 with a sidewalk on both sides of the roadway.
- **Clements Ferry Road (S-33)** is a five-lane open-shoulder roadway crossing under I-526.
- **River Landing Drive/Seven Farms Drive.** Seven Farms Drive is a three-lane curb and gutter section with parking on both sides crossing under I-526. Landscaped verges separate sidewalk on both sides of the roadway. River Landing Drive ramps intersect Seven Farms Drive 0.4 miles southwest of I-526. River Landing Drive is a four-lane roadway separated by raised, landscaped medians.
- **Island Park Drive** is a four-lane roadway with curb and gutter paralleling Seven Farms Drive and crossing under I-526. It connects River Landing Drive with Seven Farms Drive.
- **Long Point Road (S-97)** is a five-lane roadway crossing under I-526. Some of the interchange area consists of open shoulder and some has curb, gutter, and sidewalk. There are decorative street lighting and landscaping within the interchange area.
- **U.S. 17 (Johnnie Dodds Boulevard)** is a four- to six-lane roadway with curb and gutter on both sides and sidewalk on the south side through the interchange, separated by a raised landscaped median. Decorative street lighting is located in the median, and street lighting on mast arms are located behind the sidewalk within the interchange area.

2.3 FUNCTIONAL CLASSIFICATION AND DESIGN SPEEDS

Roadway functional classification was developed by the FHWA as a framework for identifying the travel objective of a roadway¹. The objective of a roadway can range from serving long-distance passenger and freight needs to serving neighborhood travel from residential developments to nearby shopping centers. The functional classification of a roadway indicates the expectations of the roadway regarding design, speed, capacity, the relationship with land use, and federal funding eligibility. Roadway system performance, benchmarks, and targets are typically described by the functional classification of roadways.

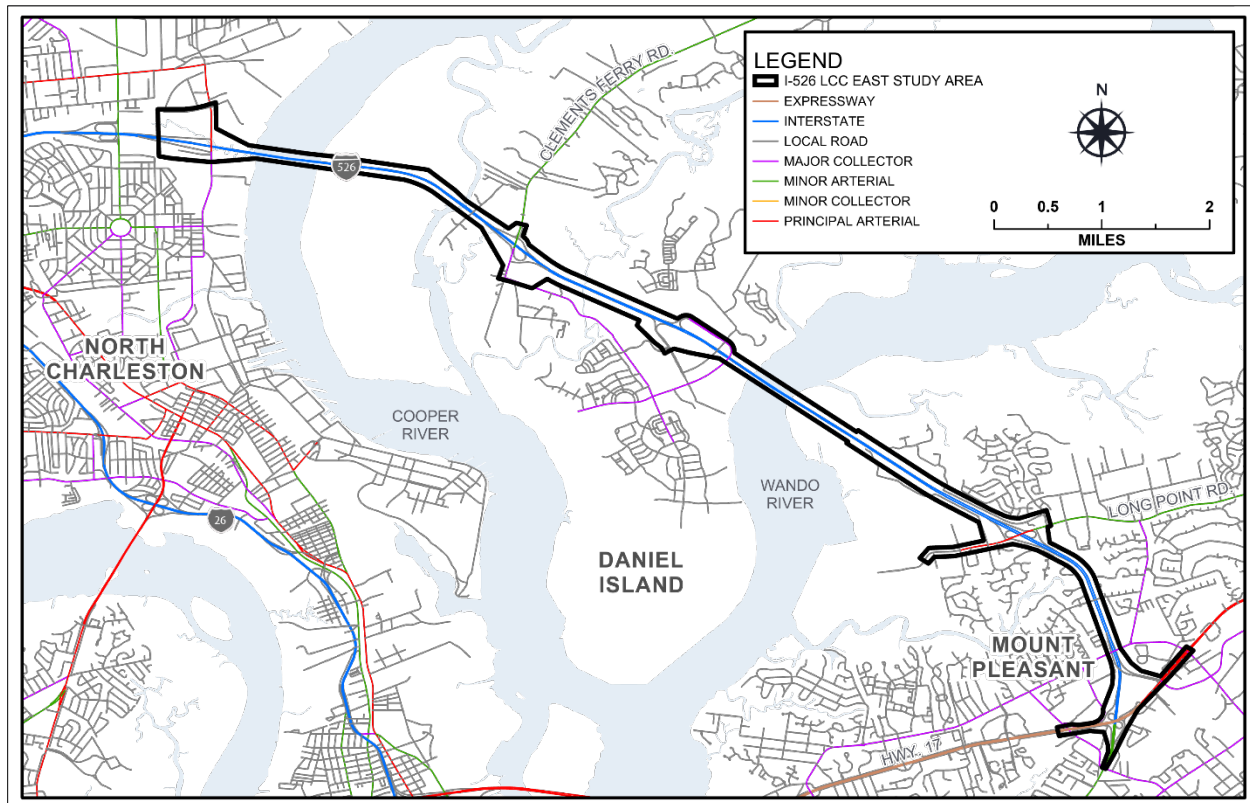
The functional classification of the I-526 LCC EAST corridor from the Virginia Avenue interchange in North Charleston to the U.S. 17 interchange in Mount Pleasant is defined as Interstate. Interstate roadways are designed and constructed with the travel objective of mobility and long-distance travel.

¹ Federal Highway Administration. (2013). Highway Functional Classification Concepts, Criteria and Procedures, 2013 Edition. Accessed February 19, 2021. Retrieved from https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section01.cfm.

Roadways within the Interstate functional classification are officially designated as Interstates by the Secretary of Transportation, and all routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways. The Interstate System provides a network of limited access, divided highways offering high levels of mobility while linking major urban areas of the United States.

Functional roadway classifications are based on the facility's current use as defined by SCDOT and depicted on the functional classification maps on SCDOT's GIS mapping website as of July 2018. **Figure 2-4** shows roadway functional classification for the I-526 LCC EAST corridor and the regional road network.

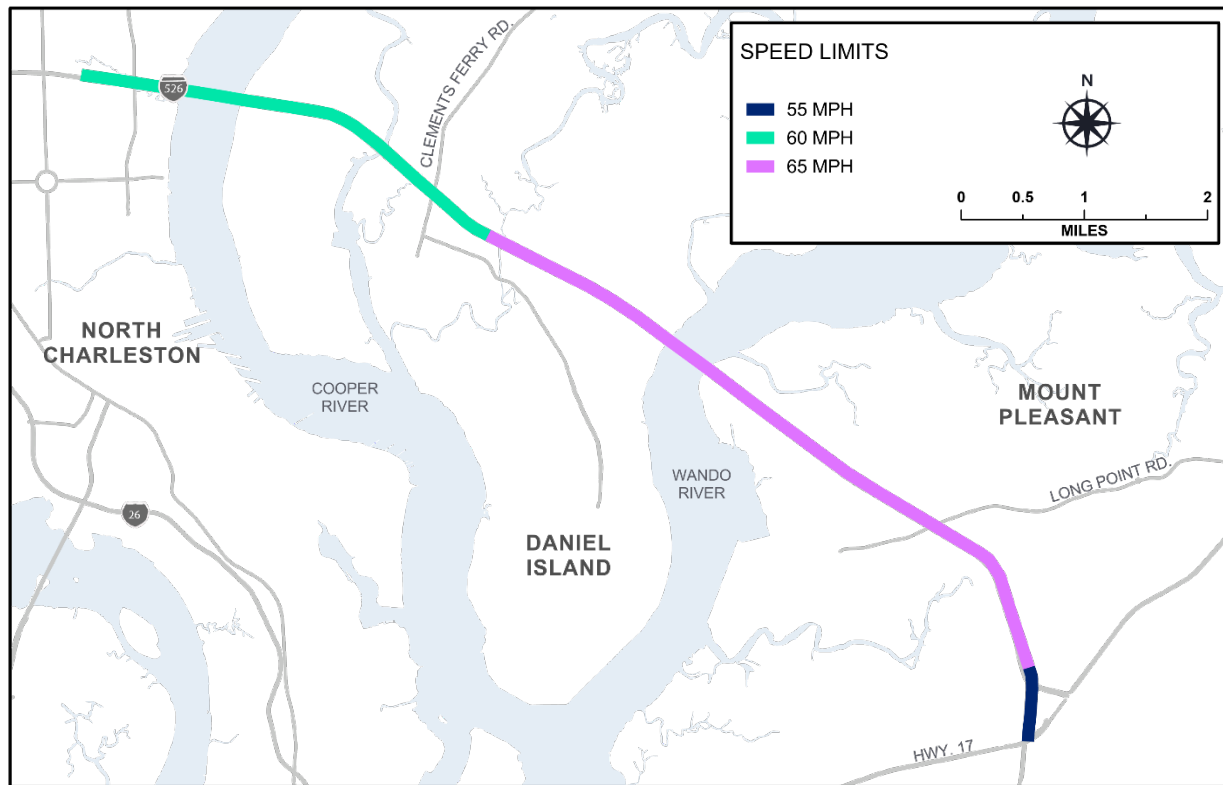
Figure 2-4: Functional Classification



Source: SCDOT Functional Classification, 2010

The posted speed limit varies along the project corridor, ranging from 55 to 65 miles per hour (mph). The posted speed limit is 60 mph from west of Virginia Avenue to approximately 0.5 miles east of the Clements Ferry Road interchange. At this point, the posted speed limit is 65 mph and continues to the bridge crossing Mathis Ferry Road. After crossing Mathis Ferry Road, the posted speed limit changes to 55 mph until I-526 ends at U.S. 17. **Figure 2-5** depicts the posted speed limit along I-526 within the project limits. **Table 2-1** presents a description of the functional classification, posted speed limit, and recommended design speed for each roadway included in this project.

Figure 2-5: Posted Speed Limits within I-526 LCC EAST Corridor



Source: SCDOT, 2018

Table 2-1: Functional Classification, Posted Speed Limit, Recommended Design Speed, Recommended Posted Speed Limit

Roadway	Functional Classification	Current Posted Speed Limit	Design Speed	Recommended Posted Speed Limit
I-526	Interstate (Freeway/Expressway)	Varies 55 to 65 mph	65 mph	Varies 55 to 65 mph
Virginia Avenue (South of eastbound exit ramp)	Collector (Major)	40 mph	45 mph	40 mph
Virginia Avenue (North of eastbound exit ramp)	Arterial (Minor) (Urban Multilane)	40 mph	45 mph	40 mph
Clements Ferry Road (S-33) (South of I-526)	Collector (Major)	40 mph	45 mph	40 mph
Clements Ferry Road (S-33) (North of I-526)	Arterial (Minor) (Urban Multilane)	40 mph	45 mph	40 mph
Seven Farms Drive	Collector (Major)	30 mph	30 mph	30 mph
Island Park Drive	Local Group 4	35 mph	35 mph	35 mph
River Landing Drive	Local Group 4	35 mph	35 mph	35 mph
Long Point Road (S-97)	Arterial (Urban Multilane)	45 mph	45 mph	45 mph
U.S. 17 (I-526 interchange area)	Freeway/Expressway	45 mph	45 mph ¹	45 mph
U.S. 17 (Hungryneck Boulevard interchange area)	Arterial (Principal)	45 mph	45 mph	45 mph

¹. Based on construction plans (file numbers 10.036997A and 10.037229A), the design speed for this roadway was 45 mph. Proposed design speed is consistent with these plans.

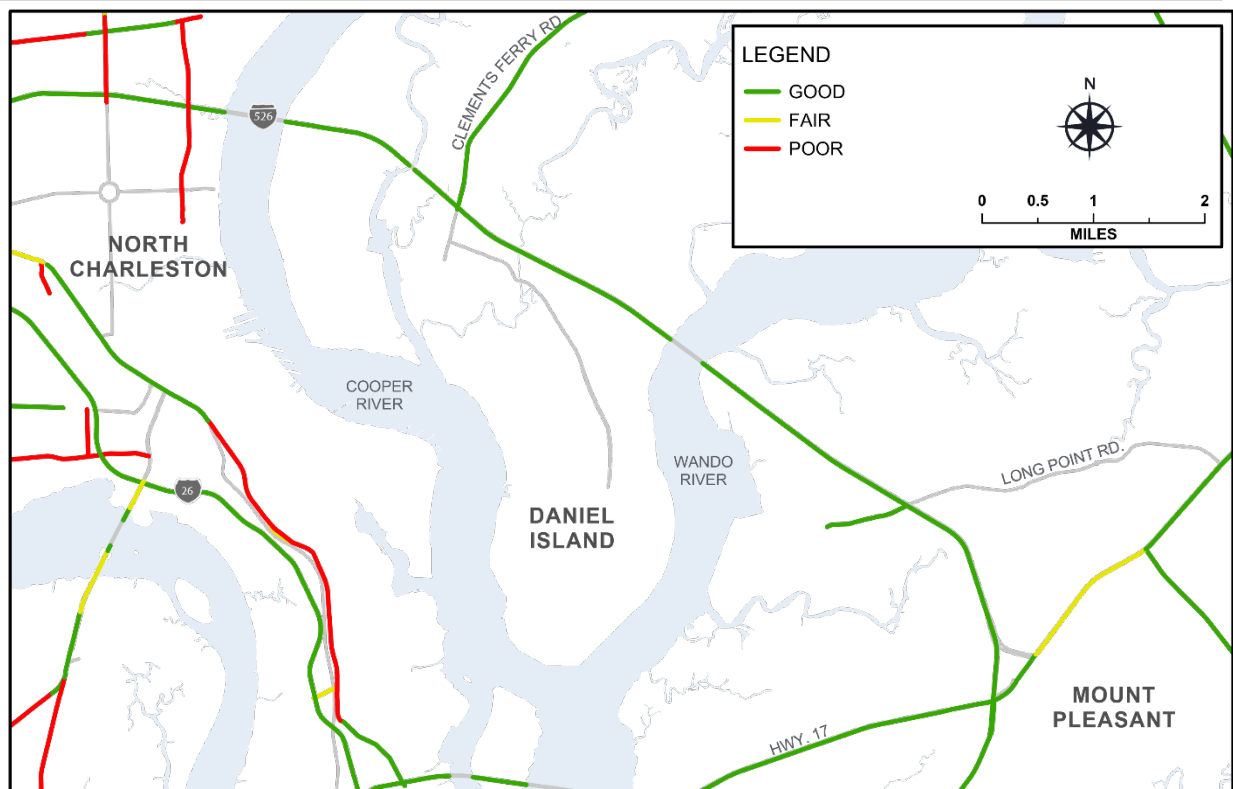
2.4 ROADWAY CONDITION

An assessment of the existing condition of pavement, bridges, drainage, and utilities was performed within the I-526 LCC EAST corridor.

2.4.1 Pavement Condition

According to SCDOT pavement condition data, the pavement condition of the I-526 LCC EAST corridor is rated as “Good” as shown in **Figure 2-6**. The pavement condition ratings are based on the SCDOT Pavement Quality Index (PQI), which is a combination of Pavement Serviceability Index (a roughness/rutting measure) and Pavement Distress Index (a measure of cracking or other distress). PQI scores are given on a 5-point scale, where a “poor” rating ranges from a PQI score of 0.0 to 2.6, “fair” from 2.7 to 3.3, and “good” from 3.4 to 5.0. Pavement condition data was only available for two of the corridor crossroads: Virginia Avenue, Clements Ferry Road, and Long Point Road. The pavement condition for Virginia Avenue is rated as “Poor”, and the pavement condition for both Clements Ferry Road and Long Point Road is rated as “Good”.

Figure 2-6: Pavement Condition



Source: SCDOT, 2018

2.4.2 Bridge Condition

2.4.2.1 Don Holt Bridge

The Don Holt bridge over the Cooper River was built in 1992 and is approximately 2 miles long. The main span of the bridge consists of a 3-span steel truss unit and the approach spans are reinforced concrete flat slab and prestressed concrete girder. According to the National Bridge Inventory (NBI), the Don Holt bridge has a satisfactory superstructure, substructure, and deck condition. The Don Holt bridge has a vertical clearance of 155 feet over the Cooper River and the structural evaluation is equal to present minimum criteria.

As of 2018, the Cooper River bridge approach spans are in generally fair, satisfactory, and good condition. The bridge is performing well and is not in need of any major maintenance repairs or rehabilitation as outlined in the **I-526 Over Cooper River and Approaches Bridge report**.

2.4.2.2 Wando River Bridges

The Wando River bridges are twin parallel structures opened in 1991 and are approximately 1.5 miles long. One structure carries eastbound traffic and the other carries westbound traffic. The bridges are post-tensioned concrete segmental box girders. The Wando River bridges have a vertical clearance of 138 feet over the Wando River and the structure evaluation is equal to present minimum criteria.

The Wando River bridges have experienced many critical service-related issues during its lifetime. Joints and bearings have been a performance problem for the bridge as they are for most longer or complex bridges. In particular, post-tensioning issues have been recurring and threatening issues for these two structures. Since the bridge opening in 1991, the Wando bridges have gone through a series of repairs and maintenance, the following list includes maintenance activities from 2008 through 2018, as outlined in the **I-526 Over Wando River and Approaches Bridge report**:

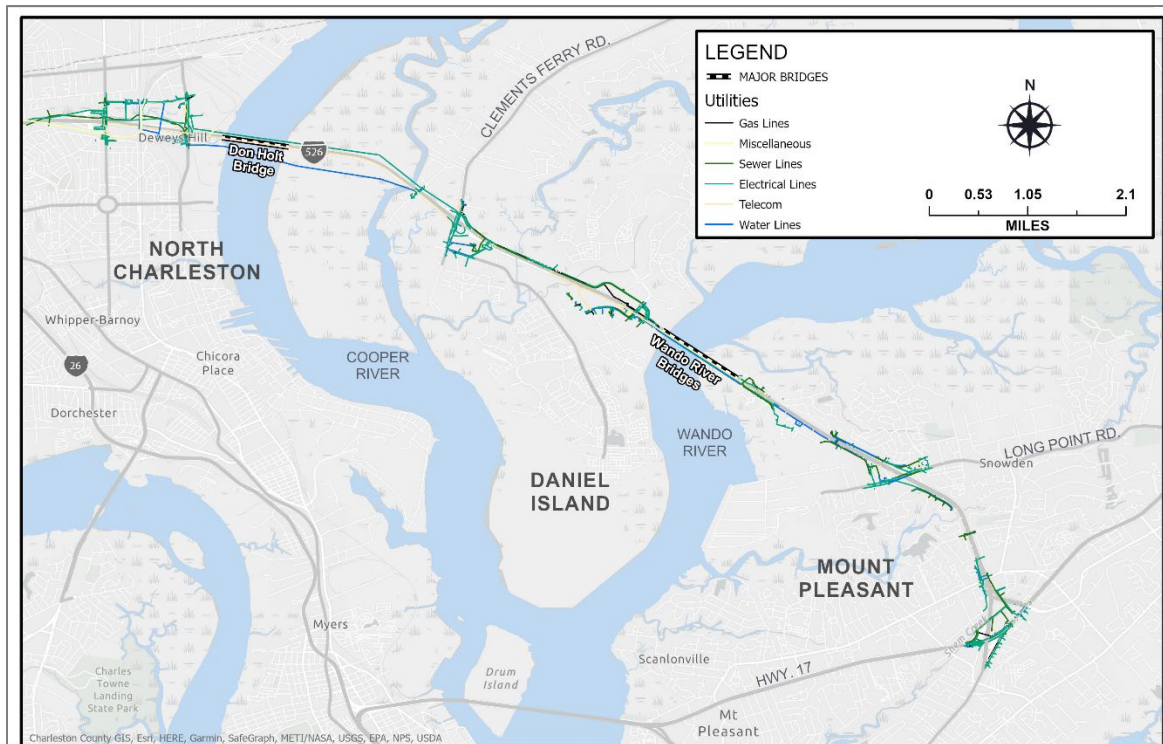
- 2011: Patch and seal repairs were made on east and westbound bridges
- 2012: Scour repairs to east and westbound piers
- 2014: Scour repairs at 2 locations, deck repair and sealing, and grout tube sealing
- 2016: Bearing repair for east and westbound bents
- 2017: External tendon replacement

According to the NBI, the eastbound and westbound spans of the Wando River bridges have a satisfactory superstructure, substructure, and deck condition.

2.4.3 Utilities

Subsurface and above ground utilities were field located during the data collection process. Potential utility issues will be determined as more specific alternatives designs are developed. The location of alternatives in relationship to utilities may drive alternative layouts, screening choices, or cost estimates. **Figure 2-7** illustrates the utilities within the project study area.

Figure 2-7: Utilities



2.5 TRANSIT, BICYCLE, AND PEDESTRIAN FACILITIES

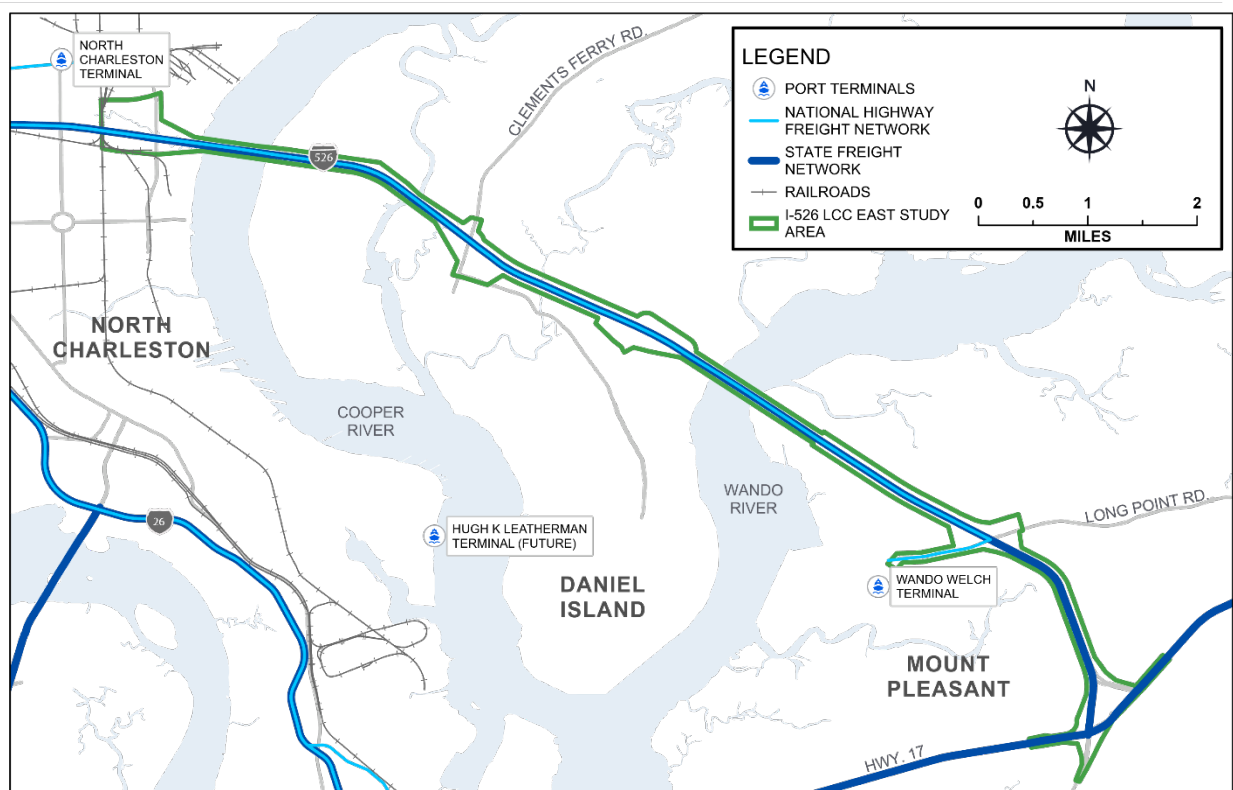
Two transit organizations service the BCD region, the Charleston Area Transportation Authority (CARTA) and the Tri-County Link. There are no CARTA bus routes that travel along the I-526 LCC EAST corridor. The Tri-County Link has one route that travels along the corridor. Route B105 Moncks Corner/Mount Pleasant travels from the Sea Island Shopping Center on Coleman Boulevard in Mount Pleasant to the Tri-County Link Terminal in Moncks Corner. Along the way, it travels on the I-526 LCC EAST corridor from U.S. 17 to Clements Ferry Road.

On Daniel Island, there is one multi-use path on Seven Farms Drive from the southern project study area boundary south of I-526 to the Island Park Drive intersection. In Mount Pleasant, a significant amount of bicycle and pedestrian facilities are present within the I-526 LCC EAST study area. Wando Park Boulevard and Etiwan Pointe Drive have sidewalks from Long Point Road south of I-526 to Slipper Shell Court north of I-526. A sidewalk is present along Shoals Drive. Along Long Point Road a sidewalk is present that spans the length of the project study area from approximately the Wando Welch Terminal to Belle Halle Parkway. In addition, a sidewalk is present on Mathis Ferry Road that runs the length of the project study area south on Hospital Drive. Along U.S. 17, sidewalks are present from Bowman Road to the I-526 overpass and from Ira Road to Mathis Ferry Road. On U.S. 17, there are bicycle and pedestrian facilities that is both a sidewalk and bike path from the western limit of the project study area to Bowman Road.

3.0 FREIGHT INFRASTRUCTURE

I-526 is designated as part of the freight network both within the 2020 SC Statewide Freight Plan and the 2022 BCD Regional Freight Mobility Plan. I-526 is also nationally significant and designed for long-distance travel and trade as it connects to I-26, which connects to I-95, the primary highway trade corridor for the entire Eastern Seaboard. The I-526 LCC EAST corridor is the nearest interstate facility for the Wando Welch Terminal and North Charleston Terminal and therefore provides key access for trucks into and out of the two port terminals. **Figure 3-1** shows the national and state freight networks, port terminals, and railroads in the vicinity of the I-526 LCC EAST corridor.

Figure 3-1: Freight Network and Freight Facilities



Other key freight infrastructure in the region includes the Port of Charleston, which has five cargo terminals (Hugh Leatherman Terminal, Columbus Street Terminal, North Charleston Terminal, Veterans Terminal, and Wando Welch Terminal). I-526 and I-26 carry port-generated truck traffic, accommodating significant flows between the Charleston region and the upstate region.

The Charleston International Airport is another significant component of freight infrastructure in the region. The Charleston International Airport was the 78th busiest cargo airport in the U.S. in 2018, handling about 347 million pounds of freight.² High quality landside connections are critical to air freight efficiency.

² <https://www.ttnews.com/top100/airports/2019>

CSX and Norfolk Southern (NS) railroads are the major Class 1 freight railroads in the region. Each railroad operates an intermodal yard in Charleston. CSX and NS railroads are located in North Charleston and cross below I-526 between North Rhett Avenue and Virginia Avenue. The railroads in this area serve the North Charleston Terminal and other industrial uses in the area.

3.1 FREIGHT GENERATORS

Key freight generators nearest the I-526 LCC EAST corridor include the North Charleston Terminal and Wando Welch Terminal. Virginia Avenue in North Charleston has a few significant freight generators. Delfin Group USA generates nearly 1.8 million tons of inbound and outbound freight. Kinder Morgan Bulk Terminals generates 511,000 tons of inbound and outbound freight. Buckeye Terminals produces nearly 507,000 tons of inbound and outbound freight.

3.2 FREIGHT DELAYS AND BOTTLENECKS

According to the CHATS TDM and the SCDOT statewide model for 2015, I-526 from Rivers Avenue to Clements Ferry Road experience truck delays of approximately between 40 and 161 hours per day. The intersection of I-526 and Clements Ferry Road experience truck delays of up to nearly 1,300 hours per day.

The National Performance Management Research Data Set (NPMRDS) data for 2019-2020 revealed significant truck bottlenecks on the I-526 LCC EAST corridor. Heavy freight bottlenecks tend to occur between the east side of the Cooper River and Clements Ferry Road and the westbound Daniel Island off-ramp and westbound side of the Wando River. Moderate freight bottlenecks occur from the western boundary of the project study area to approximately Virginia Avenue and between Clements Ferry Road and the westbound Daniel Island off-ramp. There are also frequent bottleneck hot spots in the westbound direction around the Long Point Road interchange and in both directions near Bowman Road.

3.3 FREIGHT MOVEMENT IN THE BCD REGION

3.3.1 Truck

In 2016, TRANSEARCH estimated 89 million tons of goods traveled on the BCD highway network, transporting 6.4 million units valued at over \$211 billion. A summary of freight truck movements within the BCD region is shown in **Table 3-1**. The BCD region exhibited a positive truck-bound trade balance, with more outbound than inbound goods, especially by value, which indicates that the region is a net producer of truck-borne freight (the BCD region produces more than it consumes). Additionally, the BCD region likely reflects the truck-leg of the Charleston Ports freight that is moved inland.

Table 3-1: TRANSEARCH Truck Summary, 2016

Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Outbound	15,013,564	16.9%	1,138,237	17.8%	\$46,880	22.1%	\$3,123
Outbound to SC	4,585,980	5.1%	420,446	6.6%	\$5,813	2.7%	\$1,268
Outbound to non-SC	10,427,584	11.7%	717,791	11.2%	\$41,067	19.4%	\$3,938
Inbound	13,413,669	15.1%	1,085,043	17.0%	\$28,482	13.5%	\$2,123
Inbound from SC	3,400,089	3.8%	376,497	5.9%	\$4,446	2.1%	\$1,307
Inbound from non-SC	10,013,580	11.2%	708,546	11.1%	\$24,037	11.4%	\$2,400
Intra-Regional	8,510,723	9.6%	1,190,516	18.6%	\$19,640	9.3%	\$2,308
Through	52,135,754	58.5%	2,971,248	46.5%	\$116,713	55.1%	\$2,239
Through SC to SC	620,197	0.7%	56,428	0.9%	\$604	0.3%	\$974
Through non-SC to SC	3,249,517	3.6%	275,290	4.3%	\$5,484	2.6%	\$1,688
Through SC to non-SC	4,005,009	4.5%	260,003	4.1%	\$7,465	3.5%	\$1,864
Through non-SC to non-SC	44,261,032	49.7%	2,379,527	37.3%	\$103,159	48.7%	\$2,331
Total	89,073,711	100.0%	6,385,045	100.0%	\$211,716	100.0%	\$2,377

Source: TRANSEARCH (2016)

Aside from I-95, the remaining regionally relevant truck volumes are routed mostly along I-26 heading towards the upstate regions and north along I-95. The TRANSEARCH-routed tonnage on I-26 is about a third the volumes on I-95 in Dorchester County. Other roadways are allocated minor volumes, which is typical for TRANSEARCH routing due to the database resolution³. As such, roadways like I-526 are under allocated volumes relative to observed reality (e.g., the eastern segment is only routed a few thousand tons from Georgetown County to/from Jasper County and the surrounding counties). The freight truck density in 2016 for the BCD region is shown in **Figure 3-2**.

By 2040, truck freight on the BCD network is projected to increase to over 170 million tons, a 92 percent total increase, or 2.7 percent annually, with outbound volumes growing slightly faster than the other directions.

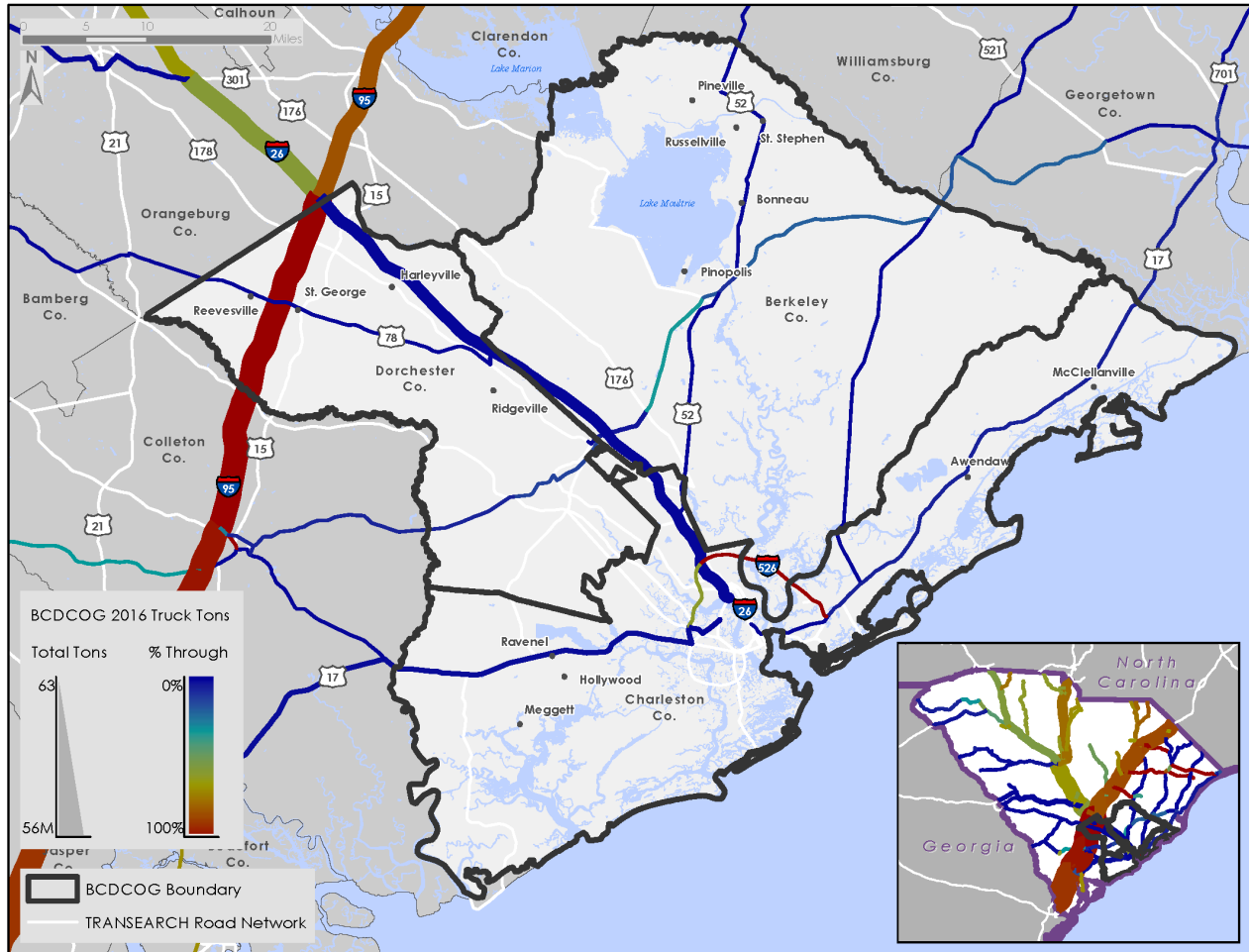
3.3.2 Rail

In 2016, TRANSEARCH estimated 24 million tons of goods travelling on the BCD region railroads, transported within 566,300 carloads and valued at over \$37 billion. A summary of freight truck movements within the BCD region is shown in **Table 3-2**.

Unlike trucks, freight traversing railroads in the BCD region are not mostly through (about one third volumes) but originate/terminate in the region (including at the port and intermodal transfer facilities). Inbound is the largest relative direction, at almost half the tonnage, and more than a third the freight value. Outbound rail comprises about one fifth of the tonnage and a quarter of the value. Intraregional rail is a relatively small proportion, as expected given rail freight is typically long-haul.

³ TRANSEARCH is based on a NAFTA trade network; as such, intra-county and intra-regional movements are not routed with a detailed resolution; specifically, intra-county movement are not routed at all because there is no sub-county origin and destination.

Figure 3-2: BCD Freight Truck Density in Tons, 2016



Source: TRANSEARCH (2016)

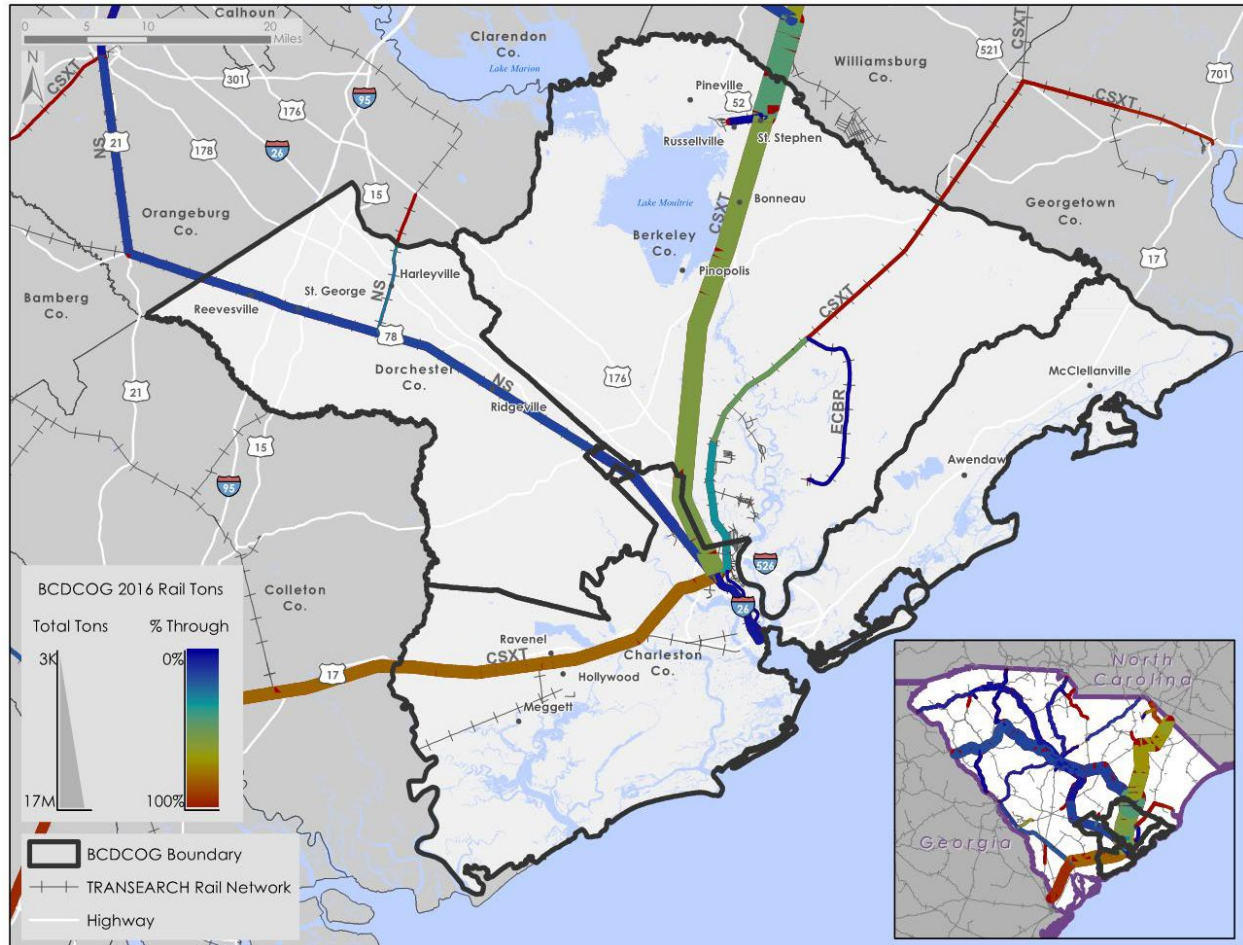
Table 3-2: BCD Region Rail Summary, 2016

Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Outbound	4,432,478	18.5%	129,716	22.9%	\$10,086	27.3%	\$2,275
Outbound to SC	1,625,080	6.8%	48,240	8.5%	\$3,512	9.5%	\$2,161
Outbound to non-SC	2,807,398	11.7%	81,476	14.4%	\$6,574	17.8%	\$2,342
Inbound	11,144,727	46.6%	241,889	42.7%	\$13,782	37.2%	\$1,237
Inbound from SC	2,687,557	11.2%	88,215	15.6%	\$7,356	19.9%	\$2,737
Inbound from non-SC	8,457,170	35.4%	153,674	27.1%	\$6,426	17.4%	\$760
Intra-Regional	780,056	3.3%	7,688	1.4%	\$443	1.2%	\$568
Through	7,550,479	31.6%	187,008	33.0%	\$12,693	34.3%	\$1,681
Through SC to SC	111,920	0.5%	1,160	0.2%	\$107	0.3%	\$960
Through non-SC to SC	1,185,744	5.0%	11,284	2.0%	\$334	0.9%	\$282
Through SC to non-SC	771,760	3.2%	8,960	1.6%	\$623	1.7%	\$807
Through non-SC to non-SC	5,481,055	22.9%	165,604	29.2%	\$11,629	31.4%	\$2,122
Total	23,907,740	100.0%	566,301	100.0%	\$37,005	100.0%	\$1,548

Source: TRANSEARCH

The CSXT line connecting Charleston north parallel to US 52 has the densest freight volumes, at about 17 million tons in 2016, followed by CSXT line from Charleston south paralleling U.S. 17; however much of that is through the region. The freight rail density by tons in 2016 for the BCD region is shown in **Figure 3-3**.

Figure 3-3: Freight Rail Density in Tons, 2016



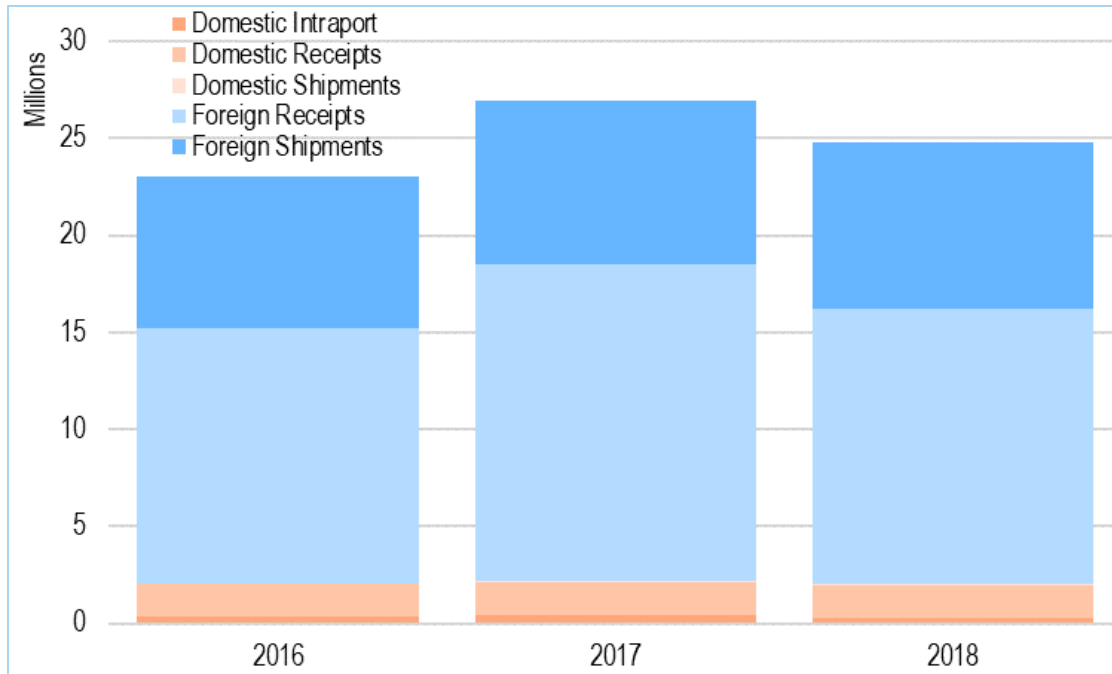
Source: TRANSEARCH (2016)

By 2040, rail freight on the BCD region railroads is projected to increase to almost 40 million tons, a 65 percent total increase, or 2.1 percent annually, with outbound volumes growing slightly faster than in the other directions. About half the absolute volume growth is in miscellaneous mixed shipments and chemicals; coal imports from Kentucky, Indiana, and Pennsylvania are not expected to grow.

3.3.3 Port

The United States Army Corps of Engineers (USACE) Waterborne Commerce Statistics (WCS) provides data on the foreign and domestic waterborne commerce moved at the ports and harbors (i.e., nodes) and on the waterways and canals (i.e., links) of the U.S. Between 2016 and 2018, the Port of Charleston accommodated around 25 million freight tons, with a significant majority (92 percent) pertaining to foreign-borne trade, and the remaining to domestic movements (8 percent). Directionally, about two-thirds are receipts (inbound, or imports), and the remaining third are shipments (outbound, or exports), with a small fraction pertaining to intra-port movements.

Table 3-3: USACE WCS Port of Charleston Tons, 2016-18



Source: USACE WCS, 2016-2018

According to the FHWA Freight Analysis Framework (FAF) data forecasts, total waterborne tonnage in the Charleston District is projected to almost double by 2045, with 95 percent growth, or 2.3 percent on average, annually; imports growing faster than exports **Table 3-4**. Waterborne values are forecast to almost triple, with 191 percent growth, or 3.8 percent annually.

Table 3-4: FHWA FAF4 Charleston District, Foreign Water Growth, 2016-2045

Year	Tons (millions)			Value (billions)		
	Imports	Exports	Total	Imports	Exports	Total
2016	15.4	17.1	32.5	\$57.9	\$40.9	\$98.7
2045	36.1	27.1	63.2	\$171.4	\$115.8	\$287.2
Change in Tons	20.7	10.0	30.7	\$113.5	\$75.0	\$188.4
Percentage Change	135%	58%	95%	196%	183%	191%
Compound Annual Growth Rate	3.0%	1.6%	2.3%	3.8%	3.7%	3.8%

Source: FHWA FAF4