CAROLINA CROSSROADS

Noise Advisory Board Meeting

January 24, 2019

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

Introductions

Agenda

01 Project Overview

02 Noise Analysis

03 Next Steps

Existing Corridor

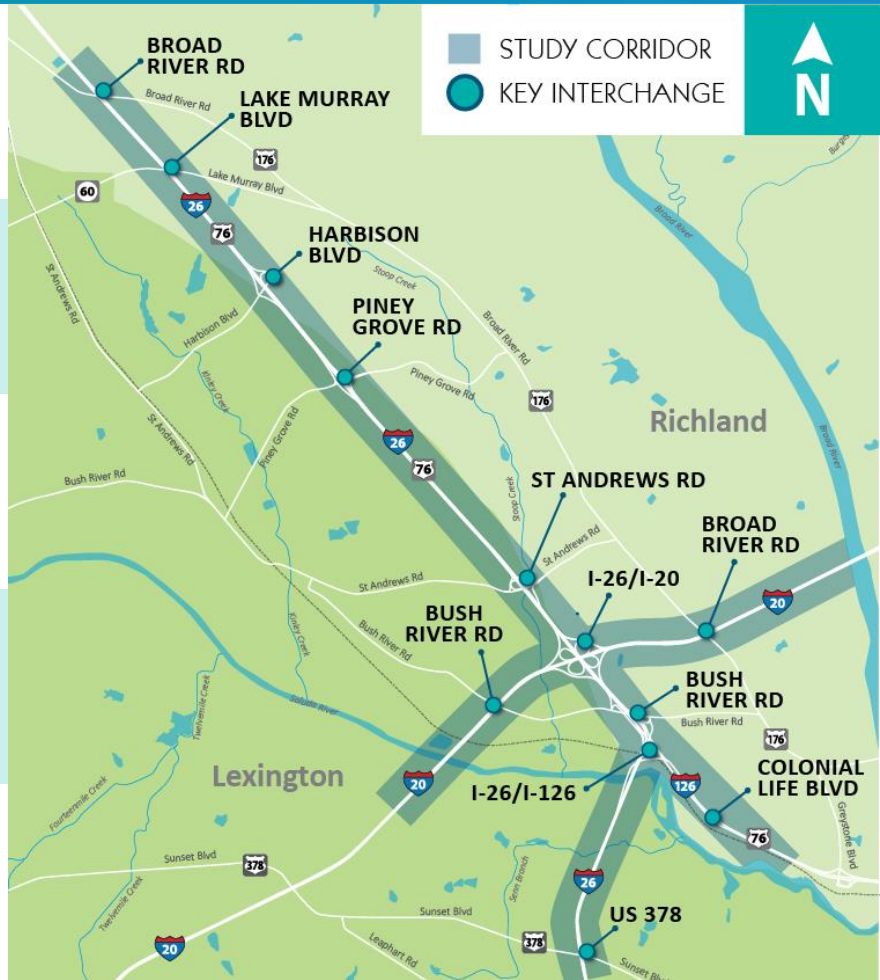
19 **Bridges**

12 **Interchanges**

14 **Interstate**
(miles)

166 **Roadway**
(lane miles)

134k **AADT**
(Between St. Andrews and I-20)



Project Purpose and Needs

Primary Purpose

Secondary Need

- Improve freight mobility
- Improve safety in the corridor
- Improve system linkages

Key Project Milestones

Key Project Milestones

1	2	3	4	5	6	7
Project Initiation	Community Kick-off Meeting	Scoping & Initial Environmental Studies Notice of Intent	Public Scoping Meeting	Preliminary Interchange Alternatives	Begin Development of Draft Environmental Impact Statement (DEIS)	Alternatives Public Information Meeting
March 2015	May 12, 2015	July 2015	September 10, 2015	2015-2016	July 2016	October 4, 2016

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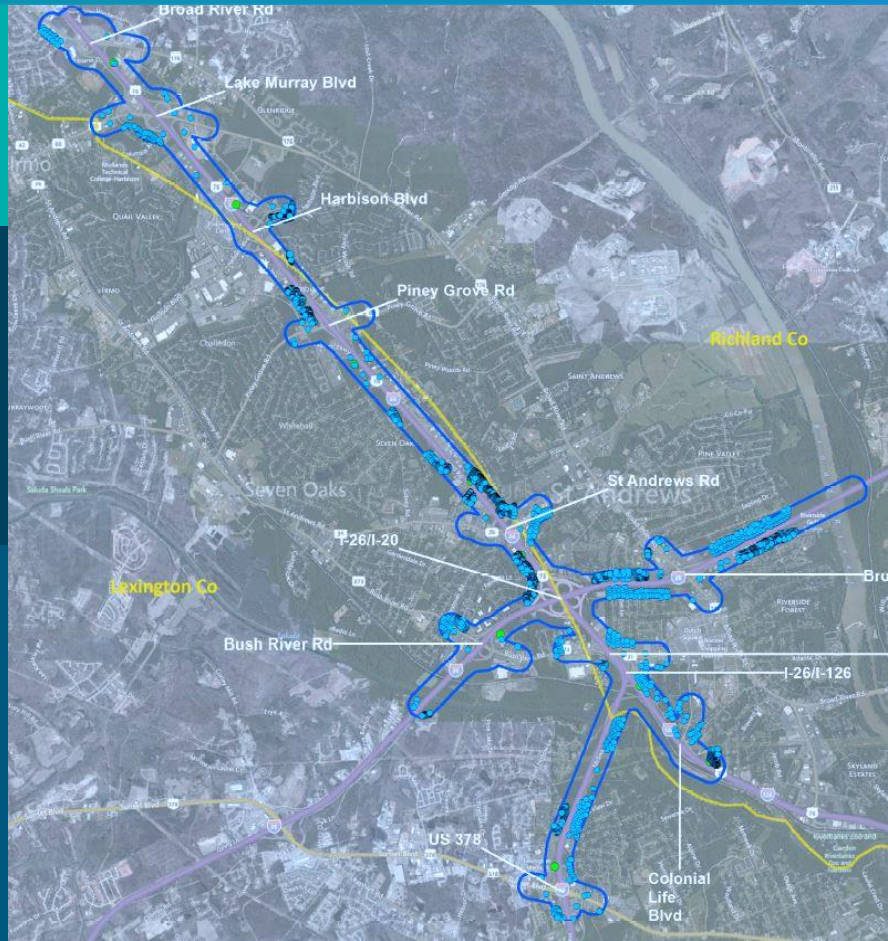
Development and Screening of Representative Alternatives	Reasonable Alternatives Public Information Meeting	Public Hearing on DEIS and Recommend Preferred Alternative	Final Environmental Impact Statement (FEIS) Record of Decision (ROD)	Procurement of Contractor & Begin Right of Way Acquisition	Project Delivery/ Construction
October 2016 - Summer 2017	Fall 2017	Summer 2018	Spring 2019	2019	2019 & beyond

We are here

South Carolina Department of Transportation

Noise Receptor Sites

- A total of 2,736 individual noise receptor sites were identified.
- Sites were within approximately 500 feet of the project centerline and were identified using parcel map information.
- SCDOT has different Activity Categories defining what is, and what is not, a noise sensitive receptor that needs to be evaluated.



SCDOT Traffic Noise Abatement Policy

Feasibility

“Feasibility” is determined by physical and/or engineering constraints

Engineering Feasibility

Could a noise barrier feasibly be constructed on the site? (topography, safety, drainage, utilities, maintenance, access, wall height)

Acoustic Feasibility

Could a noise barrier provide a 5 dBA reduction for 75% of impacted receptors?

Feasibility Considerations

- Does DOT have the required right-of-way to construct the wall?
- Are there safety concerns such as sight distances and clear zones?
- Are there buried utilities or utility relocation needs?
- What are the impacts to drainage or drainage features within right-of-way?
- What are the soil types or wetland areas?

Reasonableness

“Reasonableness” is based on several factors including:

Noise Reduction Design Goal:

At least 8 dBA reduction must be achieved for 80% of those receptors in the first two building rows that would benefit from a noise wall.

Cost Effectiveness:

SCDOT’s cost-effectiveness criteria is based on $35 per square foot, and must be less than $30,000 per benefited receptor.

Opinion of Benefited Residents and Owners:

A noise wall will not be constructed if greater than 50% of the neighborhood is against it.

Preliminary vs. Detailed Noise Analysis

Preliminary

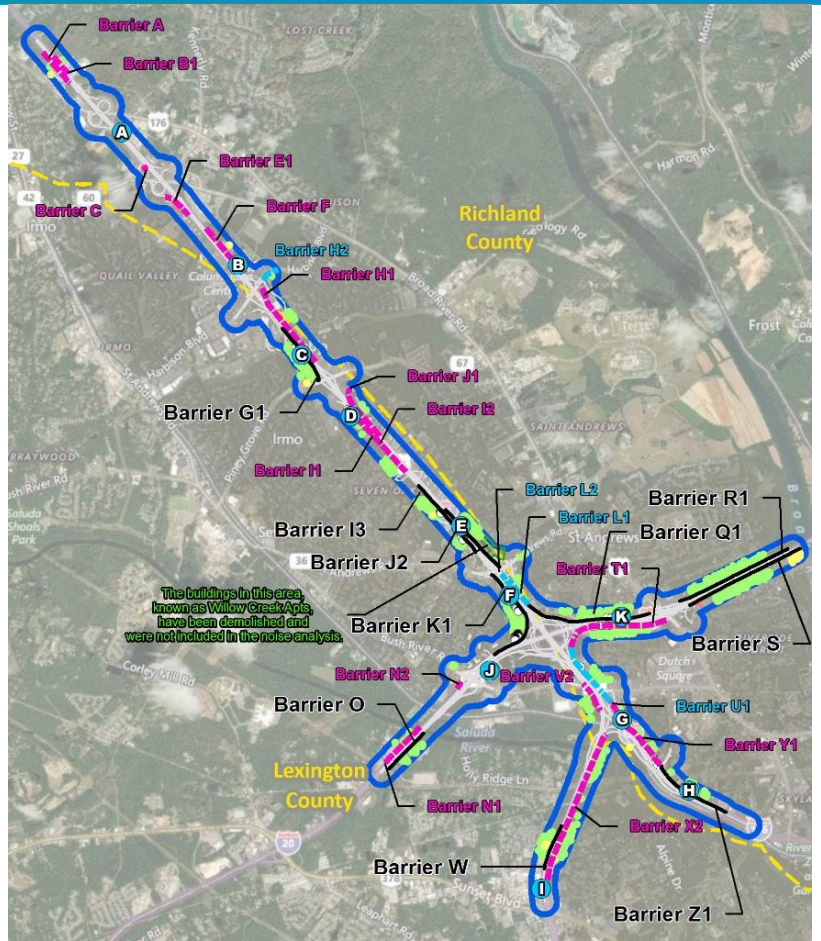
- Required by SCDOT policy
- Considered each alternative in the DEIS (RA1, RA5 and No-Build)
- Not a final indicator of where noise abatement measures will be constructed

Detailed

- Only performed on the Recommended Preferred Alternative (RA1) and the No-Build Alternative
- Includes more detail than Preliminary Analysis (traffic and roadway design)
- Results reviewed by an independent 3rd party technical expert

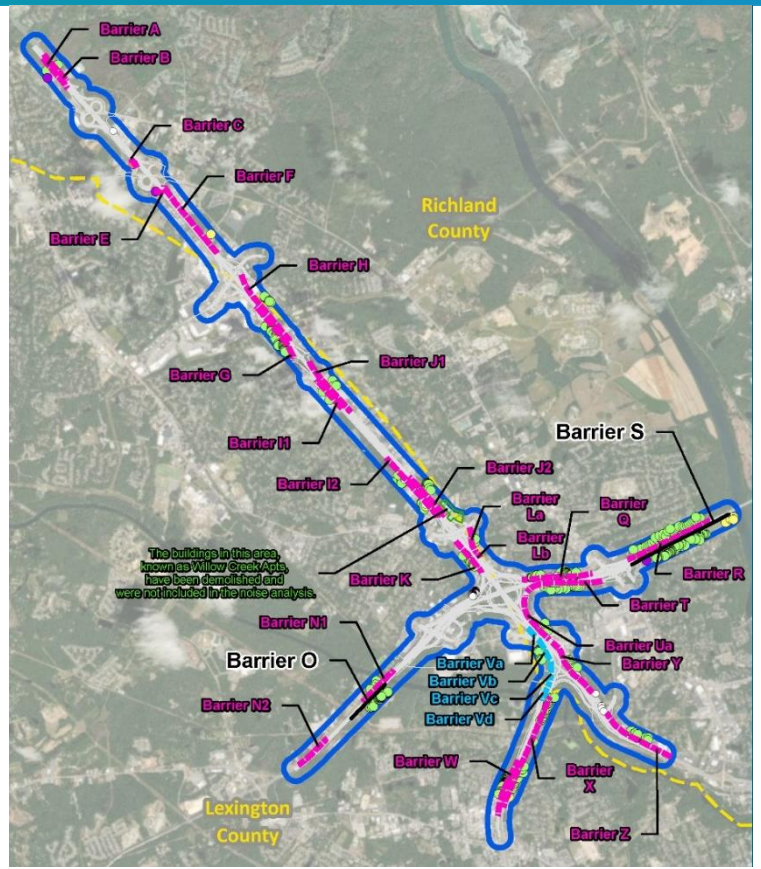
Preliminary Analysis

- 26 noise wall locations evaluated, 10 were presented at the public hearing and in DEIS
- Assumes all terrain is flat
- Does not include terrain, elevations, shoulders/medians and buildings that would affect noise

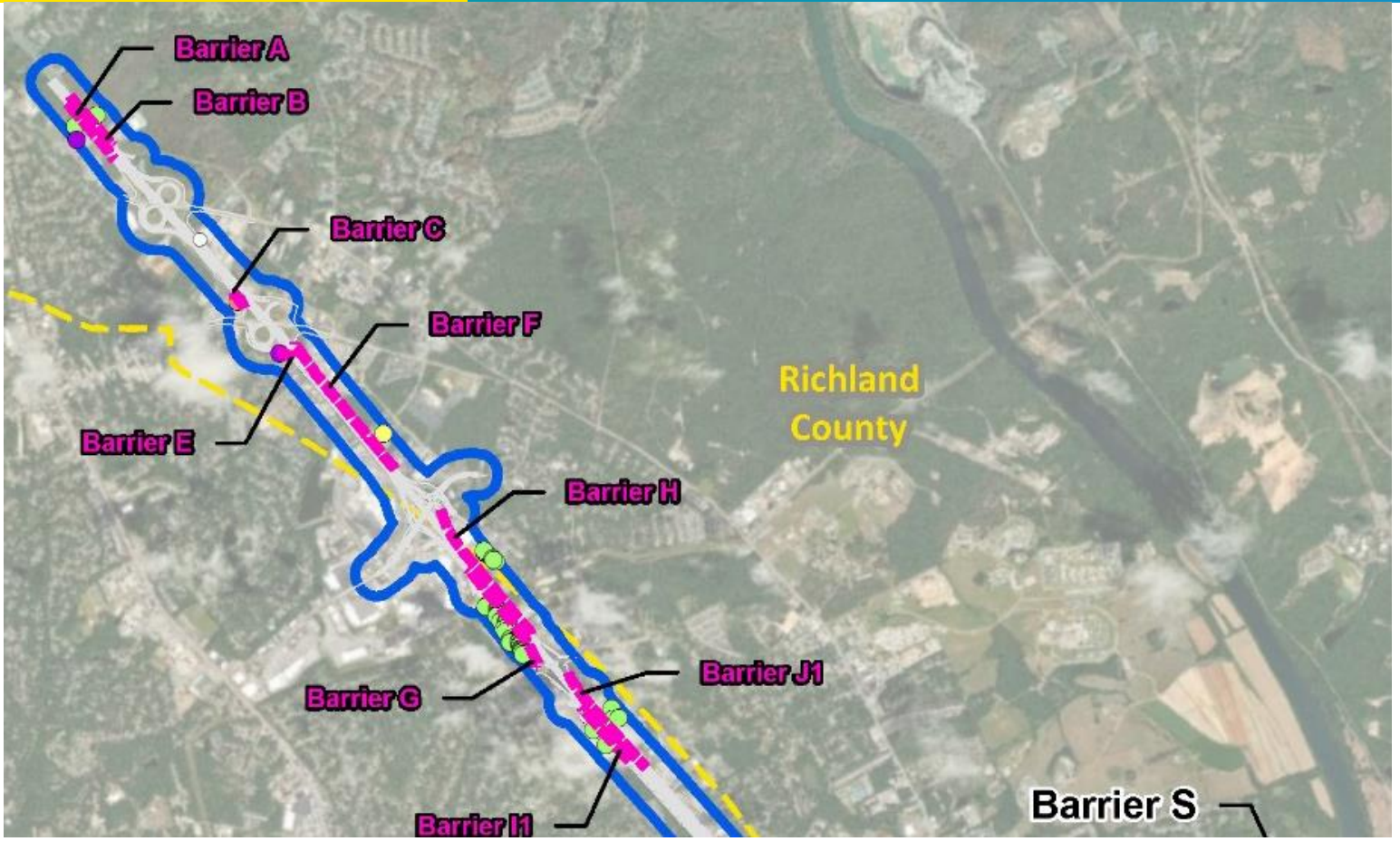


Detailed Analysis

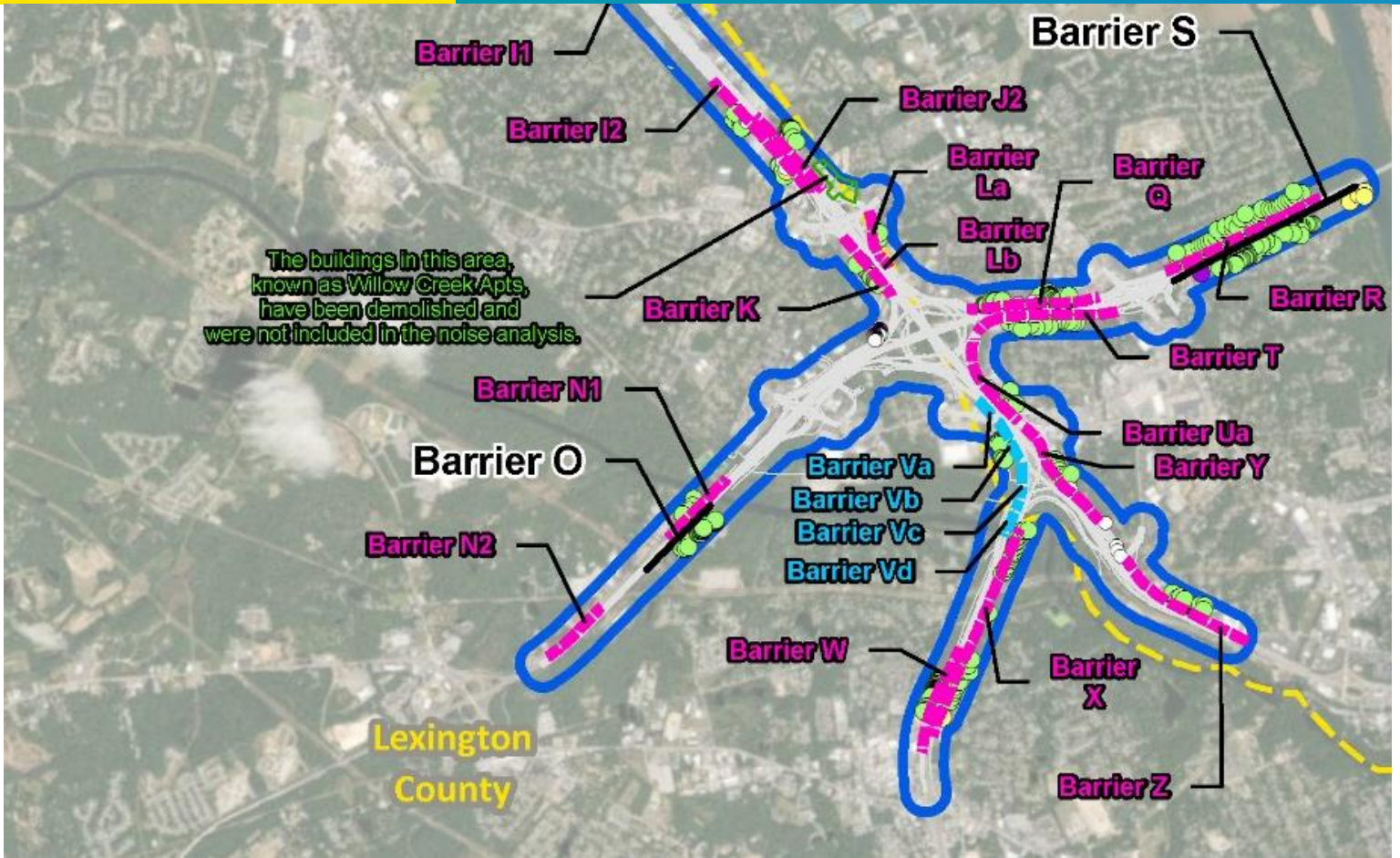
- 26 noise walls were evaluated
- Includes all terrain, shoulders/ medians, and buildings
- 2 noise barriers were determined to be both feasible and reasonable



Detailed Analysis



Detailed Analysis



	NOISE BARRIER	G	I2	J2	K	O	Q	R	S	W	Z
FEASIBILITY	Number of Impacted Receivers	72	39	25	25	44	48	78	159	27	52
	Number of Benefited Receivers	140	121	168	77	47	159	87	348	73	152
	Number of Benefited Impacted Receivers	72	39	25	25	37	48	74	153	27	52
	Number of Benefited Receivers in First 2 Building Rows	132	92	100	77	45	144	71	312	67	145
	% of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure	100%	100%	100%	100%	84%	100%	95%	96%	100%	100%
	Is the Proposed Noise Abatement Measure Acoustically Feasible?[1]	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
REASONABLENESS	Number of Benefited Receivers that Achieve at least an 8 dBA Reduction in First 2 Building Rows	90	54	3	23	37	88	57	287	45	119
	% of Benefited Receivers in first 2 rows that would achieve at least a 8 dBA reduction from the proposed noise abatement measure[2]	68%	59%	3%	30%	83%	61%	80%	92%	67%	82%
	Does the Proposed Noise Abatement Measure meet the Noise Reduction Design Goal?	NO	NO	NO	NO	YES	NO	YES	YES	NO	YES
	Estimated Cost per Square Foot for Noise Abatement Measure	$35	$35	$35	$35	$35	$35	$35	$35	$35	$35
	Estimated Construction Cost for Noise Abatement Measure	$2,687,195	$3,304,280	$2,204,930	$1,694,630	$1,269,660	$2,939,790	$2,843,120	$4,514,895	$2,468,375	$7,028,030*
	Estimated Cost per Benefited Receiver	$19,194	$27,308	$13,125	$22,008	$27,014	$18,489	$32,680	$12,974	$33,813	$46,237
	SCDOT Policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable?	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO
	Assessment	FNR	FNR	FNR	FNR	FR	FNR	FNR	FR	FNR	FNR
	Avg Height (feet)	25	25	25	25	15.4	25	17.2	25	25	20.1
	Length	3,071	3,777	2,520	1,937	2,301	3,360	4,320	5,160	2,822	3,769
	Surface Area	76,777	94,408	62,998	48,418	36,276	83,994	81,232	128,997	70,525	79,098

DRAFT

1 SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible

2 SCDOT Policy indicates that 80% of the benefited receivers in the first 2 building rows must achieve at least a 8 dBA reduction for it to be reasonable.

* Includes $35 per square foot of noise wall plus costs associated with relocation of frontage road to avoid retaining wall along I-126. Does not include costs that may be associated with additional Right-of-Way.

FR: Feasible and Reasonable

FNR: Feasible but not reasonable

Recommended Noise Barrier Locations

	NOISE BARRIER	O	S
FEASIBILITY	Number of Impacted Receivers	44	159
	Number of Benefited Receivers	47	348
	Number of Benefited Impacted Receivers	37	153
	Number of Benefited Receivers in First 2 Building Rows	45	312
	% of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure	84%	96%
	Is the Proposed Noise Abatement Measure Acoustically Feasible?[1]	YES	YES
REASONABLENESS	Number of Benefited Receivers that Achieve at least an 8 dBA Reduction in First 2 Building Rows	37	287
	% of Benefited Receivers in first 2 rows that would achieve at least a 8 dBA reduction from the proposed noise abatement measure[2]	83%	92%
	Does the Proposed Noise Abatement Measure meet the Noise Reduction Design Goal?	YES	YES
	Estimated Cost per Square Foot for Noise Abatement Measure	$35	$35
	Estimated Construction Cost for Noise Abatement Measure	$1,269,660	$4,514,895
	Estimated Cost per Benefited Receiver	$27,014	$12,974
	Avg Height (feet)	15.4	25
	Length	2,301	5,160

DRAFT

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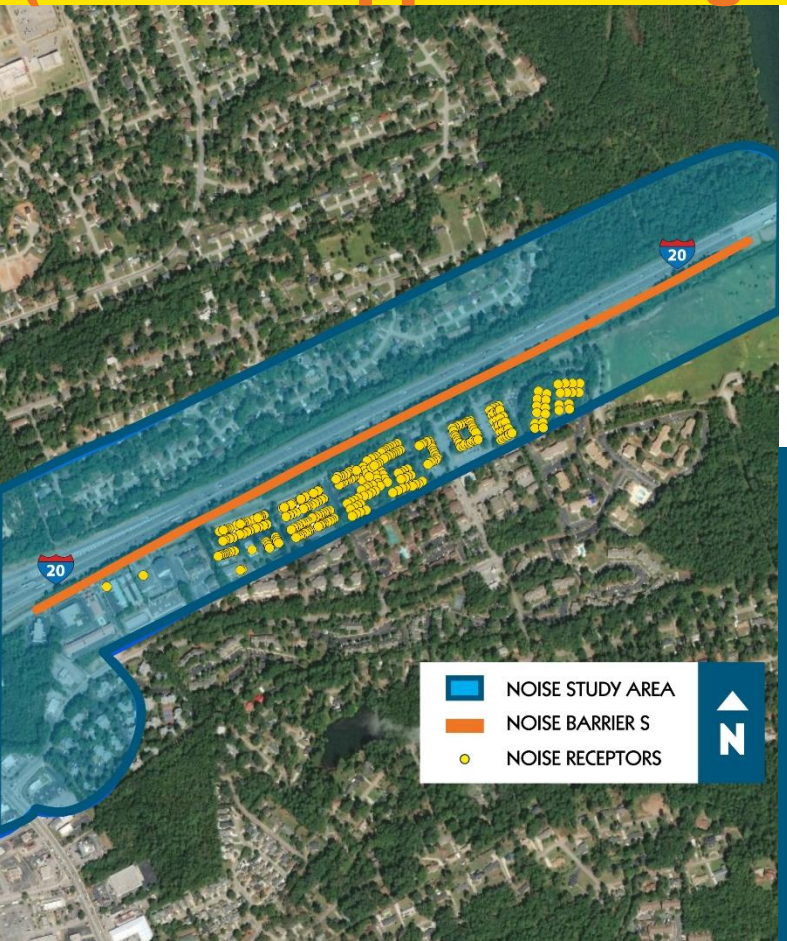
Proposed Barrier – O
(I-20 EB approaching the Saluda River)

AVG. HEIGHT	LENGTH	COST	BENEFITED RECEPTORS
15.4 ft.	2,301 ft.	$1,269,660	47

Proposed Barrier – S
(I-20 EB approaching the Broad River)



AVG. HEIGHT	LENGTH	COST	BENEFITED RECEPTORS
25 ft.	5,160 ft.	$4,514,895	348

Next Steps

Schedule

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