

October 16, 2025

Mr. Michael Biggs, PE, CPESC
Neel-Schaffer, Inc. (NS)
210 25th Avenue North, Suite 800
Nashville, Tennessee 37203

TTL
624 Grassmere Park, Ste. 14
Nashville, TN 37211
615.331.7770
www.TTLUSA.com

RE: Revised Pavement Design Recommendations Report
DB2505 I-24 Epps Mill Road
Murfreesboro, Rutherford County, Tennessee
TTL Project No. 000240802902.00
TDOT Project No. 75I024-S1-010
GES File No. 7513321 / PIN No. 124683.06

Dear Mr. Biggs:

We have revised our pavement design report for the I-24 and Epps Mill Road project in Murfreesboro, Tennessee, to include recommendations for acceleration and deceleration lanes and Interstate 24 included in the project and to clarify notes included with the recommended pavement sections. This revised report replaces and supersedes the latest report revision dated October 13, 2025. Our services were provided in accordance with our supplemental scope of work, dated May 28, 2025, and approved on May 29, 2025. This report provides recommendations for new pavement sections for the project, as well as consideration for overlays along existing parts of Epps Mill Road. Please note that the Geotechnical Exploration Reports and supporting documents for the Epps Mill Road realignment (mainline) and new bridge have been submitted separately.

Project information was provided by Mr. Michael Biggs, PE, and Mr. Matt Lifsey, PE (NS) in several e-mail transmissions and telephone calls. We were provided with a pdf document titled "124683.06-Concept Report 8-2-24.pdf" prepared by TDOT and STV, dated August 26, 2024. The document contained a summary of the project including a conceptual layout, as well as current and projected traffic loading for the project. We were also provided a set of drawings (11 sheets) titled "Proposed Layout," undated, prepared by NS. This drawing set shows the planned alignment and existing site grades. Updated traffic data for the project was provided by Mr. Ulises Martinez (TDOT – Materials and Tests Division – Pavements Team Lead) on August 20, 2025.

We appreciate the opportunity to be of service. Please contact us if you have questions regarding the information or recommendations contained in the report.

Sincerely,
TTL, Inc.

 AS

Ethan P. Laird, PE
Project Engineer
elaird@ttlusa.com


Leanna S. Whitwell, PE
Principal Engineer
lwhitwell@ttlusa.com



Attachments Pavement Design Report

Pavement Design Report

Rutherford County

Epps Mill Road

From S.R. 2 to West of Capitol Way

TDOT PIN: 124683.06

Submitted To:

Matt Lifsey, PE, Neel-Schaffer, Inc.

Pavement Designer:

Ethan P. Laird, PE, TTL Inc.
Project Engineer

Reviewer:

Leanna S. Whitwell, PE, TTL Inc.
Principal Engineer



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FLEXIBLE PAVEMENT DESIGN

County	Rutherford	TDOT PIN	124683.06
Route	I-24	Design YR	2048
Description	From S.R 2 to West of Capitol Way (Includes I-24 Interchange)		
Road	Full Depth design for Epps Mill Road		

Pavement Schedule

Mainline			
	Item #	Description	Depth (in)
Pavement	411-02.10	ACS Mix (PG 70-22) GRADING D	1.25
	307-02.08	Asphalt Conc Mix (PG 70-22) (BPMB-HM) GR B-M2	2.5
	307-02.01	Asphalt Conc Mix (PG 70-22) (BPMB-HM) GR A	4.5
Base	303-01	Mineral Aggregate Base, Type A	12
Subgrade			

Shoulder			
	Item #	Description	Depth (in)
Pavement	411-02.10	ACS Mix (PG 70-22) GRADING D	1.25
	307-02.08	Asphalt Conc Mix (PG 70-22) (BPMB-HM) GR B-M2	2.5
Base	303-01	Mineral Aggregate Base, Type A	16.5
Subgrade			

Notes:

- 1 Mill 1.25 inches of the existing pavement and resurface with 1.25 inches of D mix for Ties-ins
- 2 Add Tack Coat Per Standard Specification 403.05 between each pavement layer
- 3 Use Prime coat at 0.30 to 0.35 gallons per square yard between base and pavement
- 4 Use the mainline design for shoulders less than 4 feet wide
- 5 Use shoulder design for temporary traffic, if needed
- 6 Use design for all intersection at Epps Mill Road (north and south of I-24)



FLEXIBLE PAVEMENT DESIGN

County	Rutherford	PIN	124683.06
Route	I-24	Design YR	2048
Description	From S.R 2 to West of Capitol Way (Includes I-24 Interchange)		
Road	Full Depth design for Epps Mill Road		

Traffic Information

Project Year	2028	ADL	635
Design Year	2048	Design EASLs	4,635,500
Traffic Data Provided By	TDOT	Traffic Data Date	August 15, 2025
		Design Year ADT	10,760

Soil Data

CBR	4	Mr	6,000 psi
Geotech Report Number	GES File No. 7513321	Report Date	September 23, 2025
Geotech Provided By	TTL, Inc.		

Design Inputs

Zr	85 percent	Delta PSIs	1.7
So	0.45		

Proposed Design Data

SN Required	4.8	SN Proposed	5.0
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The proposed design provides	103.8 percent of the required SN
The proposed pavement design is designed up to	4,809,331 ESALs



FLEXIBLE PAVEMENT DESIGN

County	Rutherford	TDOT PIN	124683.06
Route	I-24	Design YR	2048
Description	From S.R 2 to West of Capitol Way (Includes I-24 Interchange)		
Road	Full Depth design for Interstate I-24		

Pavement Schedule

Mainline			
	Item #	Description	Depth (in)
Pavement	411-03.23	ACS Mix (PG 76-22) OGFC	1.25
	307-03.12	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR CM	1.5
	307-03.08	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR B-M2	2.5
	307-03.01	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR A	6.25
	307-01.22	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR A-S	4
Base	303-01	Mineral Aggregate Base, Type A	12
Subgrade			

Shoulder			
	Item #	Description	Depth (in)
Pavement	411-03.23	ACS Mix (PG 76-22) OGFC	1.25
	307-03.12	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR CM	1.5
	307-03.08	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR B-M2	2.5
	307-03.01	Asphalt Conc Mix (PG 76-22) (BPMB-HM) GR A	3.5
Base	303-01	Mineral Aggregate Base, Type A	18.75
Subgrade			

Notes:

- 1 The existing surface on I-24 is currently OGFC. Mill 2.75 inches of the existing pavement and resurface with 1.25 inches of OGFC and 1.5 inches of GR CM for Ties-ins
- 2 Add Tack Coat Per Standard Specification 403.05 between each pavement layer
- 3 Use Prime coat at 0.30 to 0.35 gallons per square yard between base and pavement
- 4 Tack coat should not be applied on top of Grading A-S layer
- 5 This flexible pavement design shall be used for acceleration/deceleration lanes
- 6 Ramps, from the gore area to Epps Mill Road, will be rigid concrete pavements
- 7 Use shoulder for temporary traffic, if needed



FLEXIBLE PAVEMENT DESIGN

County	Rutherford	PIN	124683.06
Route	I-24	Design YR	2048
Description	From S.R 2 to West of Capitol Way (Includes I-24 Interchange)		
Road	Full Depth design for Interstate 24		

Traffic Information

Project Year	2028	ADL	6,062
Design Year	2048	Design EASLs	44,252,600
Traffic Data Provided By	TDOT	Traffic Data Date	August 15, 2025
		Design Year ADT	55,895

Soil Data

CBR	4	Mr	6,000 psi
Geotech Report Number	GES File No. 7513321	Report Date	September 23, 2025
Geotech Provided By	TTL, Inc.		

Design Inputs

Zr	95 percent	Delta PSIs	1.7
So	0.45		

Proposed Design Data

SN Required	6.9	SN Proposed	6.98
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The proposed design provides	101.2 percent of the required SN
The proposed pavement design is designed up to	44,765,674 ESALs



RIGID PAVEMENT DESIGN

County	Rutherford	TDOT PIN	124683.06
Route	I-24	Design YR	2048
Description	From S.R to West of Capitol Way (Includes I-24 Interchange)		
Road	Full Depth design for Ramps on Exit 89 at I-24		

Traffic Information

Project Year	2028	ADL	942
Design Year	2048	Design EASLs	14,994,200
Traffic Data Provided By	TDOT	Traffic Data Date	August 15, 2025
		ADT	8,875

Design Inputs

CBR	4	Zr	95 percent
K _{eff}	300 psi	So	0.35
Geotech Report Number	GES File No. 7513321	delta PSI	2.0
Geotech Provided By	TTL, Inc.	pt	2.5
Report Date	September 23, 2025	S'c	650
		Cd	1.2
		Ec	3,122,019

Pavement Schedule

Mainline			
	Item #	Description	Depth (in)
Pavement	501-01.03	Portland Cement Concrete Pavement (Plain)	10
	313-03	Treated Permeable Base	4
Base	303-01	Mineral Aggregate Type A Base Grading D	4
Subgrade			

Note:

- 1 Use mainline design for the concrete shoulders as well
- 2 Subsurface drainage – Aggregate underdrain with pipe

Proposed Design ESALs	27,658,516
Percent of Required ESALs	184 percent

