

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

LOCATION: NC 10 FROM MP. 11.922 TO MP. 14.991.

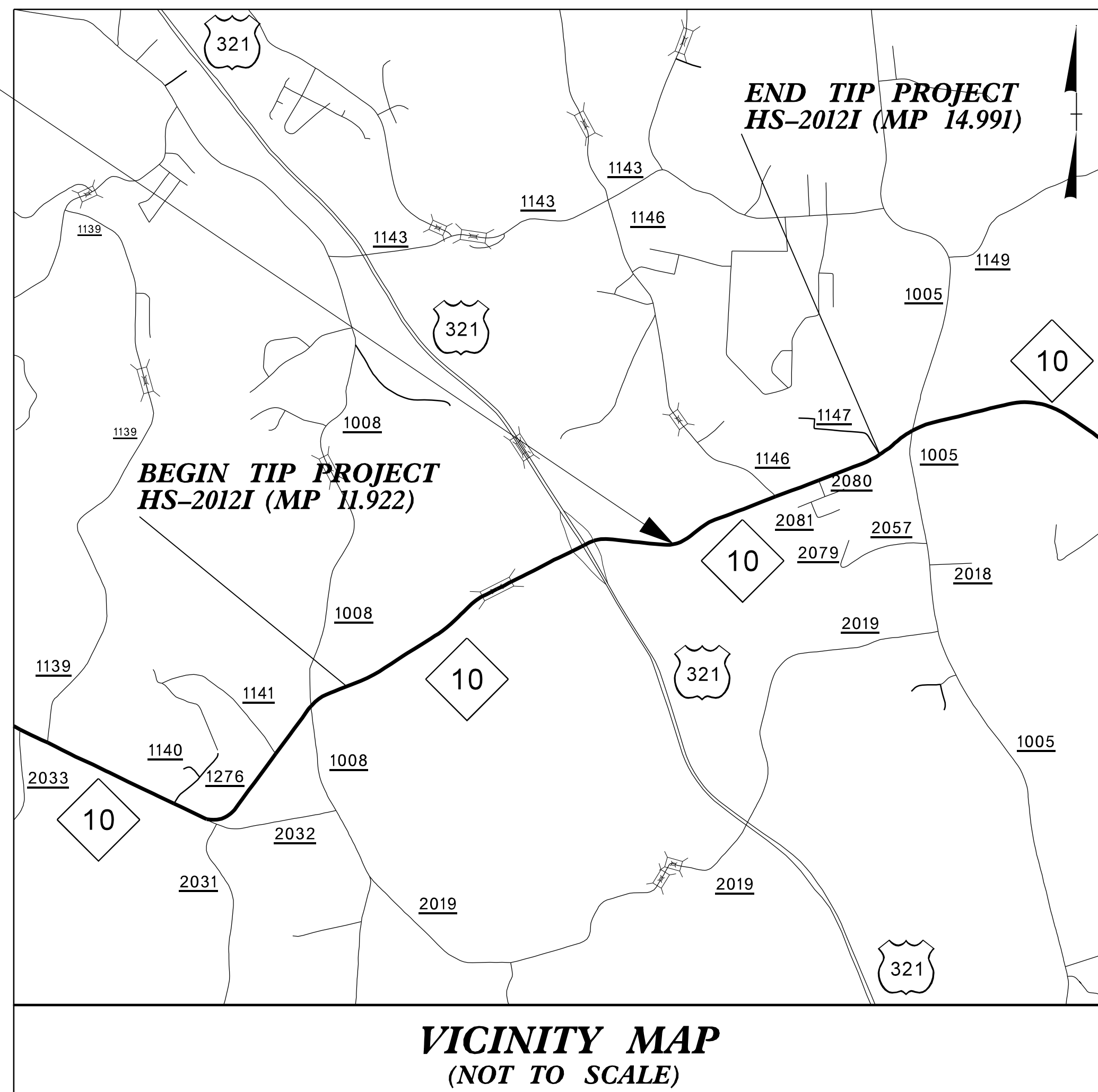
TYPE OF WORK: INSTALLATION OF CENTERLINE AND EDGELINE MILLED
SINUSOIDAL RUMBLE STRIPS AND PAVEMENT MARKINGS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HS-2012I	1	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49331.1.10	4933110	PE	
49331.3.10	4933110	CONST	

TIP PROJECT: HS-2012I

CONTRACT: DL00363

MAP 1



VICINITY MAP
(NOT TO SCALE)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HS-2012I = 7.248 MILES
TOTAL LENGTH OF TIP PROJECT HS-2012I = 7.248 MILES

Prepared In the Office of:
DIVISION TWELVE DDC
1710 E. Marion Street, Shelby NC, 28150

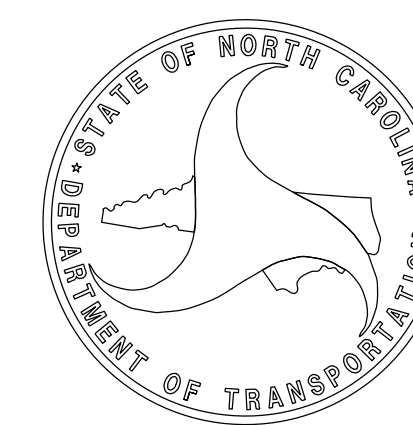
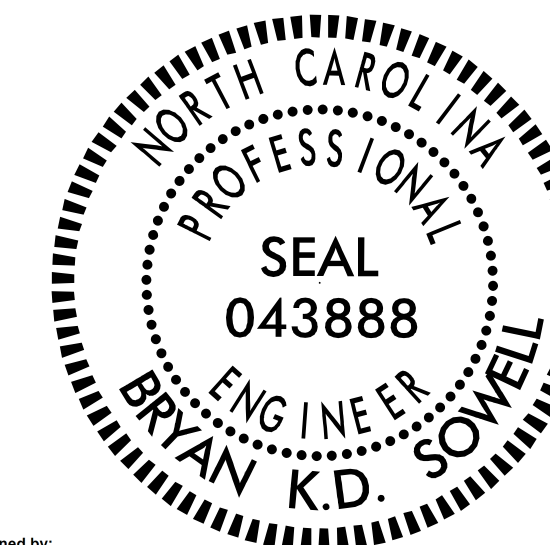
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
AUGUST 12, 2025

BRYAN K.D. SOWELL, PE
PROJECT ENGINEER

JOSHUA S. CARPENTER
PROJECT DESIGN ENGINEER



DocuSigned by:
Bryan Sowell

07/01/2025

01-JUL-2025 15:36 S:\DDC\District 3\Catawba\DL00363_SinusoidalRumbleStrips\Plan Sheets\DL00363_Rdy_tsh_ldgn jscarpen AT DIV12-329436L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTIES

LOCATION: NC 10 FROM MP. 0.000 TO MP. 11.000.

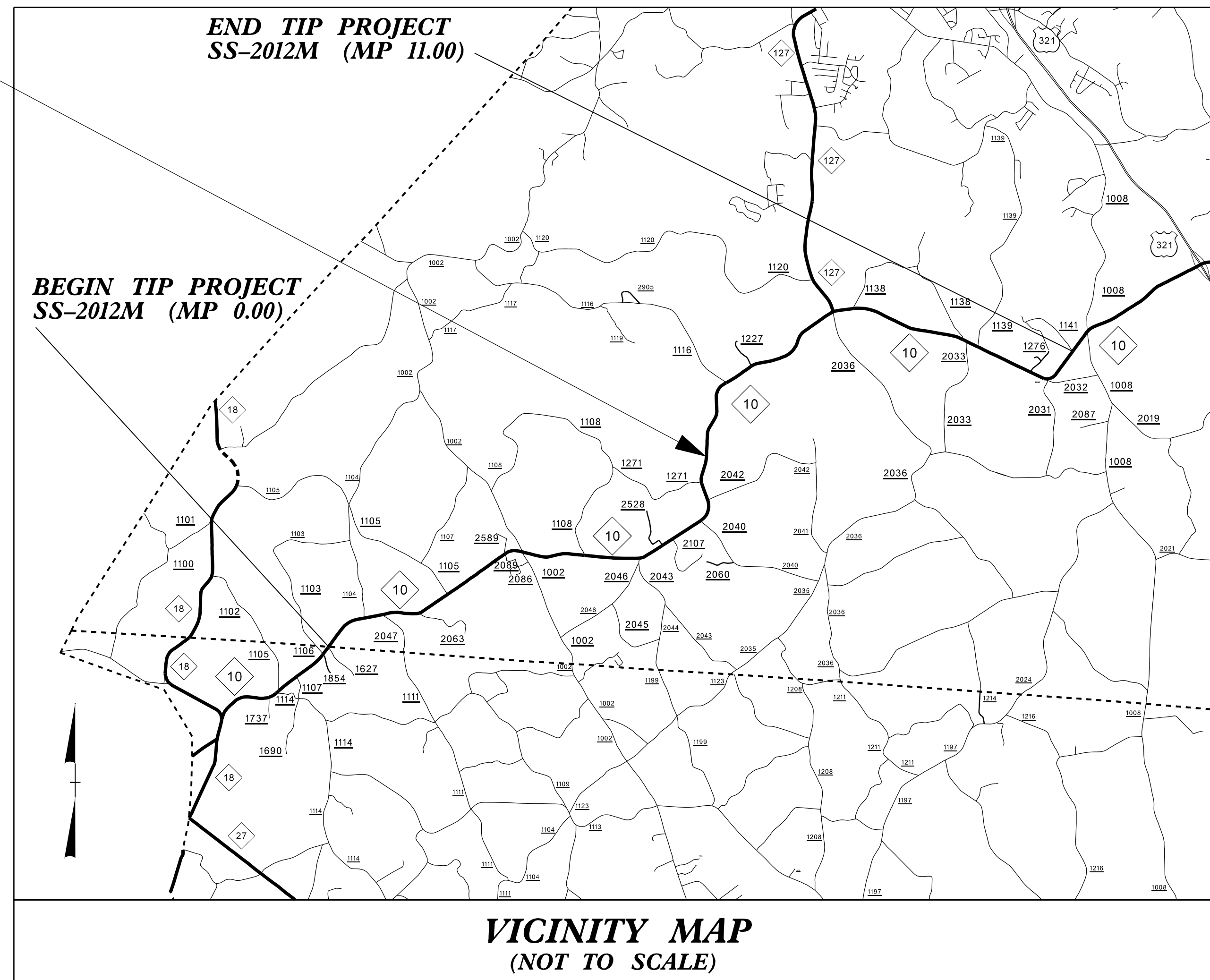
TYPE OF WORK: INSTALLATION OF CENTERLINE AND EDGELINE MILLED
SINUSOIDAL RUMBLE STRIPS AND PAVEMENT MARKINGS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HS-2012M	2	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49331.1.14	4933114	PE	
49331.3.14	4933114	CONST	

TIP PROJECT: HS-2012M

CONTRACT: DL00363

MAP 2



PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HS-2012M = 11.000 MILES
TOTAL LENGTH OF TIP PROJECT HS-2012M = 11.000 MILES

Prepared In the Office of:
DIVISION TWELVE DDC
1710 E. Marion Street, Shelby NC, 28150

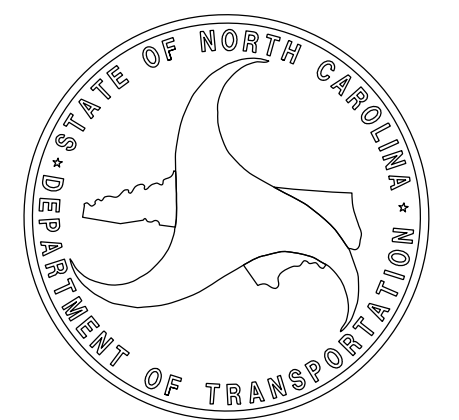
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
AUGUST 12, 2025

BRYAN K.D. SOWELL, PE
PROJECT ENGINEER

JOSHUA S. CARPENTER
PROJECT DESIGN ENGINEER



DocuSigned by:
Bryan Sowell

07/01/2025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

LOCATION: SR 1005 (STARTOWN RD.) BETWEEN NORTHERN MAIDEN MUNICIPAL LIMITS AND SOUTHERN NEWTON MUNICIPAL LIMITS (MP 2.945 – MP 5.806).

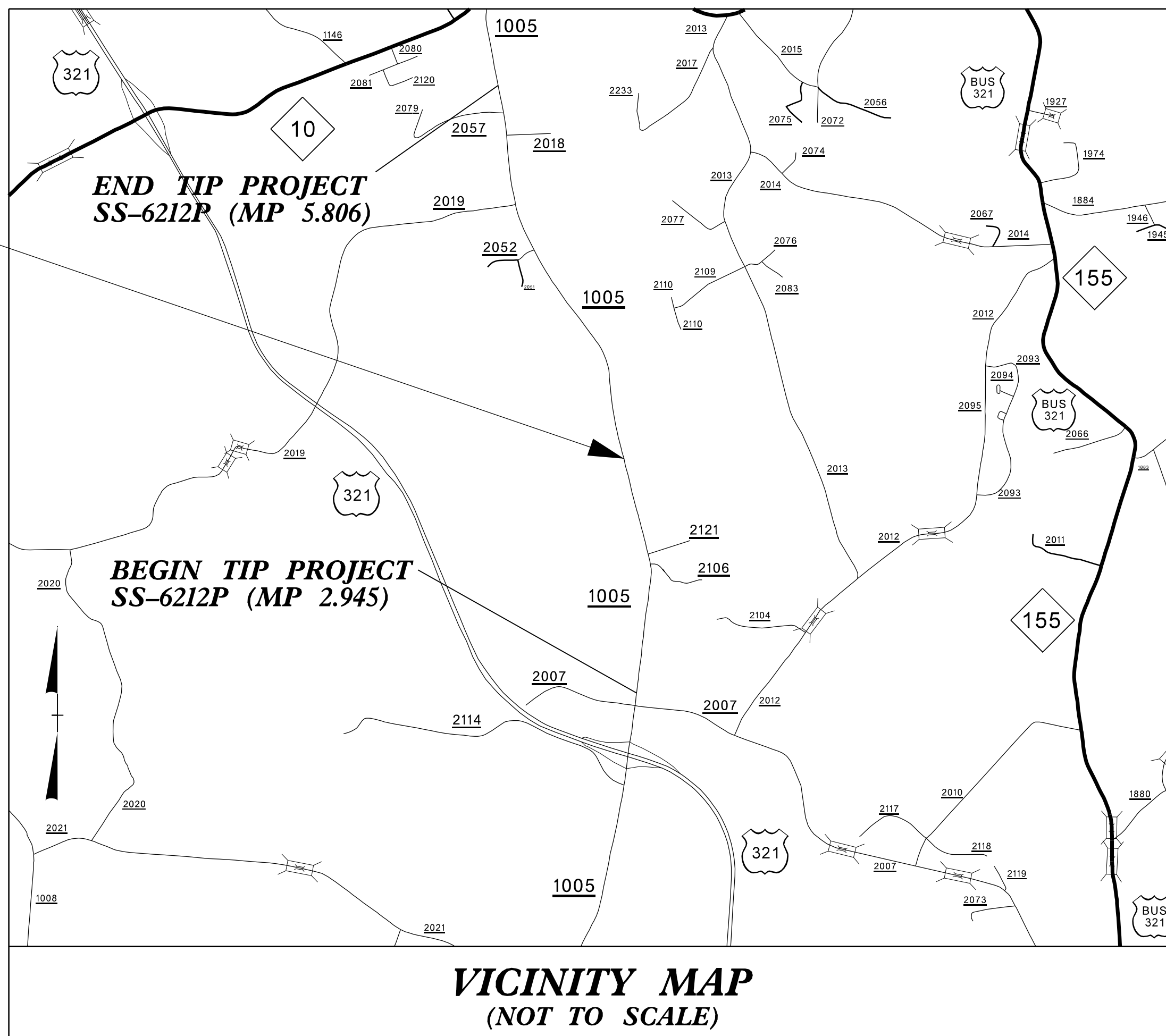
TYPE OF WORK: INSTALLATION OF CENTERLINE AND EDGELINE MILLED SINUSOIDAL RUMBLE STRIPS AND PAVEMENT MARKINGS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SS-6212P	3	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
51657	N/A	PE	
51657	N/A	CONST	

TIP PROJECT: SS-6212P

CONTRACT: DL00363

MAP 3



PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT SS-6212P = 2.861 MILES
TOTAL LENGTH OF TIP PROJECT SS-6212P = 2.861 MILES

Prepared in the Office of:
DIVISION TWELVE DDC
1710 E. Marion Street, Shelby NC, 28150

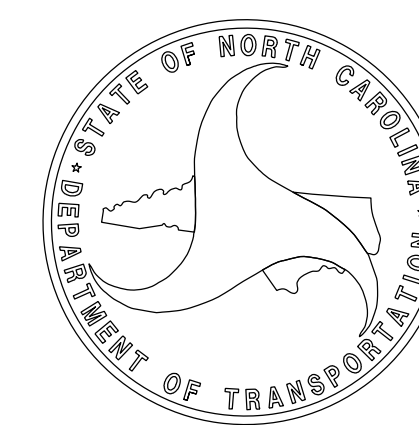
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
AUGUST 12, 2025

BRYAN K.D. SOWELL, PE
PROJECT ENGINEER

JOSHUA S. CARPENTER
PROJECT DESIGN ENGINEER



DocuSigned by:
Bryan Sowell

07/01/2025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GASTON COUNTY

LOCATION: NC 150 (MP 3.11) FROM NC 279 (RUDISILL AVE.) TO 0.2 MILE NORTH OF SR 1622 (HEPHZIBAH CHURCH RD.) (MP 4.90).

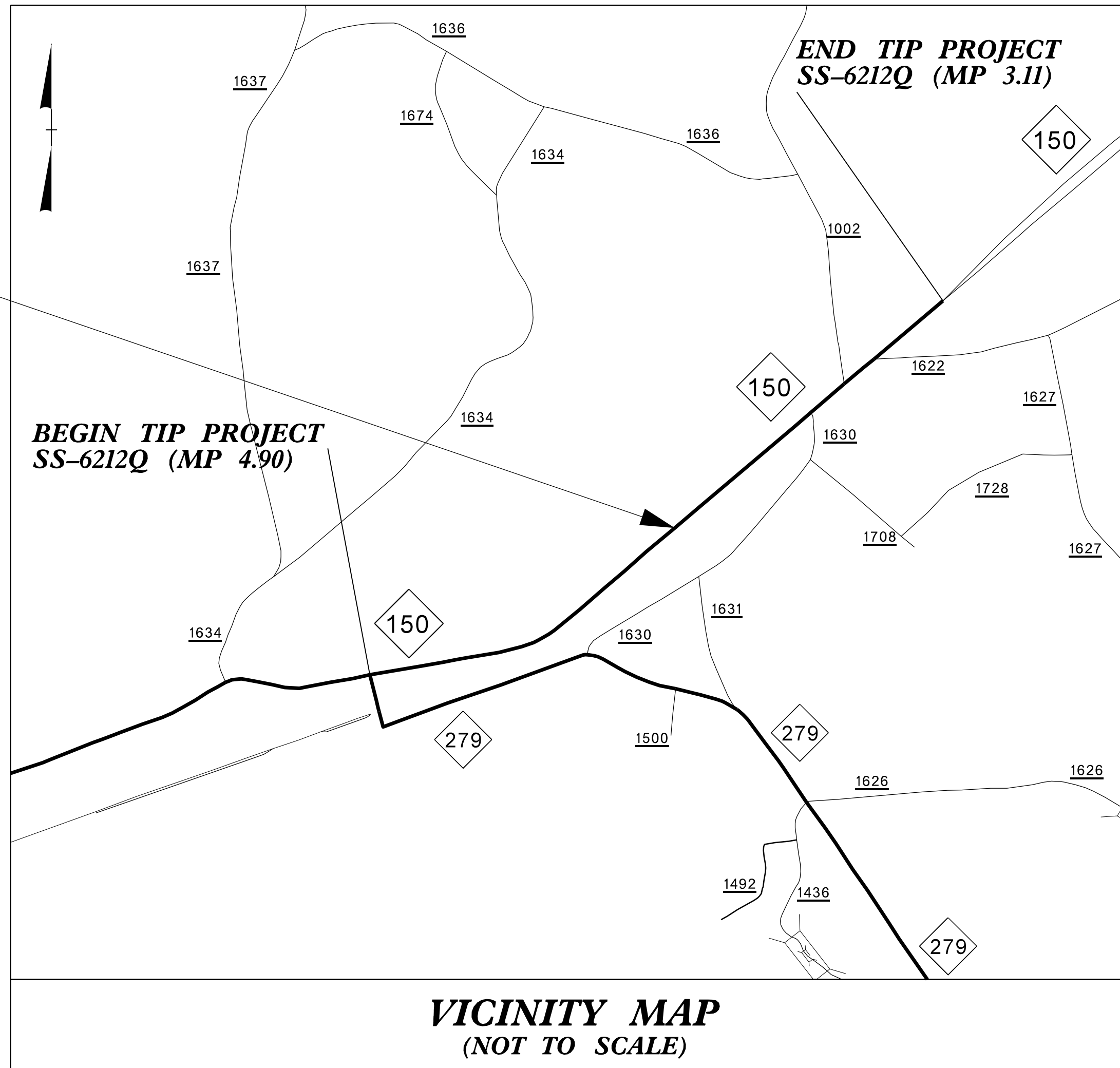
TYPE OF WORK: INSTALLATION OF CENTERLINE AND EDGELINE MILLED SINUSOIDAL RUMBLE STRIPS PAVEMENT MARKINGS AND MARKERS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SS-6212Q	4	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
51788	N/A	PE	
51788	N/A	CONST	

TIP PROJECT: SS-6212Q

CONTRACT: DL00363

MAP 4



PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT SS-6212Q = 1.79 MILES
TOTAL LENGTH OF TIP PROJECT SS-6212Q = 1.79 MILES

Prepared In the Office of:
DIVISION TWELVE DDC
1710 E. Marion Street, Shelby NC, 28150

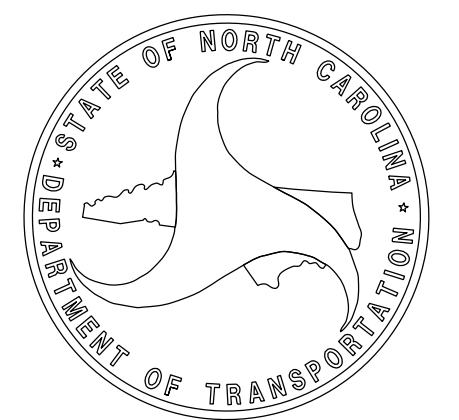
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
AUGUST 12, 2025

BRYAN K.D. SOWELL, PE
PROJECT ENGINEER

JOSHUA S. CARPENTER
PROJECT DESIGN ENGINEER



DocuSigned by:
Bryan Sowell

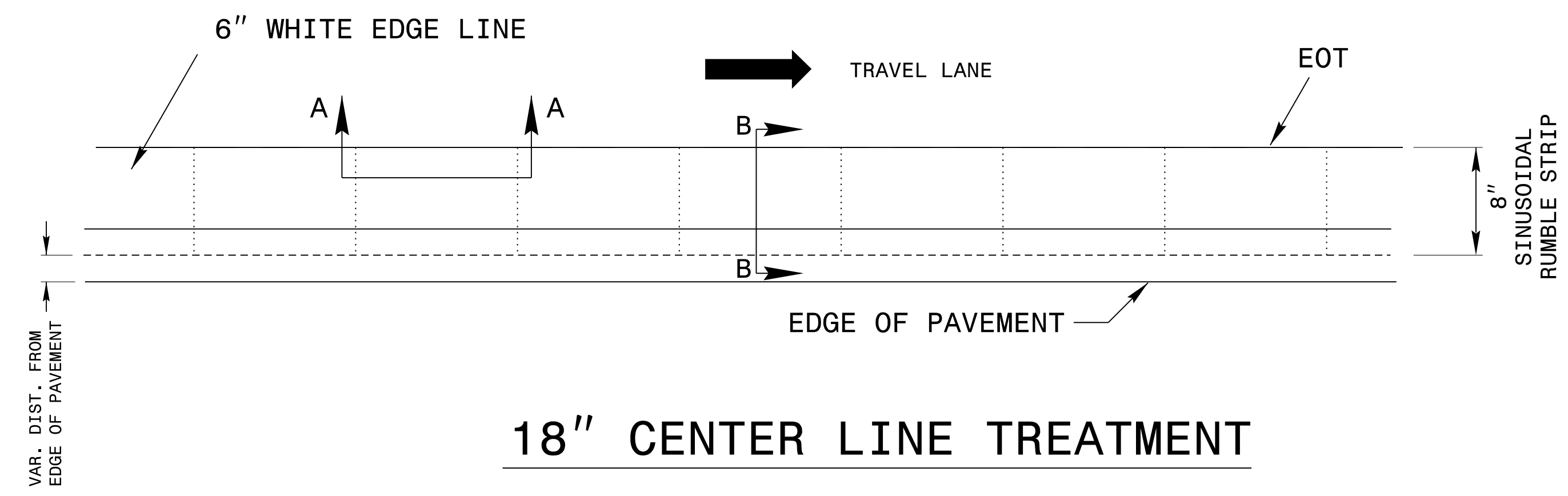
07/01/2025

8" & 18" SINUSOIDAL MILLED RUMBLE STRIP DETAIL

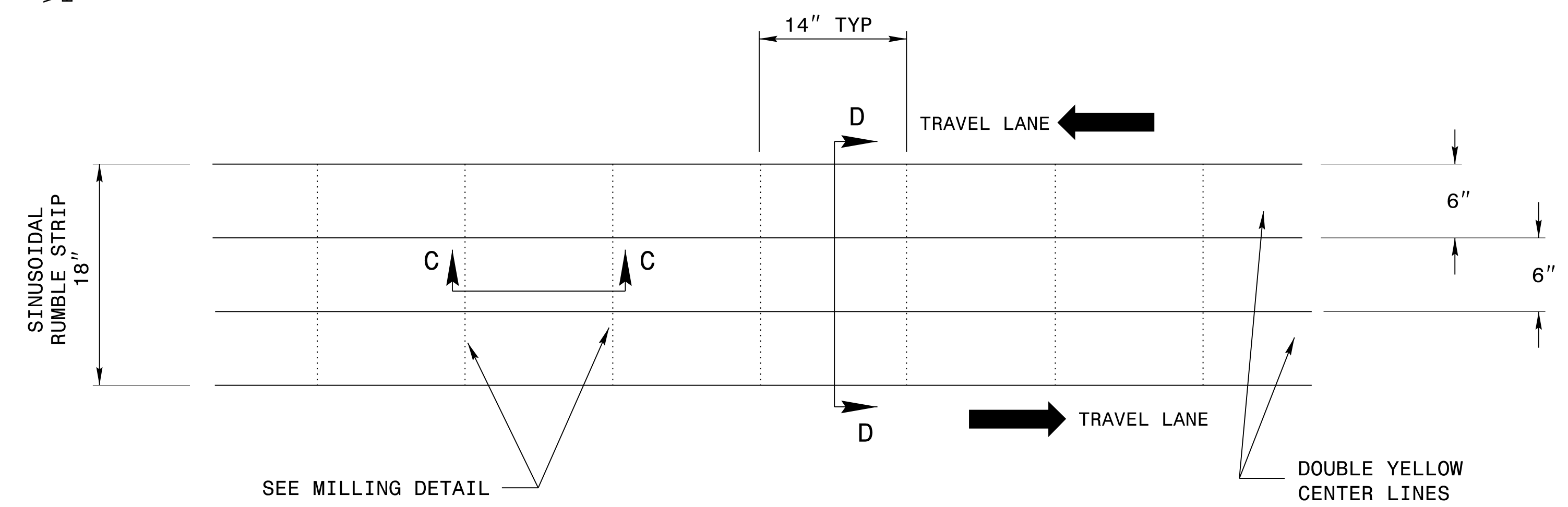


DocuSigned by:
Bryan Sowell
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07/01/2025

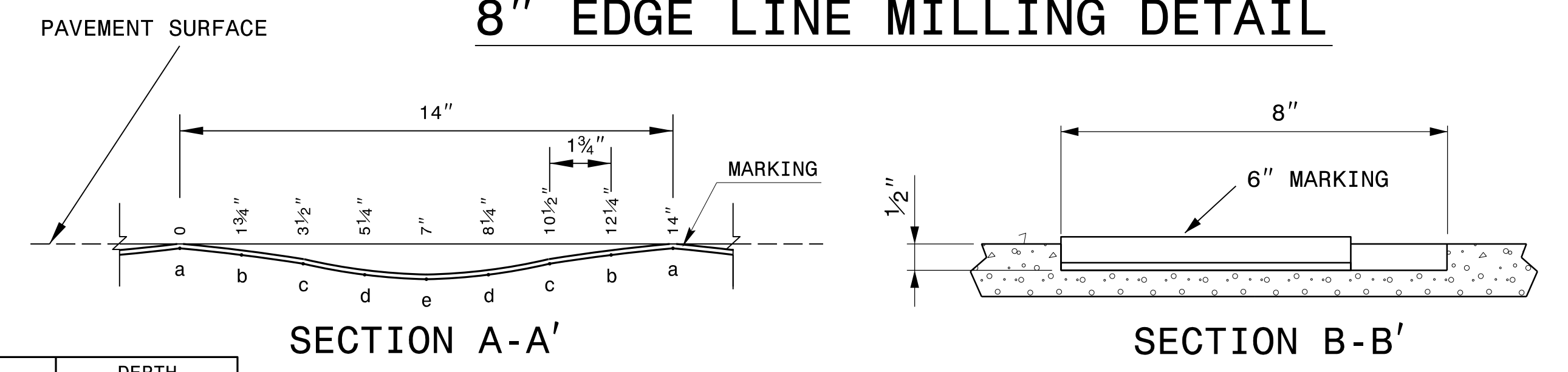
8" EDGE LINE TREATMENT



18" CENTER LINE TREATMENT



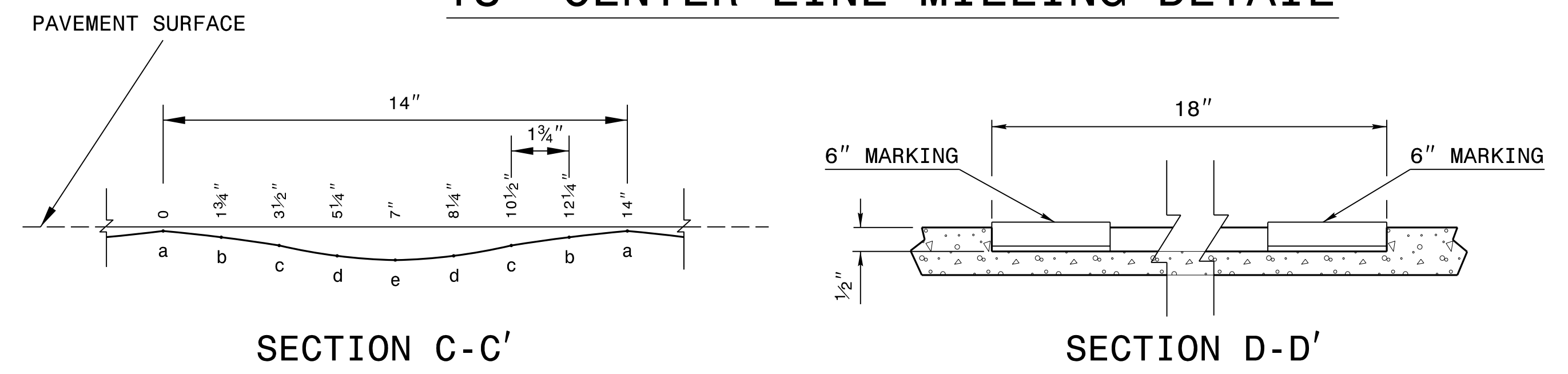
8" EDGE LINE MILLING DETAIL



LOCATION	DEPTH	
	MIL	INCHES
a	62.5	1/16"
b	125	1/8"
c	219	7/32"
d	344	1 1/32"
e	375	3/8"

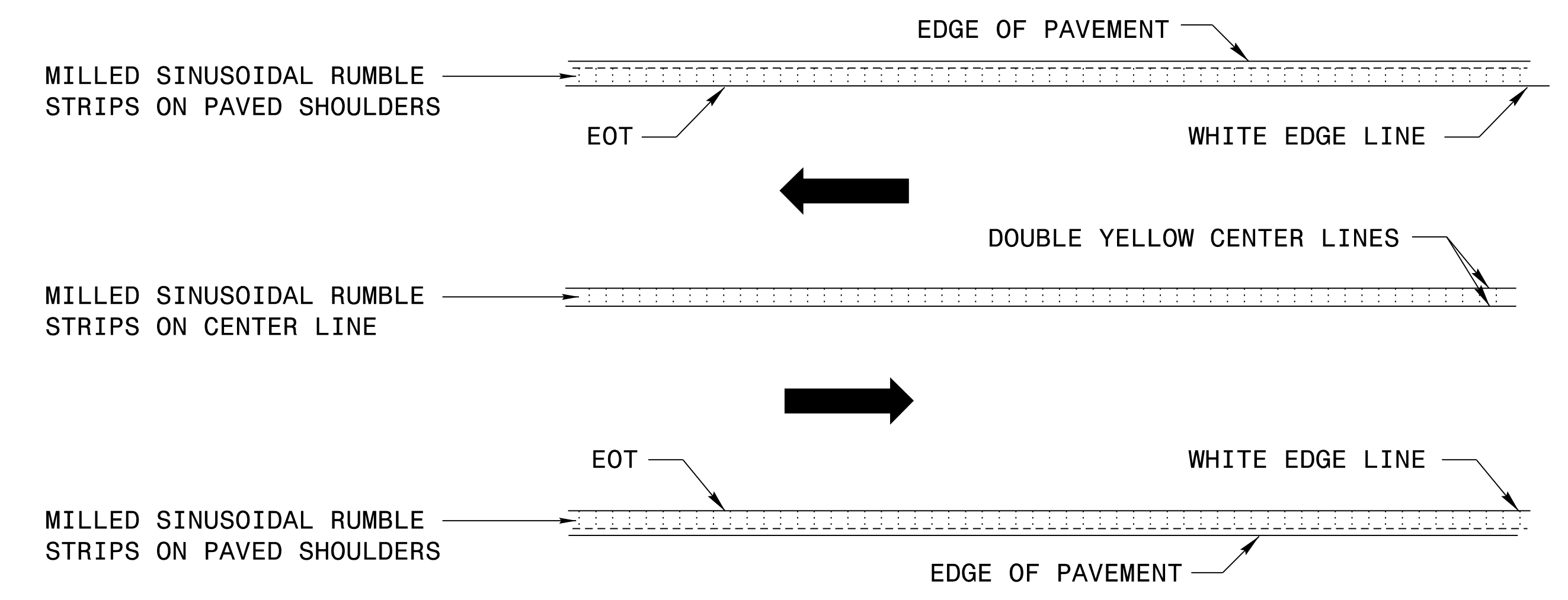
NOTE: SPECIFICATION IN TABLE FROM MNDOT RESEARCH PROJECT FINE REPORT 2016-3: SINUSOIDAL RUMBLE STRIP DESIGN OPTIMIZATION STUDY BY TERHEAR ET. AL. JUNE 2016.

18" CENTER LINE MILLING DETAIL



- NOTES:
- 1) INSTALL CENTERLINE AND EDGELINE SINUSOIDAL RUMBLE STRIPS AND PAVEMENT MARKINGS AT THE FOLLOWING LOCATIONS: MAP 1 (NC 10); MAP 2 (NC 10); MAP 3 (SR 1005); MAP 4 (NC 150). ON MAP 4 (NC 150), DO NOT PLACE SINUSOIDAL RUMBLE STRIPS ON SOLID WHITE LANE LINES AT DESIGNATED LEFT TURN LANES AT THE WALMART TRAFFIC SIGNAL.
 - 2) PLACE MILLED SINUSOIDAL RUMBLES AS SHOWN ABOVE IN THIS DETAIL ON BOTH SHOULDERS IN BOTH DIRECTIONS.
 - 3) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
 - 4) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.
 - 5) PAVEMENT MARKING MATERIAL SHALL BE THERMOPLASTIC.
 - 6) RETAIN PAVEMENT MARKERS ON ALL MAPS.

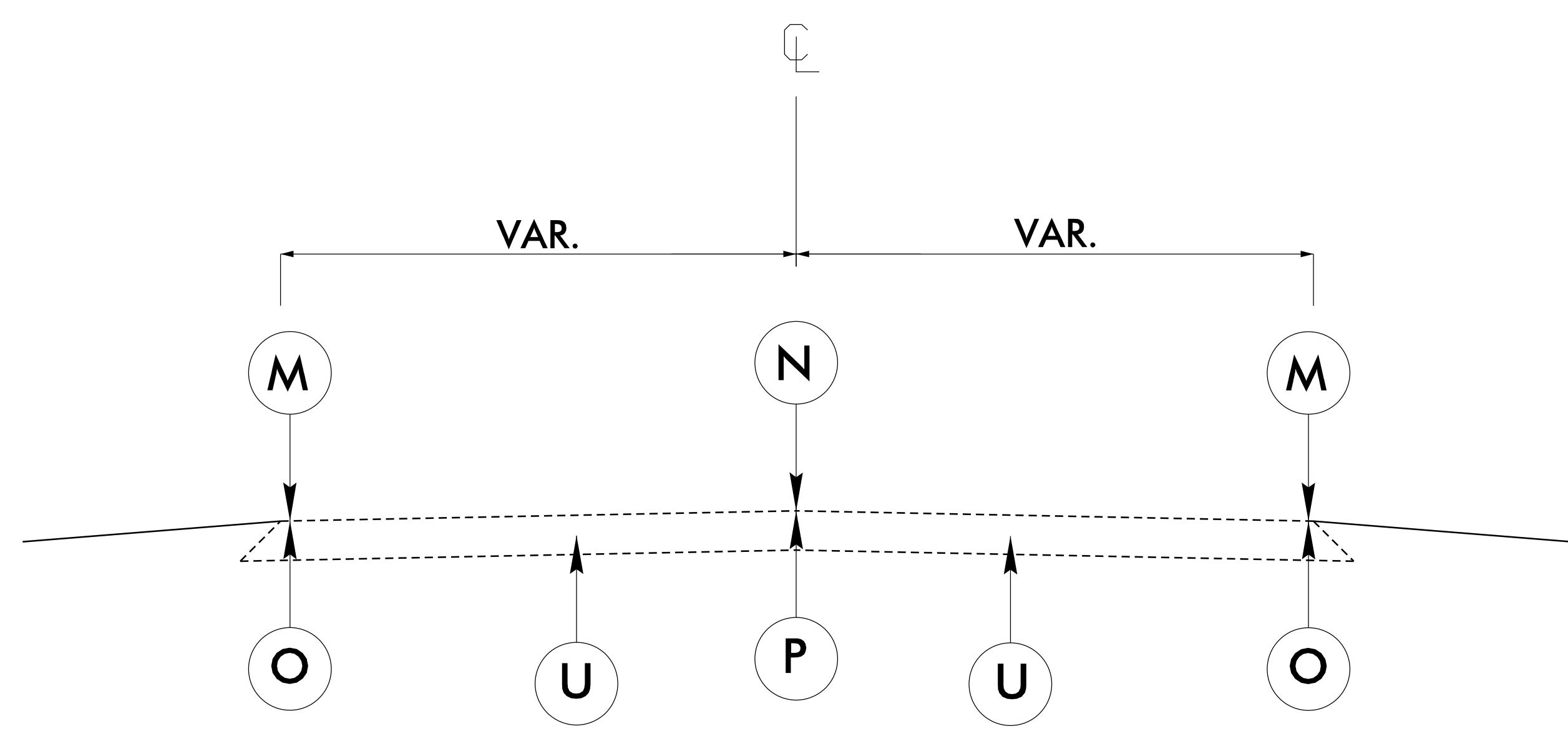
LANE TREATMENT



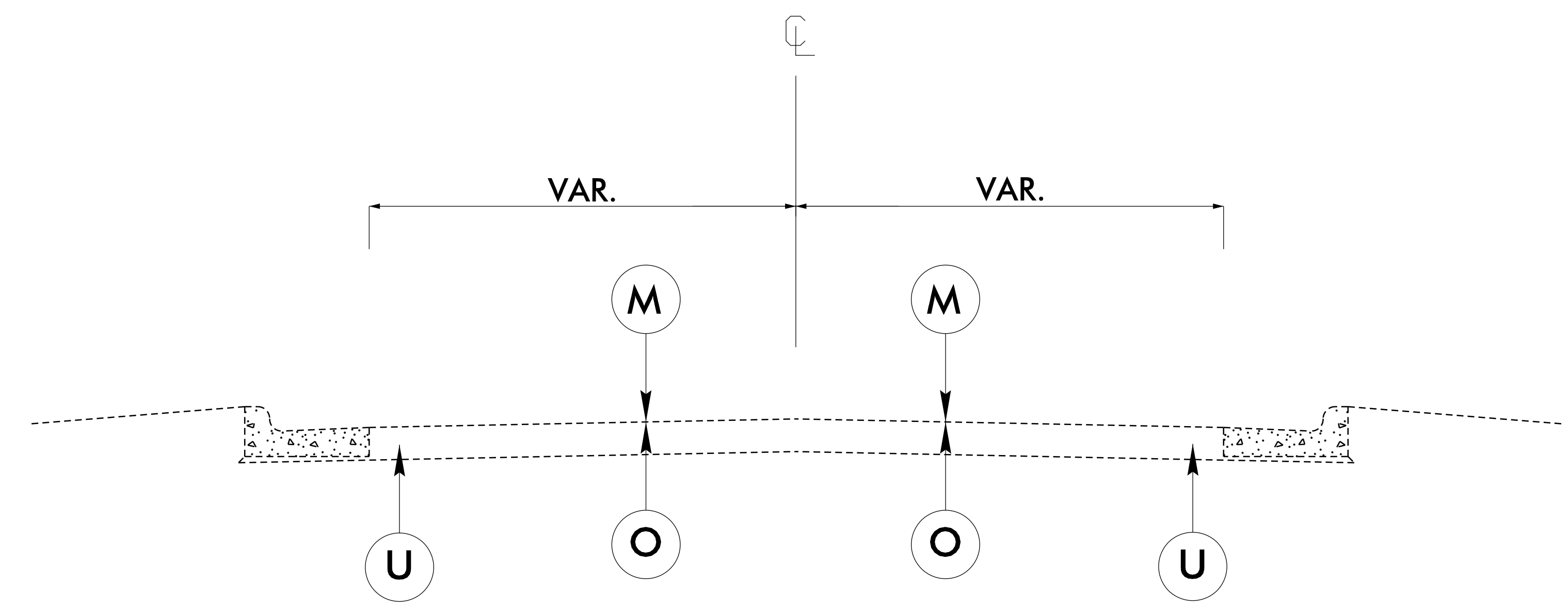
* DETAIL NOT TO A SCALE

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 AT:DIV2-32466

TYPICAL SECTIONS



TYPICAL SECTION NO. 1
USE WITH MAPS: 1-3



TYPICAL SECTION NO. 2
USE WITH MAP: 4

PAVEMENT SCHEDULE	
M	8" EDGELINE MILLED SINUSOIDAL RUMBLE STRIPS.
N	18" CENTERLINE MILLED SINUSOIDAL RUMBLE STRIPS.
O	6" WHITE THEROMPLASTIC EDGELINE.
P	6" THERMOPLASTIC DOUBLE YELLOW CENTERLINE.
U	EXISTING PAVEMENT.

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PROJECT REFERENCE #	SHEET NO.
HS-2012I; HS-2012M; SS-6212P; SS-6212Q	7

MILLED SINUSOIDAL RUMBLE STRIP, THERMOPLASTIC MARKING AND MARKER QUANTITIES

WBS#	COUNTY	MAP NO	ROUTE	DESCRIPTION	LENGTH	WIDTH	4400000000-E	4457000000-N	1881000000-E	1881000000-E	4695000000-E	4695000000-E
							WORK ZONE ADVANCE/GE NERAL WARNING SIGNING	TEMPORARY TRAFFIC CONTROL	SINUSOIDAL MILLED RUMBLE STRIP 8"	SINUSOIDAL MILLED RUMBLE STRIP 18"	THERMO PAVEMENT MARKING LINES YELLOW (6", 90 MILS)	THERMO PAVEMENT MARKING LINES WHITE (6", 90 MILS)
							SF	LS	LF	LF	LF	LF
49331.3.10	Catawba	1	NC 10	MP. 11.922 to MP. 14.991	3.069		144	*	32,408.64	16,204.32	32,408.64	32,408.64
WBS# 49331.3.10 TOTAL							144		32,408.64	16,204.32	32,408.64	32,408.64
49331.3.14	Catawba	2	NC 10	MP. 0.000 to MP. 11.000	11.000		144	*	116,160.00	58,080.00	116,160.00	116,160.00
WBS# 49331.3.14 TOTAL							144		116,160.00	58,080.00	116,160.00	116,160.00
51657	Catawba	3	SR 1005	MP. 2.945 to MP. 5.806	2.861		144	*	30,212.16	15,106.08	32,212.16	32,212.16
WBS# 51657 TOTAL							144		30,212.16	15,106.08	32,212.16	32,212.16
51788	Gaston	4	NC 150	MP. 3.110 to MP. 4.900	1.79		144	*	0.00	18,902.40	23,628.00	0.00
WBS# 51788 TOTAL							144		0.00	18,902.40	23,628.00	0.00
Contract Totals					18.72		576.00	1.00	178,780.80	108,292.80	204,408.80	180,780.80