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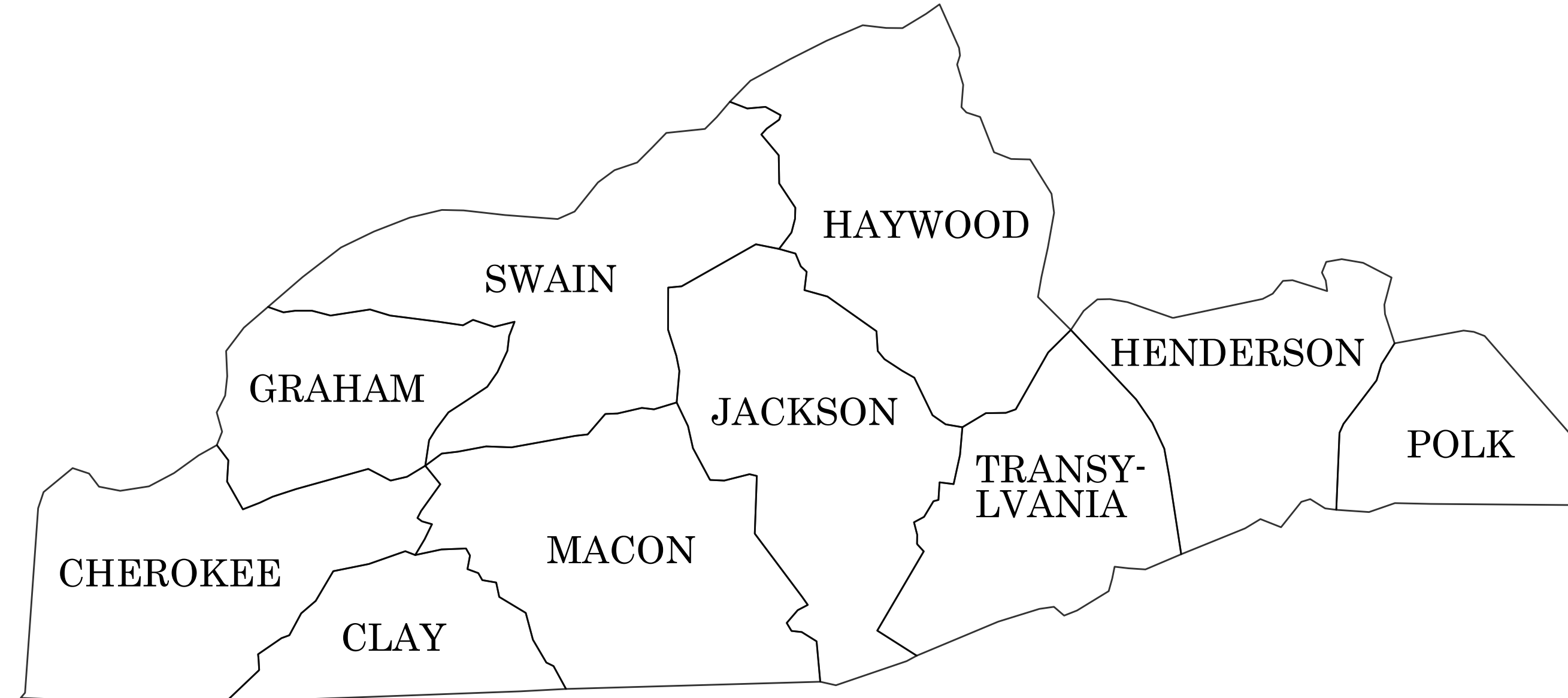
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

DIVISION 14

LOCATION: *VARIOUS LOCATIONS
ACROSS DIVISION 14*

TYPE OF WORK: *IDIQ ON-CALL SHORT LINE
PAVEMENT MARKING*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DN12179557	1	4
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
14.102012	TBD		
14.202012			
14.102212			
14.103812			
14.203812			
14.104412			
14.204412			
14.104432			
14.104512			



CONTRACT: DN12179557

Prepared in the Office of:
DIVISION OF HIGHWAYS
253 WEBSTER RD., SYLVA NC, 28779

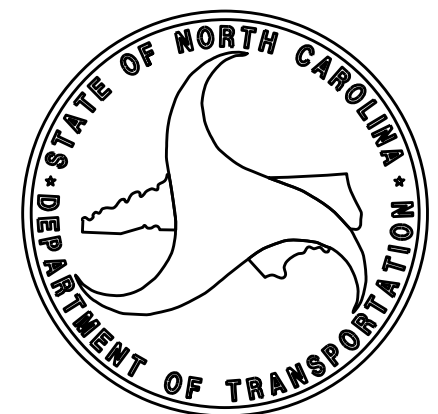
2024 STANDARD SPECIFICATIONS

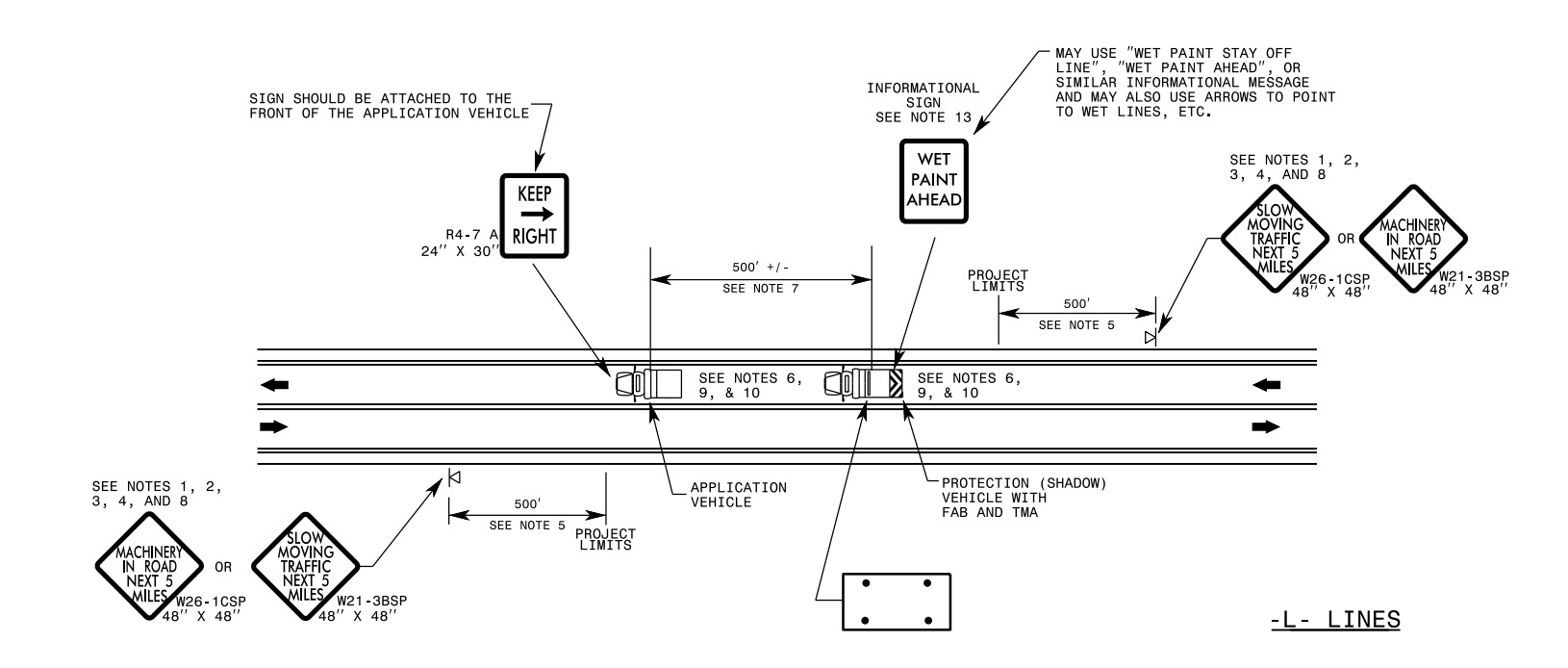
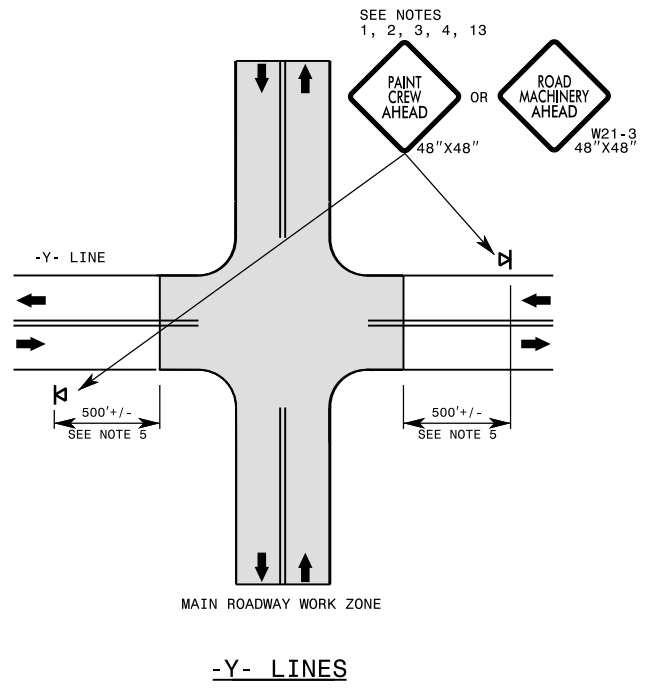
RIGHT OF WAY DATE:
N/A

LETTING DATE:
JULY 8, 2025

STEVEN BUCHANAN
PROJECT ENGINEER

JAMES HOLLINGSWORTH P.E.
PROJECT DESIGN ENGINEER



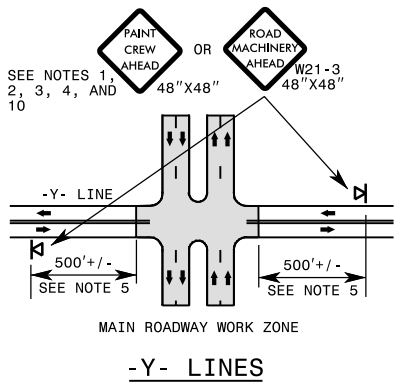


GENERAL NOTES

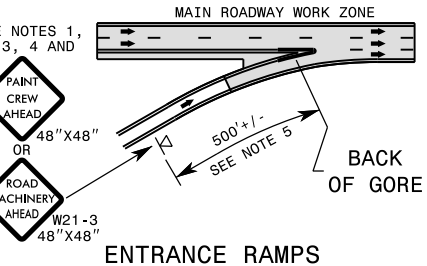
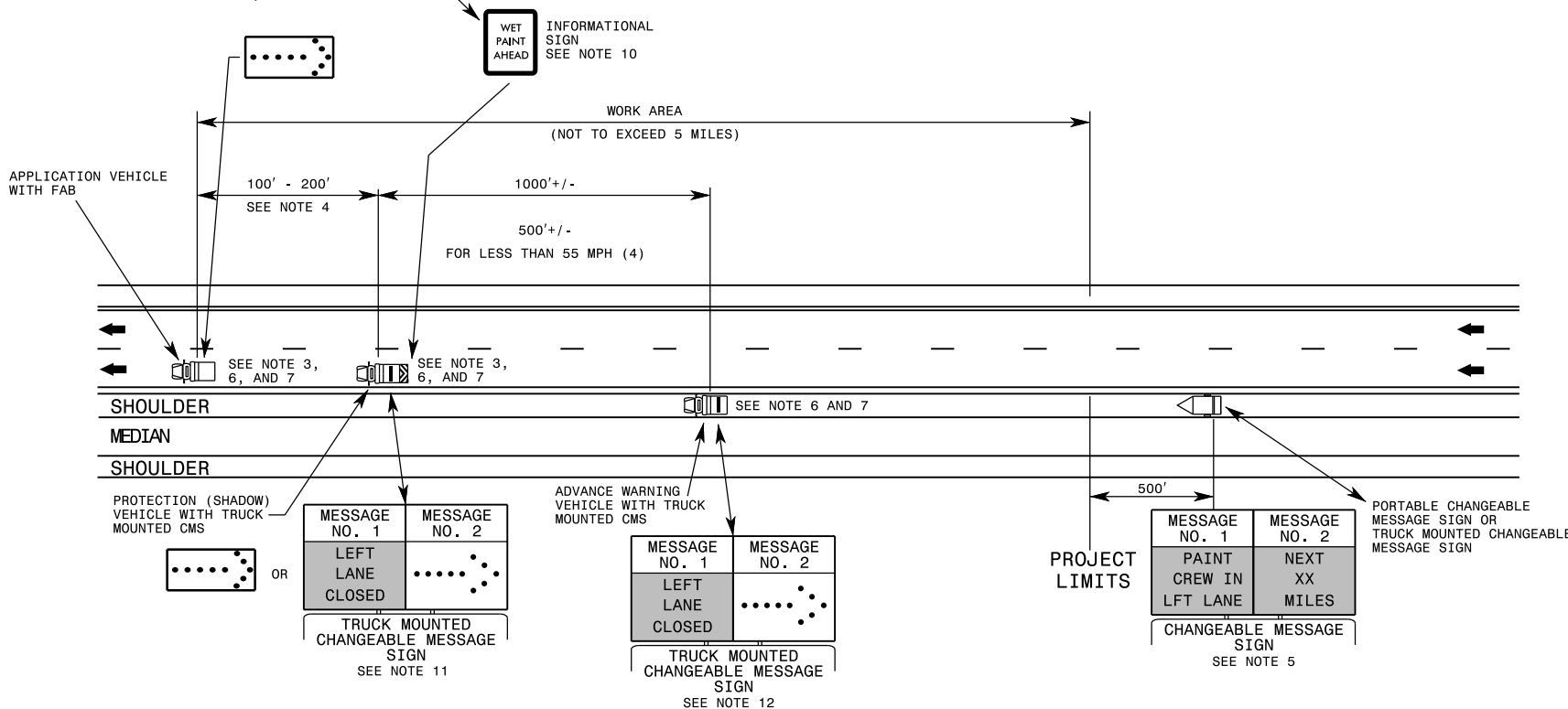
- 1- THE FOLLOWING OPTIONS MAY BE USED FOR ADVANCE WARNING SIGNS:
 - A. TRUCK MOUNTED SIGNS
 - B. TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
 - C. PORTABLE MOUNTED ADVANCE WARNING SIGNS (MUST CIRCLE TO PICK UP SIGNS)
 - D. PORTABLE CHANGEABLE MESSAGE SIGN (CMS) (MUST CIRCLE TO PICK UP SIGNS)
- 2- IF SPACE LIMITATIONS ON SHOULDER PROHIBIT A 48" X 48" SIGN, A SMALLER SIGN CAN BE USED WITH APPROVAL FROM ENGINEER.
- 3- SIGNS ON VEHICLES SHOULD BE MOUNTED A MINIMUM OF ONE (1) FOOT FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW BOARD AND/OR WARNING LIGHT(S).
- 4- GROUND MOUNTED ADVANCED WARNING SIGNS SHOULD BE MOUNTED A MINIMUM OF ONE (1) FOOT FROM THE GROUND TO BOTTOM OF SIGN.
- 5- SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.
- 6- ADDITIONAL VEHICLES SHOULD BE USED IN WORK CARAVAN TO FACILITATE DRYING OF PAVEMENT MARKING MATERIAL (TMAs ARE OPTIONAL ON THESE ADDITIONAL VEHICLES). HOWEVER, THE FIRST VEHICLE MOTORISTS SEE IN THE TRAVEL LANE SHALL HAVE A TMA.
- 7- ADJUST DISTANCE AS NEEDED TO PREVENT MOTORISTS FROM ENTERING SPACE BETWEEN THE APPLICATION AND PROTECTION VEHICLE. DISTANCE CAN BE LENGTHENED TO ACCOMMODATE SIGHT DISTANCE NEEDS.
- 8- WORK ZONE SHOULD NOT EXCEED FIVE (5) MILES IN LENGTH. ROUND UP MILEAGE TO NEXT WHOLE MILE.
- 9- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- 10- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- 11- ALL TRAFFIC CONTROL DEVICES WILL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS FOR PAVEMENT MARKING AND MARKERS.
- 12- INFORMATIONAL SIGNS SHOULD BE ACTIVITY SPECIFIC, i.e. "PAINT CREW IN ROAD". SIGNS MAY BE RECTANGULAR OR DIAMOND SHAPE. SIGN SIZE SHOULD BE BASED ON THE MOTORIST ABILITY TO RECOGNIZE SIGN WHEN TRAVELING FIVE (5) MILES ABOVE POSTED SPEED LIMIT.
- 13- IF A LEAD VEHICLE IS ADDED TO OPERATION, IT SHOULD HAVE THE SAME ADVANCE WARNING SIGNS AS THE APPLICATION VEHICLE SHOWN BELOW.

LEGEND

	PORTABLE SIGN
	DIRECTION OF TRAFFIC FLOW
	APPLICATION VEHICLE WITH WARNING LIGHT(S)
	PROTECTION VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA) AND WARNING LIGHT(S)
	FLASHING ARROW BOARD (96" X 48" MIN.), "CAUTION MODE"



MAY USE "WET PAINT STAY OFF LINE", "WET PAINT AHEAD", OR SIMILAR INFORMATIONAL MESSAGE AND MAY ALSO USE ARROWS TO POINT TO WET LINES, ETC.



GENERAL NOTES

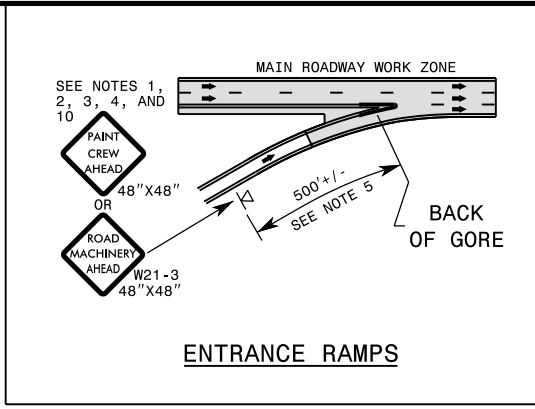
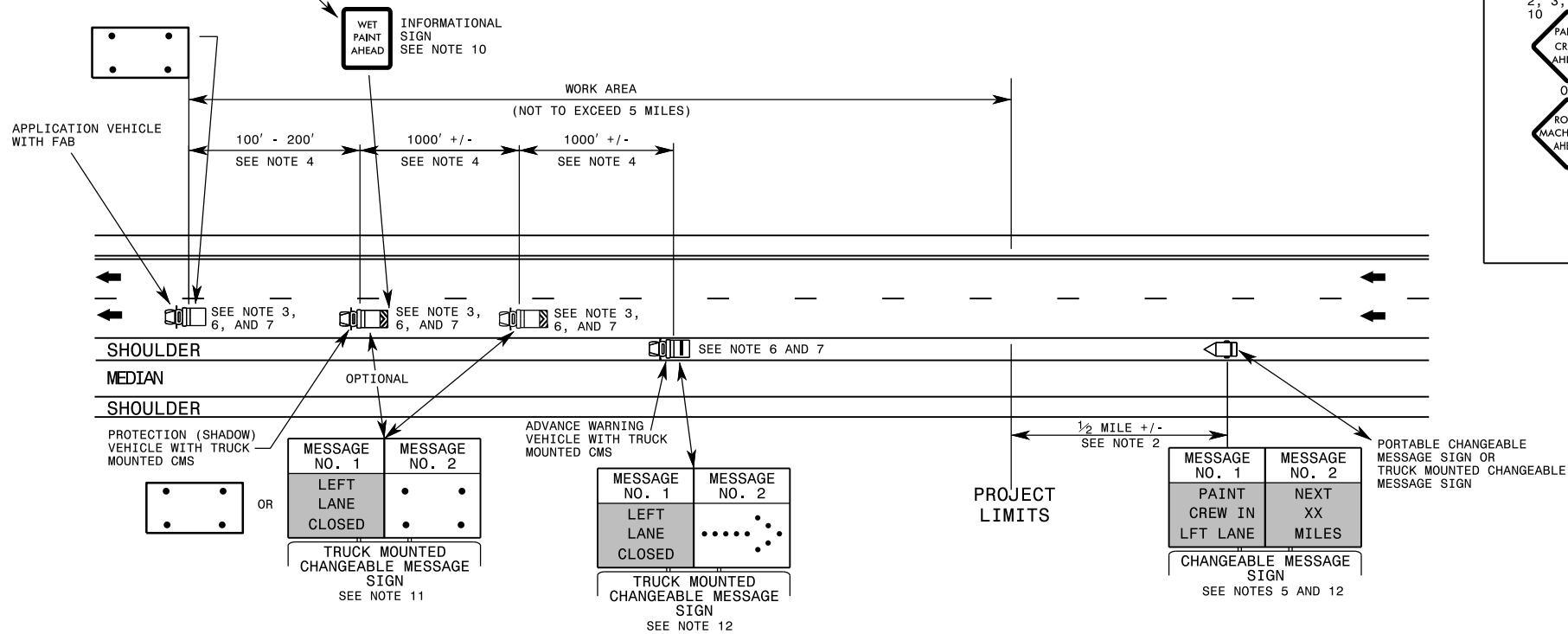
- THE FOLLOWING OPTIONS MAY BE USED FOR ADVANCE WARNING SIGNS:
A. TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
B. PORTABLE CHANGEABLE MESSAGE SIGN (CMS)
- SIGNS ON VEHICLES SHOULD BE MOUNTED A MINIMUM OF FIVE (5) FEET FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW BOARD AND/OR WARNING LIGHTS.
- ADDITIONAL VEHICLES SHOULD BE USED IN WORK CARAVAN TO FACILITATE DRYING OF PAVEMENT MARKING MATERIAL (TMAS ARE OPTIONAL ON THESE ADDITIONAL VEHICLES). HOWEVER, THE FIRST VEHICLE MOTORISTS SEE IN THE TRAVEL LANE SHALL HAVE A TMA.
- ADJUST DISTANCE AS NEEDED TO PREVENT MOTORISTS FROM ENTERING SPACE BETWEEN THE APPLICATION AND PROTECTION VEHICLE. DISTANCE CAN BE LENGTHENED TO ACCOMMODATE SIGHT DISTANCE NEEDS.
- WORK ZONE SHOULD NOT EXCEED FIVE (5) MILES IN LENGTH. ROUND UP MILEAGE TO NEXT WHOLE MILE. RELOCATE CHANGEABLE MESSAGE SIGN SUCH THAT WORK AREA DOES NOT EXCEED 5 MILES FROM BEGIN PROJECT LIMITS.
- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- ALL TRAFFIC CONTROL DEVICES WILL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS FOR PAVEMENT MARKING AND MARKERS.
- INFORMATIONAL SIGNS SHOULD BE ACTIVITY SPECIFIC, i.e. "PAINT CREW IN ROAD". SIGNS MAY BE RECTANGULAR OR DIAMOND SHAPE. SIGN SIZE SHOULD BE BASED ON THE MOTORIST ABILITY TO RECOGNIZE SIGN WHEN TRAVELING 5 MILES PER HOUR ABOVE POSTED SPEED LIMIT.

- THE CARAVAN IS TO MOVE AT 3 MPH OR GREATER TO OBTAIN THE DESIRED LEVEL OF SAFETY FOR THE MOVING OPERATION. IF AT ANYTIME AN VEHICLE STOPS DURING THE OPERATION, THE REMAINDER OF THE CARAVAN SHALL CONTINUE MOVING AND THE APPLICATION VEHICLE SHALL RESUME WORK OPERATIONS WITHIN 60 SECONDS. OTHERWISE, ALL VEHICLES ARE TO BE REMOVED FROM THE TRAVEL LANE AND THE OPERATION RESET.
- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES, SHALL BE A MINIMUM SIZE OF 43" X 73". FOR ADDITIONAL SUGGESTED MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.
- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON VEHICLES LOCATED ON THE SHOULDER FOR ADVANCED WARNING MAY BE SMALLER THAN 43" X 73". FOR ADDITIONAL SUGGESTED MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

LEGEND

- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW
- APPLICATION VEHICLE WITH WARNING LIGHT(S)
- PROTECTION VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA) AND WARNING LIGHT(S)
- ADVANCE WARNING VEHICLE WITH TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS) AND WARNING LIGHT(S)
- FLASHING ARROW BOARD (96"X48" MIN.), APPROPRIATE DIRECTION INDICATED
- CHANGEABLE MESSAGE SIGN

MAY USE "WET PAINT STAY OFF LINE", "WET PAINT AHEAD", OR SIMILAR INFORMATIONAL MESSAGE AND MAY ALSO USE ARROWS TO POINT TO WET LINES, ETC.



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

GENERAL NOTES

- SIGNS ON VEHICLES SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW BOARD AND/OR WARNING LIGHTS.
- CMS SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.
- ADDITIONAL VEHICLES SHOULD BE USED IN WORK CARAVAN TO FACILITATE DRYING OF PAVEMENT MARKING MATERIAL (TMAs ARE OPTIONAL ON THESE ADDITIONAL VEHICLES). HOWEVER, THE FIRST VEHICLE MOTORISTS SEE IN THE TRAVEL LANE SHALL HAVE A TMA.
- ADJUST DISTANCE AS NEEDED TO PREVENT MOTORISTS FROM ENTERING SPACE BETWEEN THE APPLICATION AND PROTECTION VEHICLE. DISTANCE CAN BE LENGTHENED TO ACCOMODATE SIGHT DISTANCE NEEDS.
- WORK ZONE SHOULD NOT EXCEED FIVE (5) MILES IN LENGTH. ROUND UP MILEAGE TO NEXT WHOLE MILE. RELOCATE CHANGEABLE MESSAGE SIGN SUCH THAT WORK AREA DOES NOT EXCEED 5 MILES FROM BEGIN PROJECT LIMITS.
- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- ALL TRAFFIC CONTROL DEVICES WILL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS FOR PAVEMENT MARKING AND MARKERS.
- INFORMATIONAL SIGNS SHOULD BE ACTIVITY SPECIFIC, I.E. "PAINT CREW IN ROAD". SIGNS MAY BE RECTANGULAR OR DIAMOND SHAPE. SIGN SIZE SHOULD BE BASED ON THE MOTORIST ABILITY TO RECOGNIZE SIGN WHEN TRAVELING 5 MILES PER HOUR ABOVE POSTED SPEED LIMIT.
- THE CARAVAN IS TO MOVE AT 3 MPH OR GREATER TO OBTAIN THE DESIRED LEVEL OF SAFETY FOR THE MOVING OPERATION. IF AT ANYTIME AN VEHICLE STOPS DURING THE OPERATION, THE REMAINDER OF THE CARAVAN SHALL CONTINUE MOVING AND THE APPLICATION VEHICLE SHALL RESUME WORK OPERATIONS WITHIN 60 SECONDS. OTHERWISE, ALL VEHICLES ARE TO BE REMOVED FROM THE TRAVEL LANE AND THE OPERATION RESET.
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- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON VEHICLES LOCATED ON THE SHOULDER FOR ADVANCED WARNING MAY BE SMALLER THAN 43" X 73". FOR ADDITIONAL SUGGESTED MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

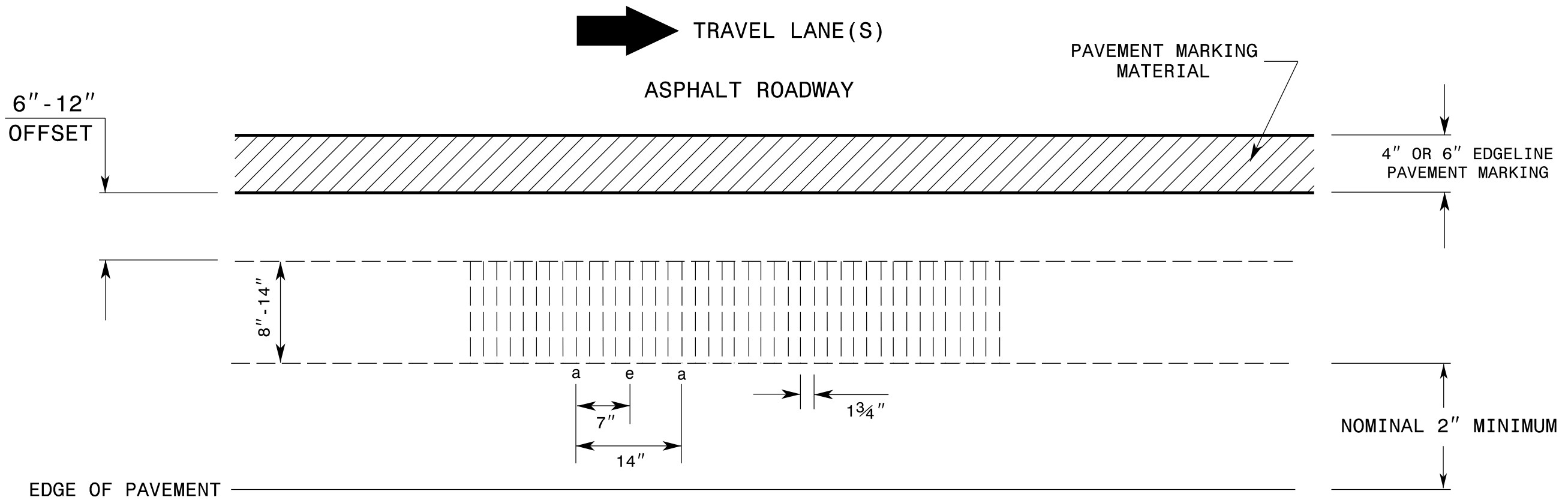
LEGEND

- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW
- APPLICATION VEHICLE WITH WARNING LIGHT(S)
- PROTECTION VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA) AND WARNING LIGHT(S)
- ADVANCE WARNING VEHICLE WITH TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS) AND WARNING LIGHT(S)
- FLASHING ARROW BOARD (96" X 48" MIN.), APPROPRIATE DIRECTION INDICATED
- CHANGEABLE MESSAGE SIGN

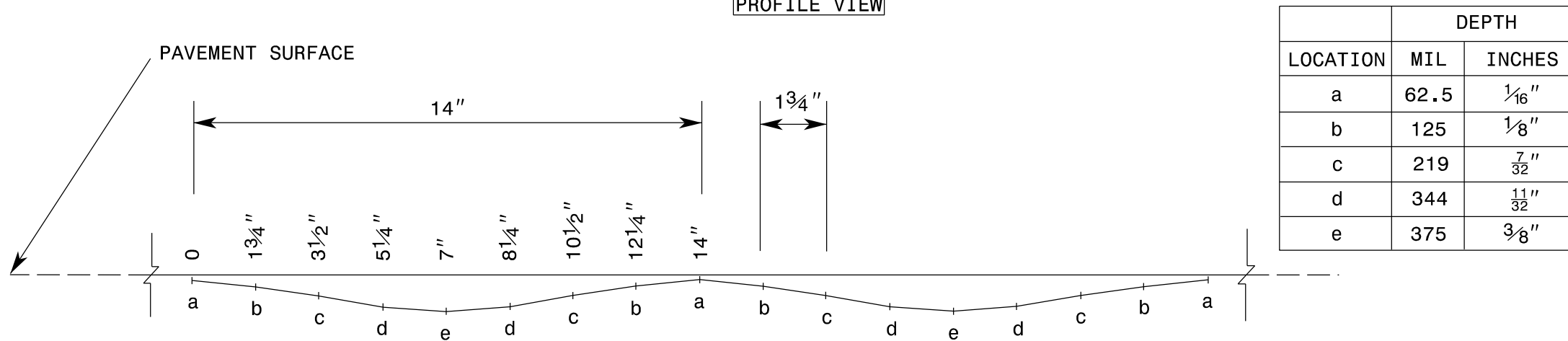
ROADWAY STANDARD DRAWING FOR
TEMPORARY LANE CLOSURES
MOVING OPERATION CARAVAN (OPERATIONS TRAVELING 3 MPH OR FASTER) PLACING PAVEMENT MARKING OR MARKERS ON MULTILANE ROADWAYS ≥ 60 MPH

See Table 1 within Rumble Strip Policy for Design Guidance

PLAN VIEW



PROFILE VIEW

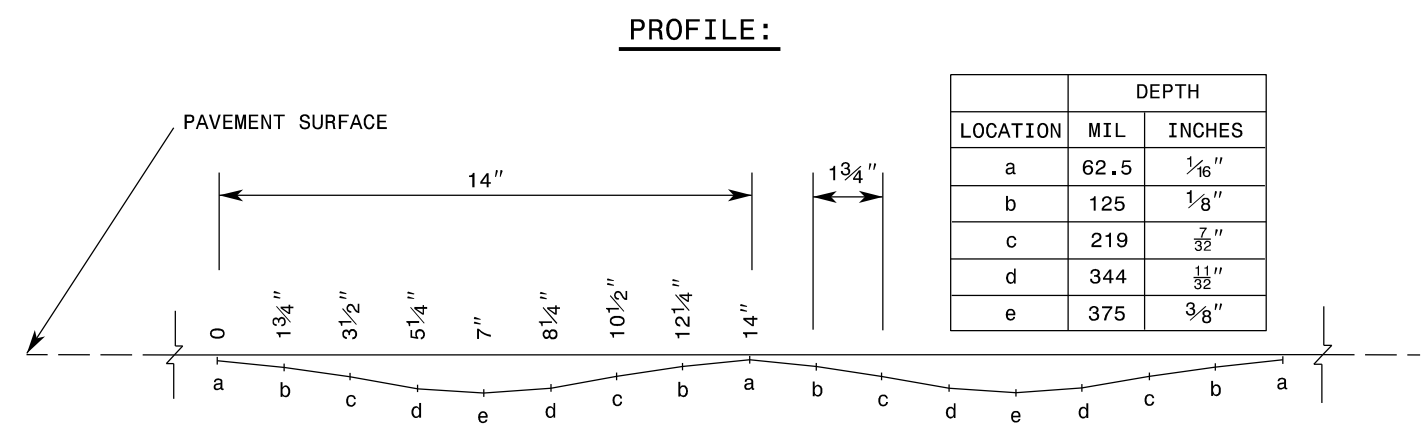
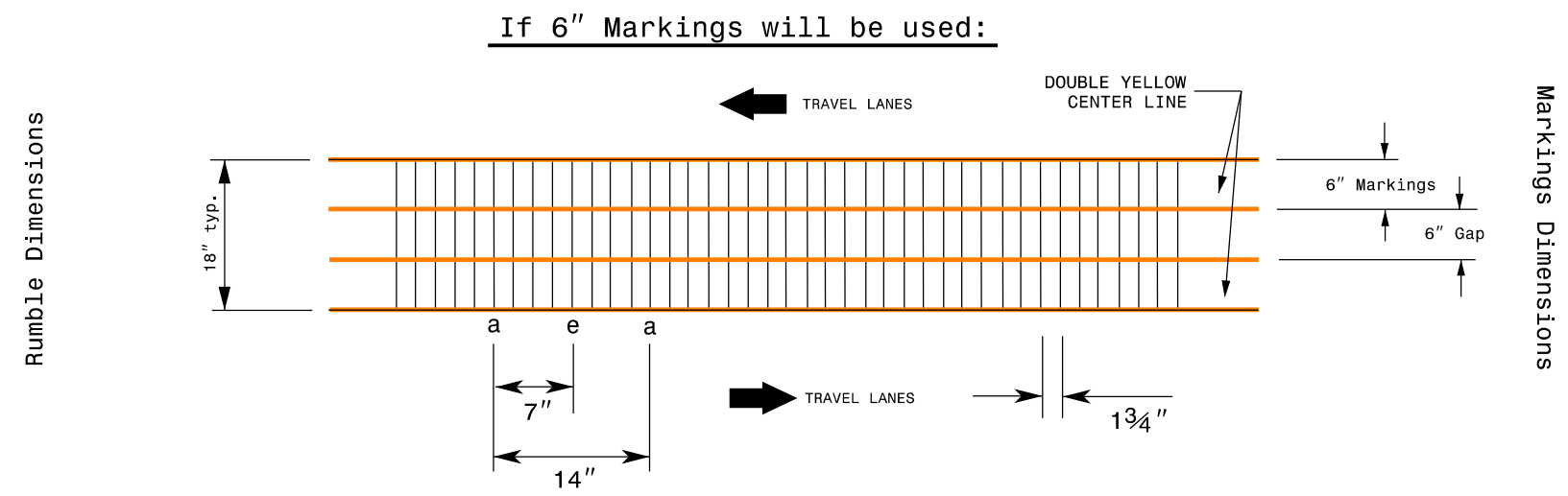
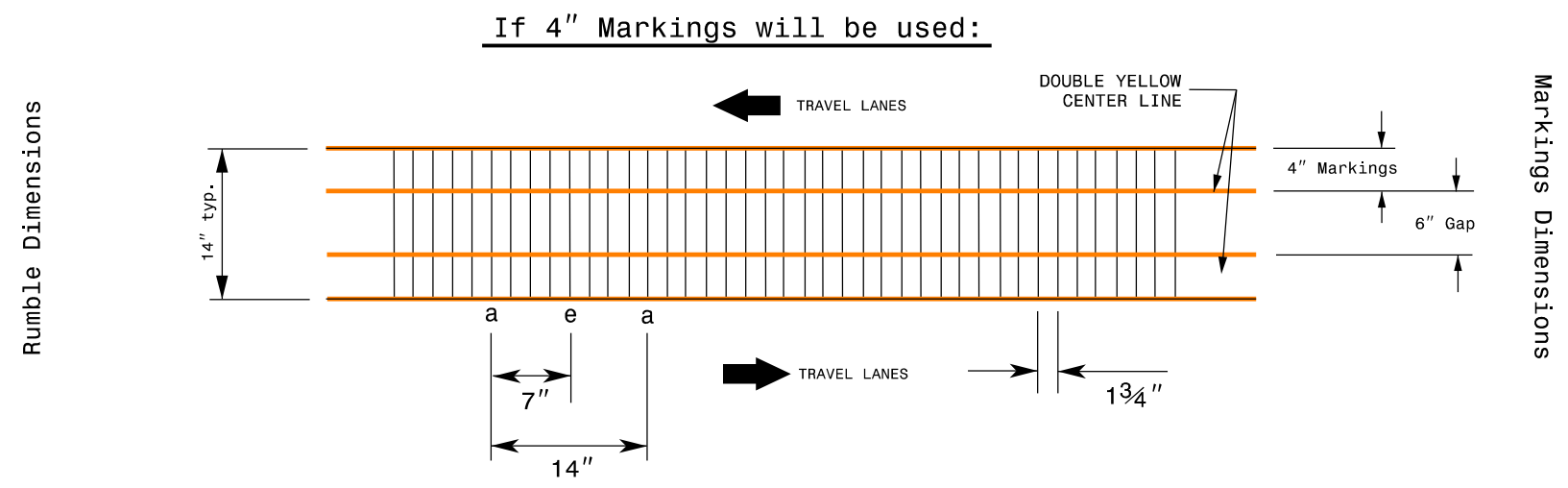


REFERENCE DRAWING ID: Sin.Strip

NOTES:

- 1) Specification in table taken from MNDOT Research Project Final Report 2016-23: *Sinusoidal Rumble Strip Design Optimization Study By: Terhaar et. al, June 2016*

See Table 2 within Rumble Strip Policy for Design Guidance



REFERENCE DRAWING ID: Sin.CL

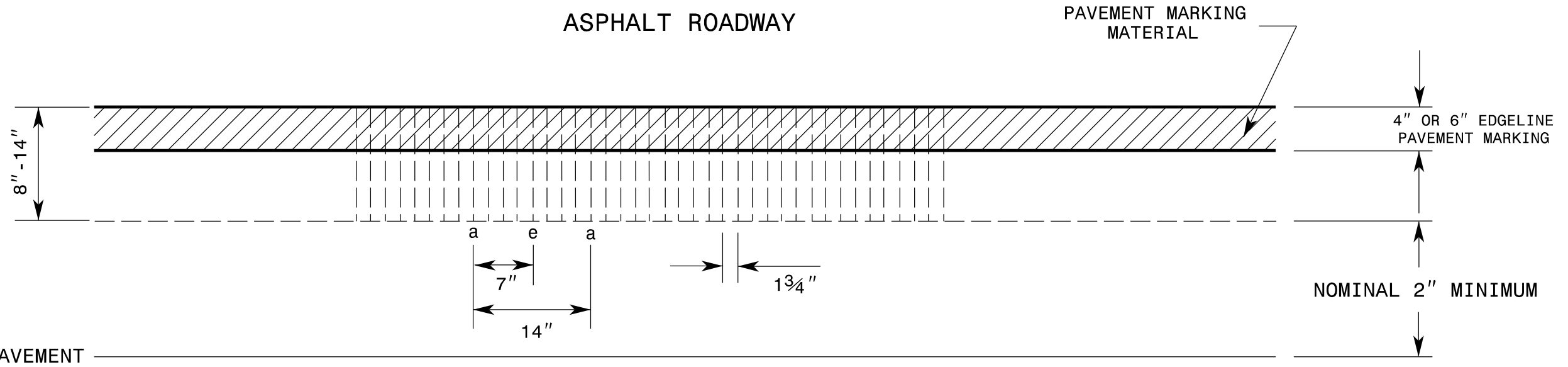
NOTES:

- 1) Specification in table taken from MNDOT Research Project Final Report 2016-23: *Sinusoidal Rumble Strip Design Optimization Study By: Terhaar et. al. June 2016*
- 2) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
- 3) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.

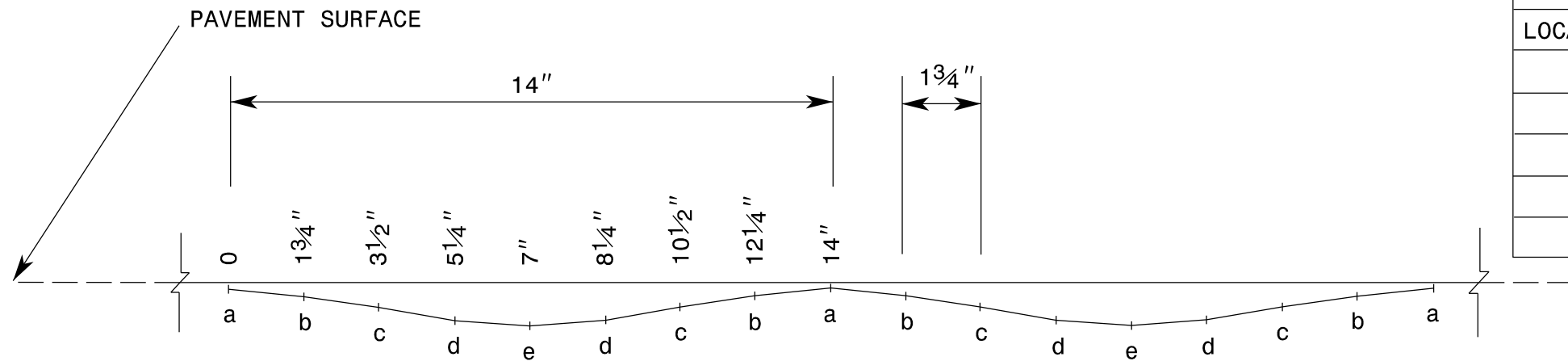
See Table 1 within Rumble Strip Policy for Design Guidance

PLAN VIEW

TRAVEL LANE(S)
ASPHALT ROADWAY



PROFILE VIEW



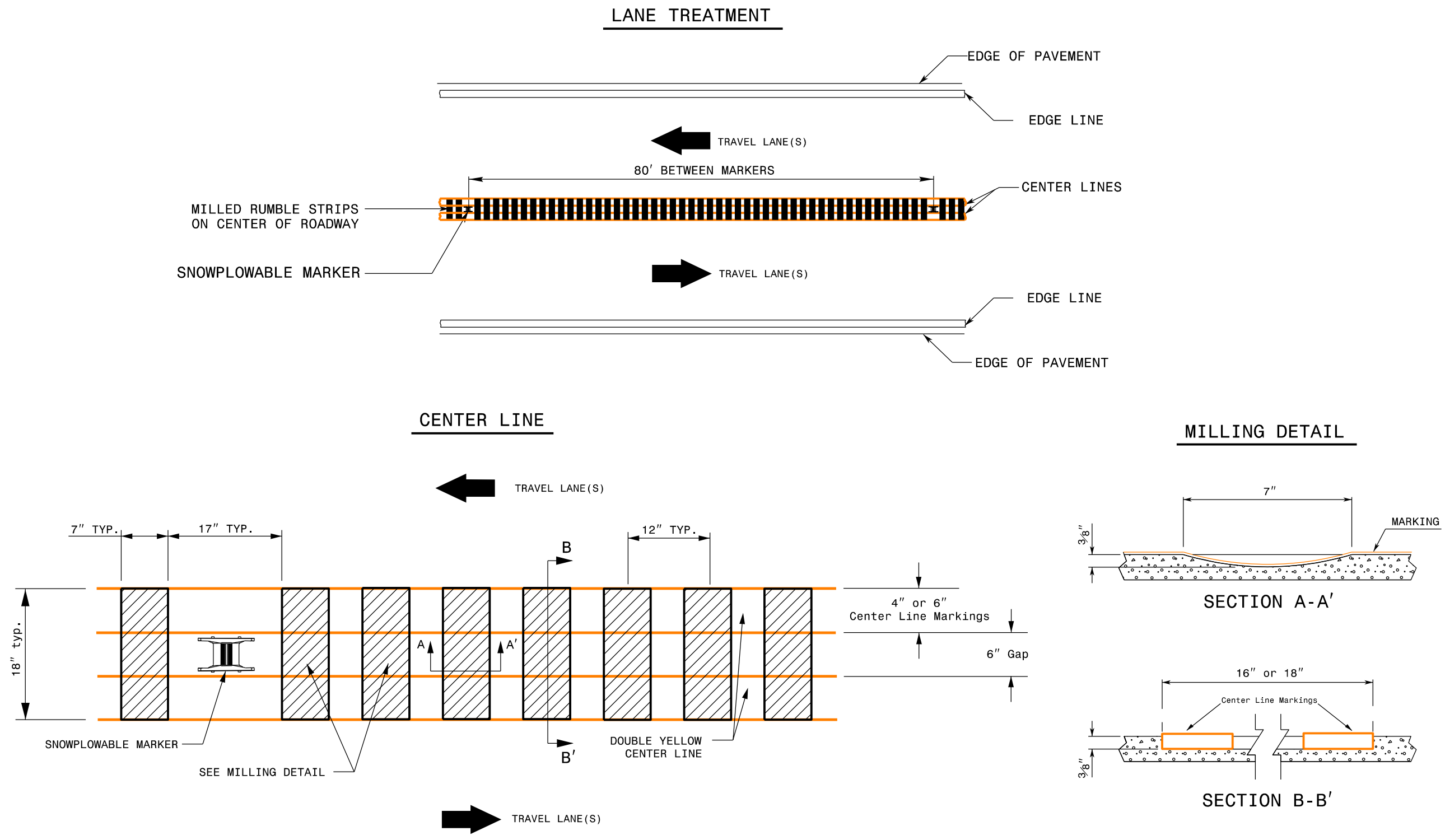
LOCATION	DEPTH	
	MIL	INCHES
a	62.5	1/16"
b	125	1/8"
c	219	7/32"
d	344	11/32"
e	375	3/8"

REFERENCE DRAWING ID: Sin.Stripe

NOTES:

- 1) Specification in table taken from MNDOT Research Project Final Report 2016-23: *Sinusoidal Rumble Strip Design Optimization Study By: Terhaar et. al, June 2016*
- 2) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
- 3) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.

See Table 2 within Rumble Strip Policy for Design Guidance



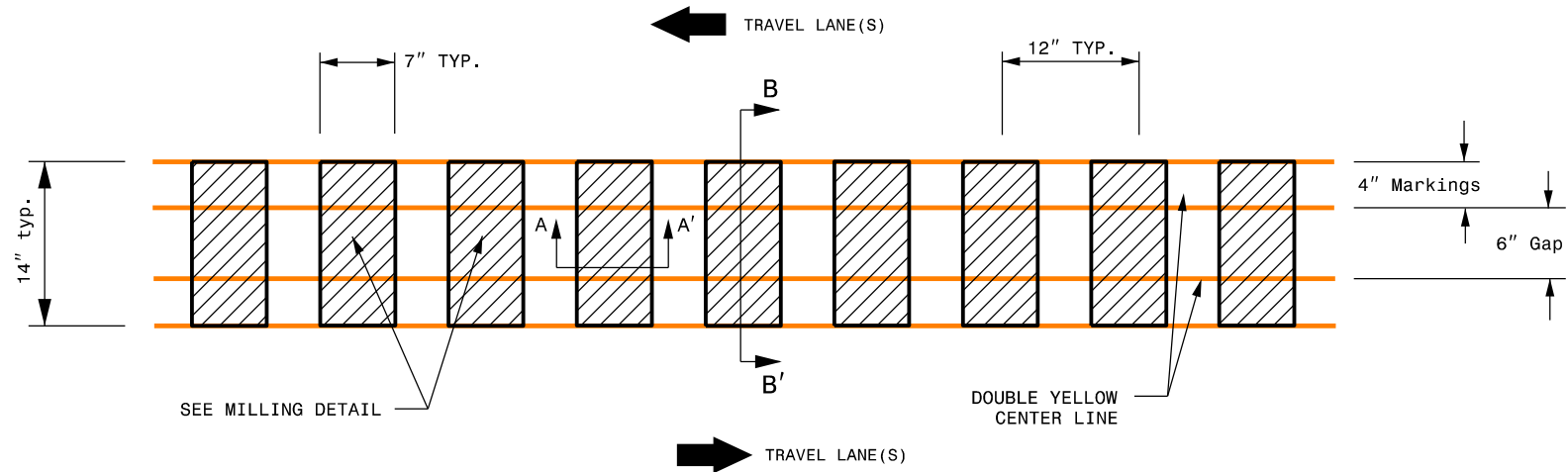
REFERENCE DRAWING ID: Trad.CL with Snowplowable Markers

NOTES:

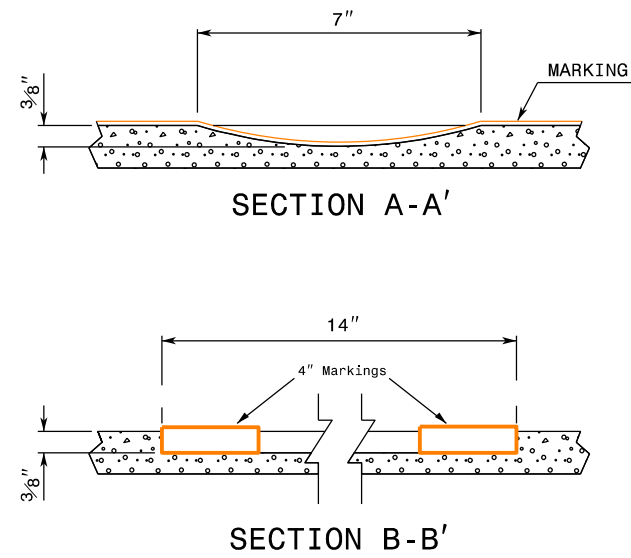
- 1) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
- 2) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.
- 3) INSTALL SNOWPLOWABLE MARKERS AT APPROXIMATELY 80' INCREMENTS. DO NOT MILL RUMBLE STRIPS IN SECTION WHERE SNOWPLOWABLE MARKERS ARE INSTALLED.

See Table 2 within Rumble Strip Policy for Design Guidance

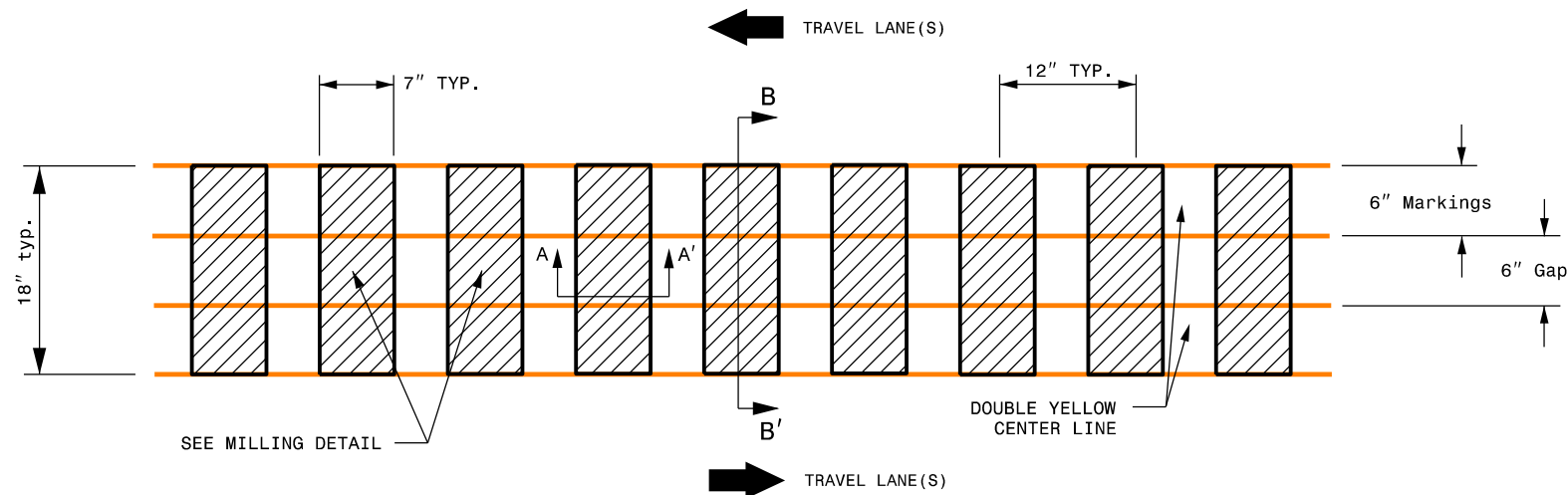
If 4" Markings will be used:



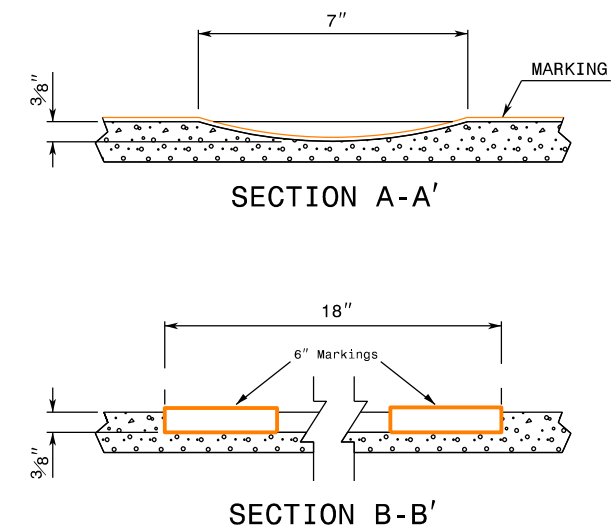
MILLING DETAIL - 4" Markings



If 6" Markings will be used:



MILLING DETAIL - 6" Markings

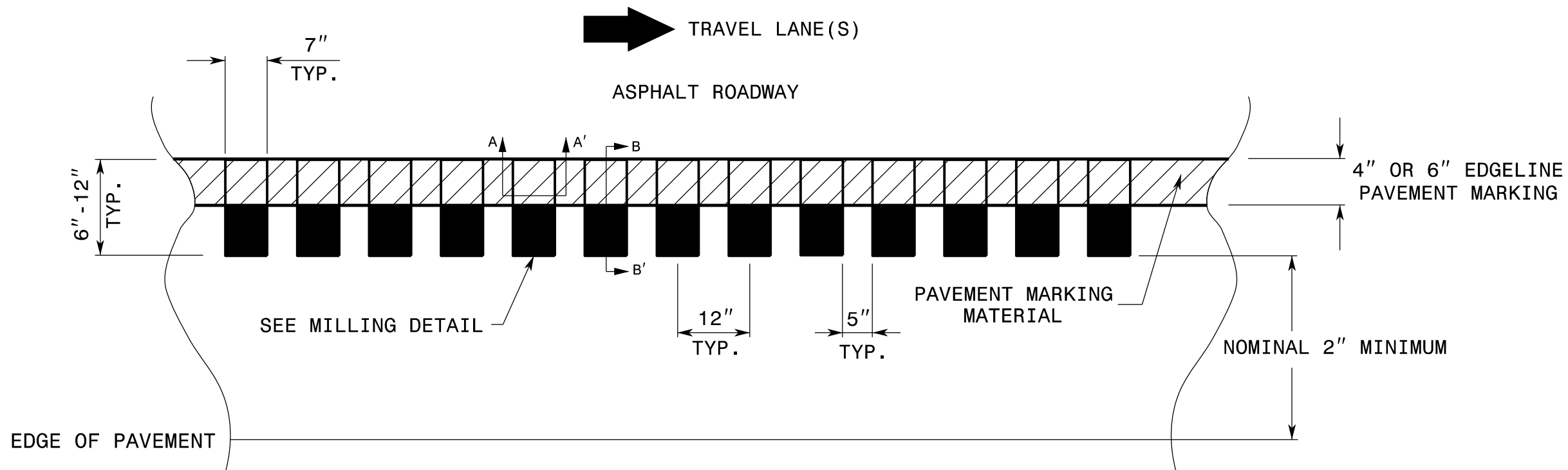


REFERENCE DRAWING ID: Trad.CL

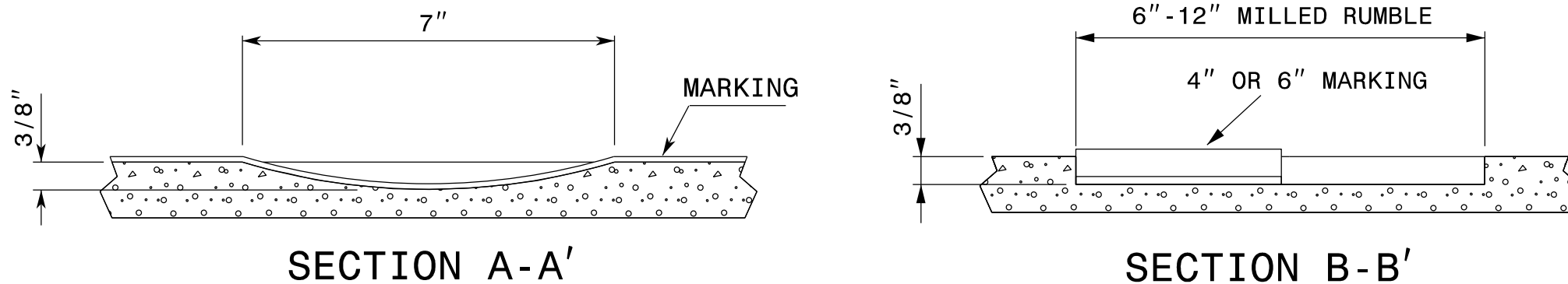
NOTES:

- 1) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
- 2) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.

See Table 1 within Rumble Strip Policy for Design Guidance



MILLING DETAIL:



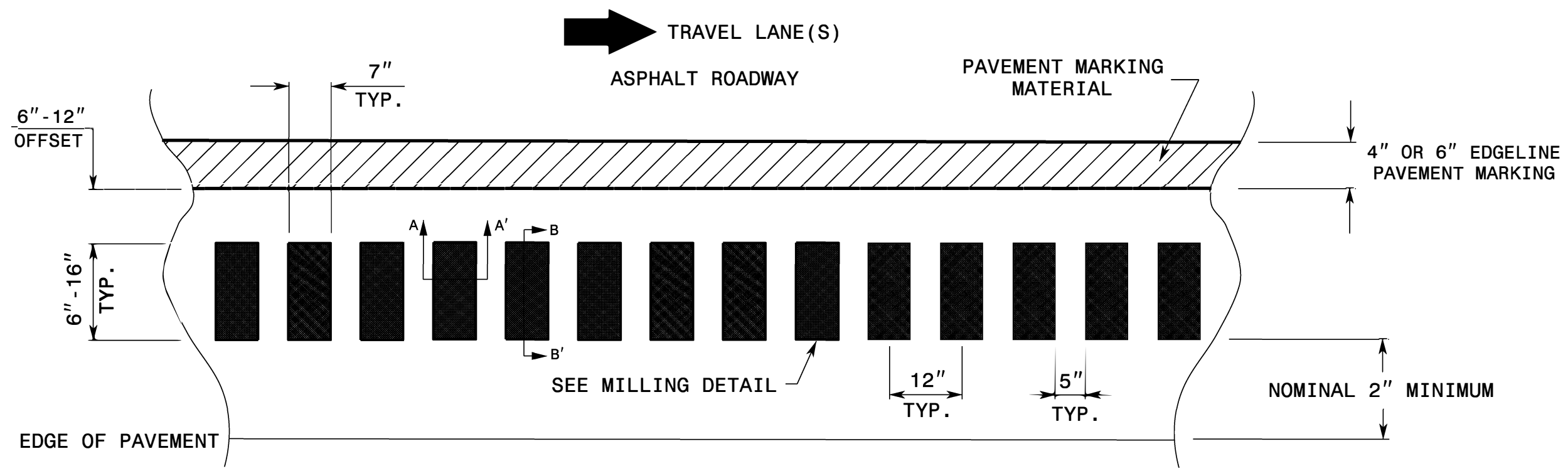
REFERENCE DRAWING ID: Trad.Stripe

NOTES:

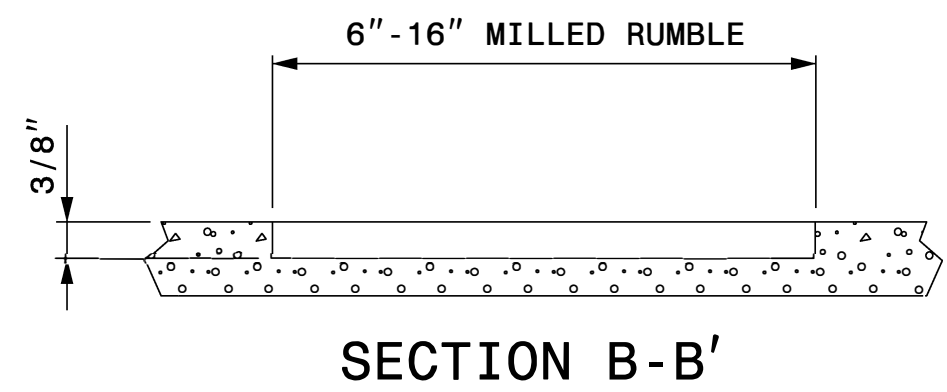
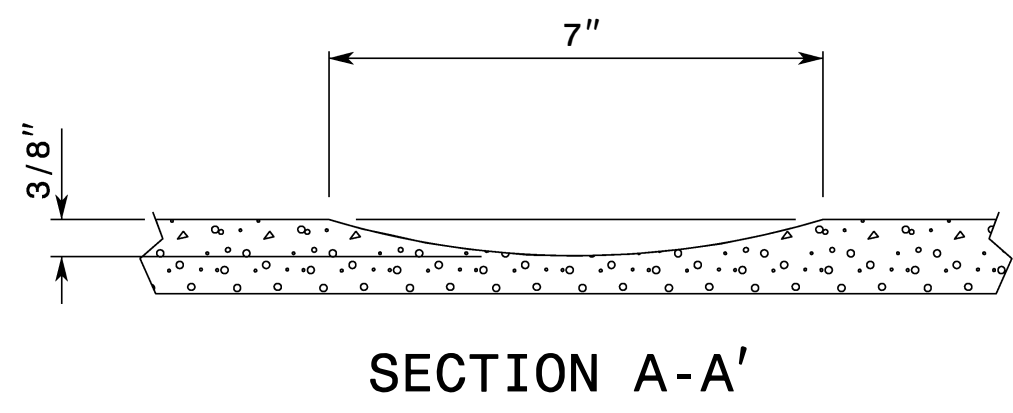
- 1) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
- 2) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.

2-23

See Table 1 within Rumble Strip
 Policy for Design Guidance



MILLING DETAIL:



2-23