

**The Triangle Expressway to be swept Once a Month - 12 cycles**

County	Route	Beginning of Route	End of Route	Corridor Miles
Durham	NC 147	Wake County Line	I-40	2.4
Wake	NC 147	I-540	Durham County Line	1.0
Durham	NC-540	40	Wake County Line	0.5
Wake	NC-540	Durham County Line	NC 55	3.5
Wake	NC-540	NC 55	US 64	6.6
Wake	NC-540	US 64	NC 55 Bypass	6.0
				<b>20.0</b>

**The Highway Corridors to be Swept Twice a Year - 2 cycles**

County	Route	Beginning of Route	End of Route	Corridor Miles
Durham	I-40	Orange County Line	Wake County Line	12.8
Durham	I-540	I-40	Wake County Line	0.6
Durham	I-85	Orange County Line	Granville County Line	13.7
Durham	US 70	South Miami Blvd	I-85	4.73
Durham	NC 147	I-40	I-85	12.4
Durham	US 15/501	I-40	I-85	6.5
Wake	I-40	Durham County Line SR	SR 1319 (Jones Franklin)	10.8
Wake	I-40	1319 (Jones Franklin)	I-440 - Exit 301	7.7
Wake	I-40	I-440 - Exit 301	Johnston County Line	9.0
Wake	I-440	I-40	US 64 Bypass/US 264	13.8
Wake	I-440	US 64 Bypass/US 264	I-40	2.8
Wake	I-540	Durham County Line	US 64 Bypass	24.7
Wake	US 1	Chatham County Line	I-40	16.4
Wake	US 1	I-440	Franklin County Line	15.6
Wake	US 64	I-440	Franklin County Line	19.7
Wake	US 264	US 64	Johnston County Line	3.3
Wake	US 70	Begin. of Divided Highway S. of I-540	Durham County Line	3.0
Wake	SR 1728 (Wade Ave)	I-40	I-440	3.1
				<b>180.63</b>

**The Wall Sweeping Locations to be Swept Once every two Months - 4 cycles**

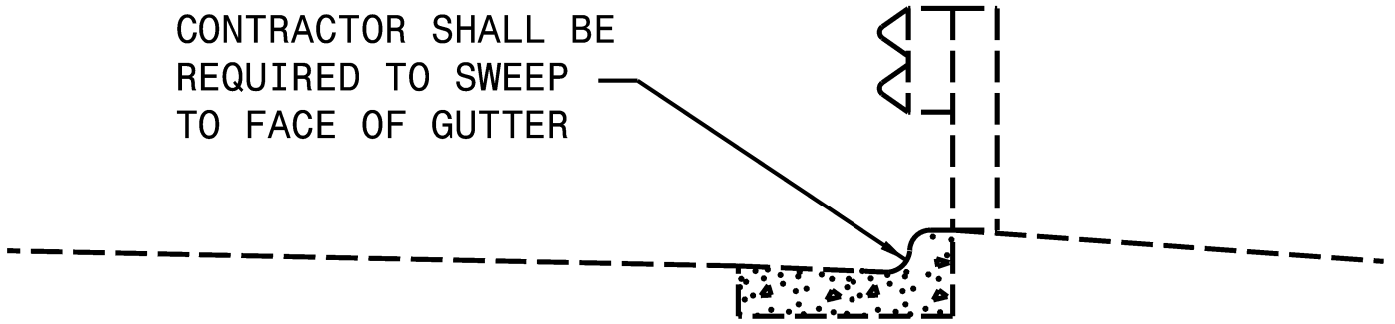
County	Route	Beginning of Route	End of Route	Corridor Miles
Durham	I-85	Cole Mill Road	Midland Terrance	5.3
Durham	I-40	Orange County Line	0.3 miles east of I-540	12.5

**The Wall Sweeping Locations to be Swept Once a Month - 10 cycles**

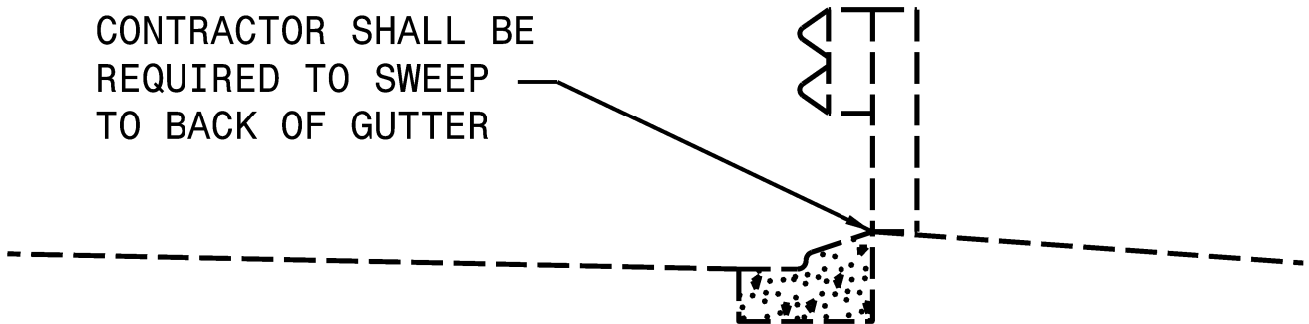
County	Route	Beginning of Route	End of Route	Corridor Miles
Wake	I-440	SR 1728 (Wade Ave)	I-40	13.4
Wake	US 1	Walnut St	Tryon Road/US 64 West	3.1
Wake	I-40	US 1 - Exit 293A	Exit 301	8.2
				<b>24.7</b>



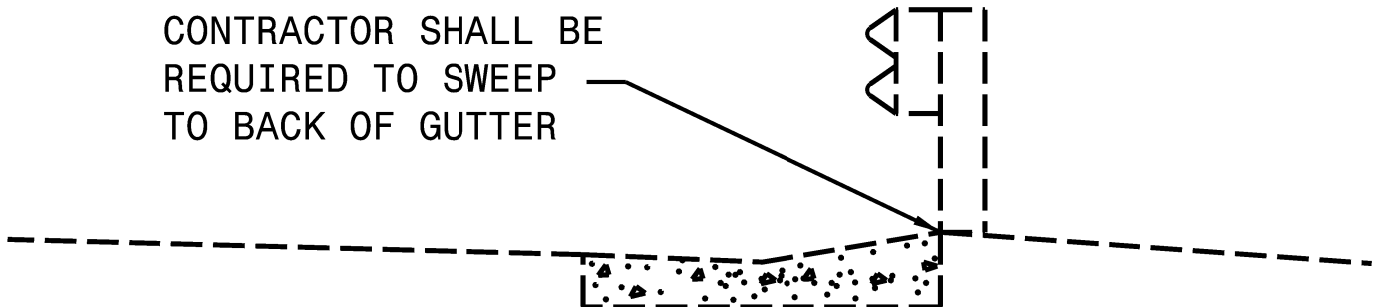
CONTRACTOR SHALL BE  
REQUIRED TO SWEEP  
TO FACE OF GUTTER



CONTRACTOR SHALL BE  
REQUIRED TO SWEEP  
TO BACK OF GUTTER



CONTRACTOR SHALL BE  
REQUIRED TO SWEEP  
TO BACK OF GUTTER



**DETAIL SHOWING SWEEPING  
LIMITS ON VARIOUS TYPES OF  
CURB AND GUTTER WITH GUARDRAIL**

TYPICAL INTERCHANGE CONFIGURATION SHOWING  
AREAS TO BE INCLUDED IN MAINLINE SWEEPING  
CONTRACTOR TO SWEEP ALL LOOPS, RAMPS, FLYOVERS,  
COLLECTOR-DISTRIBUTORS. ETC. ALONG DESIGNATED ROUTES



Contractor will be Responsible for Y-Line Sweeping in the Area between Ramps, etc.

Additional Y-Line Sweeping beyond Gantries on the Triangle Expressway will be Required

Approx. Y-Line Distances at the Triangle Expressway interchanges:






NC 147 & I-40 = 4000 LF  
NC 147 & Davis Drive = 1800 LF  
NC 540 & NC 55 = 3200 LF  
NC 540 & US 64 = 3300 LF  
NC 540 & US 1 = 9500 LF  
Veridea Parkway = 2000 LF

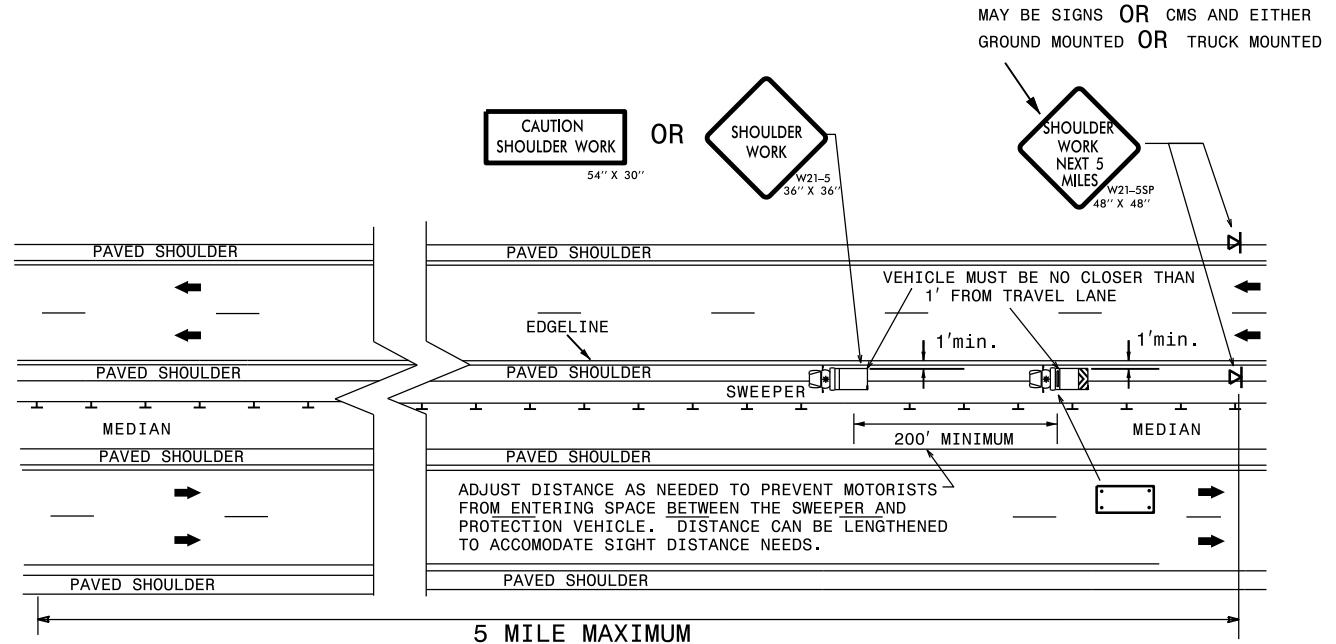
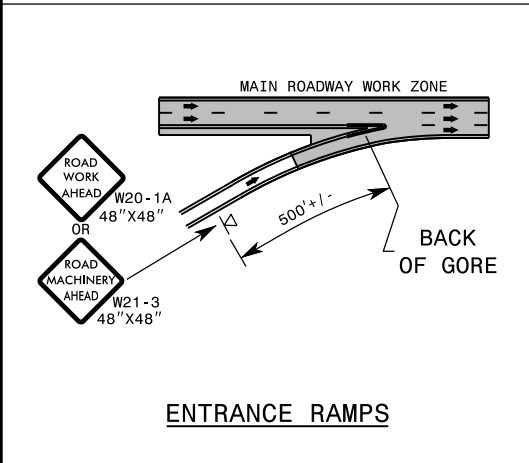
NC 147 & Hobson Road = 2300 LF  
NC 540 & NC 54 = 2800 LF  
NC 540 & Greenlevel West = 2200 LF  
NC 540 & Old US 1 = 2400 LF  
NC 540 & NC 55 Bypass = 2700 LF  
Morrisville Parkway = 2000 LF (Under Const.)

## 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. GROUND MOUNTED ADVANCE WARNING SIGNS
  - D. GROUND MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
- 2- ALL ADVANCE WARNING SIGNS MUST BE 48" X 48" WITH FLUORESCENT ORANGE TYPE VII OR HIGHER SHEETING. 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 FIVE (5) FEET FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW BOARD AND/OR LIGHTBAR.
- 4- GROUND MOUNTED ADVANCED WARNING SIGNS SHOULD BE MOUNTED A MINIMUM OF FIVE (5) FEET FROM THE GROUND TO BOTTOM OF SIGN.
- 5- SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.
- 6- WHEN TRAVELING FROM ONE SIDE OF A BRIDGE TO ANOTHER, BOTH SWEEPER VEHICLE AND TMA MUST WAIT FOR A BREAK IN TRAFFIC AND MOVE OUT INTO THE TRAVELWAY SIMULTANEOUSLY TO GET TO THE OTHER SIDE.
- 7- TOTAL DISTANCE BETWEEN FIRST AND LAST VEHICLE IN CARAVAN SHOULD NOT EXCEED ONE (1) MILE IN LENGTH.
- 8- SIGN W21-5bL "LEFT SHOULDER CLOSED AHEAD" OR W21-5bR "RIGHT SHOULDER CLOSED AHEAD" SHOULD BE PLACED ON BACK OF PROTECTION VEHICLE APPROPRIATELY IN MULTILANE DIVIDED TRAFFIC SO VEHICLES APPROACHING FROM REAR ARE NOTIFIED OF OPERATION.
- 9- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- 10- USE OF A LIGHT SYSTEM ON ALL VEHICLES IS REQUIRED (REFER TO ROADWAY STANDARD DRAWING 1165.01, SHEET 1 OF 1).
- 11- USE "CAUTION SHOULDER WORK" SIGN ON REAR OF SWEEPER.
- 12- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- 13- IF USING GROUND MOUNTED ADVANCE WARNING SIGNS OR STATIONARY CMS, THE TOTAL DISTANCE BETWEEN THE FIRST ADVANCE WARNING SIGN OR CMS AND SWEEPER VEHICLE SHOULD NOT EXCEED FIVE (5) MILES AND SIGN W21-5SP SHOULD READ 'SHOULDER WORK NEXT 5 MILES'.

## LEGEND

-  PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.
-  DIRECTION OF TRAFFIC FLOW
-  SWEEPING VEHICLE
-  PROTECTION (SHADOW) VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA). TMA MUST BE NCHRP-350 TEST LEVEL 3 (60+MPH) APPROVED.
-  FLASHING ARROW BOARD, TYPE "C" (96" X 48" MIN.), "CAUTION MODE"



ADVANCE WARNING SIGNS SHOULD BE INSTALLED AT INTERSECTIONS PER DRAWING 4.

# SHOULDER SWEEPING OPERATION

## MULTILANE DIVIDED FACILITIES







LOCATION: TIRE OF SWEEPER VEHICLE & TMA NO CLOSER THAN ONE (1) FOOT FROM EDGELINE (MEDIAN OR SHOULDER)

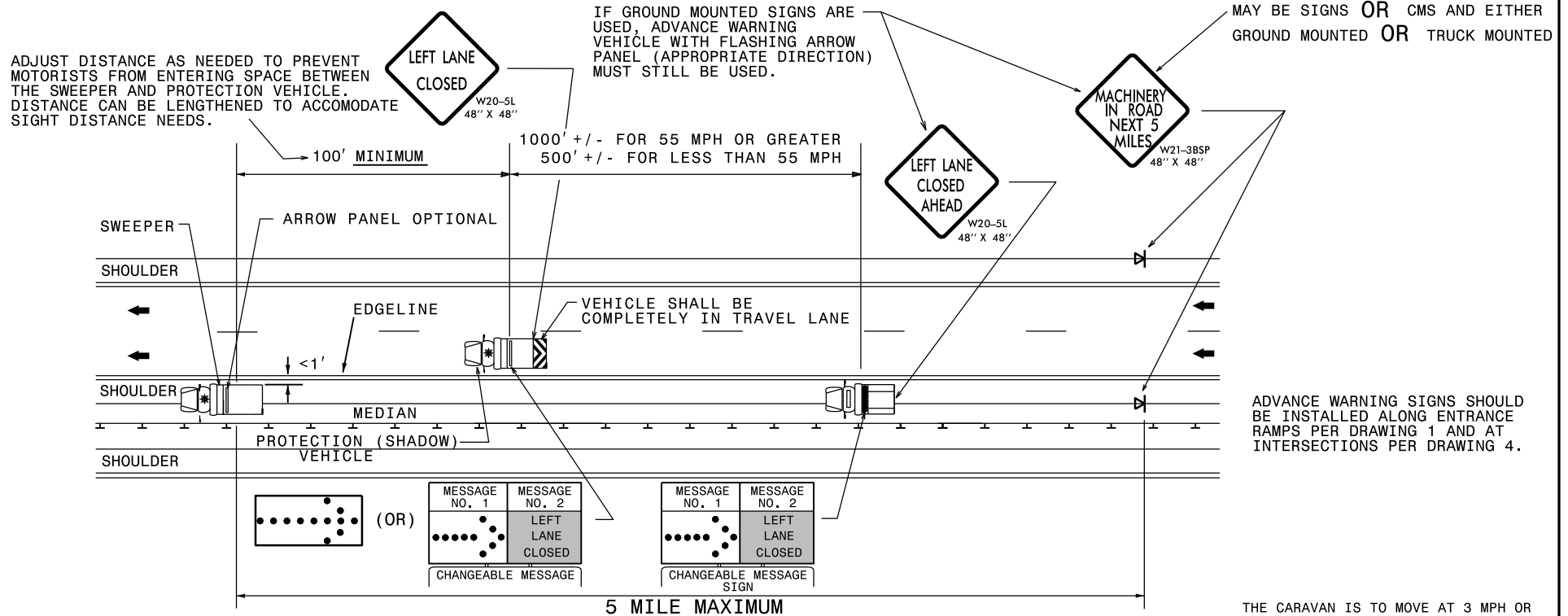
**DRAWING 1 OF 4**  
IMPLEMENTATION DATE: 11/05/01  
REVISED: 06/06/12

## 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. GROUND MOUNTED ADVANCE WARNING SIGNS
  - D. GROUND MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
- 2- ALL ADVANCE WARNING SIGNS MUST BE 48" X 48" WITH FLUORESCENT ORANGE TYPE VII OR HIGHER SHEETING. 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 FIVE (5) FEET FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW BOARD AND/OR LIGHTBAR.
- 4- GROUND MOUNTED ADVANCED WARNING SIGNS SHOULD BE MOUNTED A MINIMUM OF FIVE (5) FEET FROM THE GROUND TO BOTTOM OF SIGN.
- 5- SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.
- 6- TOTAL DISTANCE BETWEEN FIRST AND LAST VEHICLE IN CARAVAN SHOULD NOT EXCEED ONE (1) MILE IN LENGTH.
- 7- SIGN W20-5L "LEFT LANE CLOSED" SHOULD BE PLACED ON BACK OF PROTECTION VEHICLE AND SIGN W20-5L "LEFT LANE CLOSED AHEAD" ON BACK OF ADVANCE WARNING VEHICLE IN MULTILANE DIVIDED TRAFFIC SO VEHICLES APPROACHING FROM REAR ARE NOTIFIED OF OPERATION.
- 8- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- 9- USE OF A LIGHT SYSTEM ON ALL VEHICLES IS REQUIRED (REFER TO ROADWAY STANDARD DRAWING 1165.01, SHEET 1 OF 1).
- 10- USE OF CMS's ARE REQUIRED WITH ADVANCE WARNING VEHICLES.
- 11- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- 12- IF USING GROUND MOUNTED ADVANCE WARNING SIGNS OR STATIONARY CMS, THE TOTAL DISTANCE BETWEEN THE FIRST ADVANCE WARNING SIGN OR CMS AND SWEEPER VEHICLE SHOULD NOT EXCEED FIVE (5) MILES AND SIGN W21-3BSP SHOULD READ 'MACHINERY IN ROAD NEXT 5 MILES'.

## LEGEND

-  PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.
-  DIRECTION OF TRAFFIC FLOW
-  SWEEPING VEHICLE
-  PROTECTION (SHADOW) VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA). TMA MUST BE NCHRP-350 TEST LEVEL 3 (60+MPH) APPROVED.
-  ADVANCE WARNING VEHICLE i.e. PICKUP TRUCK WITH MOUNTED SIGN
-  FLASHING ARROW BOARD, TYPE "C" (96" X 48" MIN.), APPROPRIATE DIRECTION INDICATED



# SHOULDER SWEEPING OPERATION

## MULTILANE DIVIDED FACILITIES IN AREAS WITH LIMITED SHOULDER AND GUARDRAIL

LOCATION: TIRE OF SWEEPER VEHICLE CLOSER THAN ONE (1) FOOT TO EDGELINE (MEDIAN OR SHOULDER)

**DRAWING 2 OF 4**  
IMPLEMENTATION DATE: 11/05/01  
REVISED: 06/06/12

### 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. GROUND MOUNTED ADVANCE WARNING SIGNS
- D. GROUND MOUNTED CHANGEABLE MESSAGE SIGN (CMS)

2- ALL ADVANCE WARNING SIGNS MUST BE 48" X 48" WITH FLUORESCENT ORANGE TYPE VII OR HIGHER SHEETING. 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 FIVE (5) FEET FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW BOARD AND/OR LIGHTBAR.

4- GROUND MOUNTED ADVANCED WARNING SIGNS SHOULD BE MOUNTED A MINIMUM OF FIVE (5) FEET FROM THE GROUND TO BOTTOM OF SIGN.

5- SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.

6- TOTAL DISTANCE BETWEEN FIRST AND LAST VEHICLE IN CARAVAN SHOULD NOT EXCEED ONE (1) MILE IN LENGTH.

7- SIGN W20-5L "LEFT LANE CLOSED" SHOULD BE PLACED ON BACK OF PROTECTION VEHICLES IN MULTILANE DIVIDED TRAFFIC SO VEHICLES APPROACHING FROM REAR ARE NOTIFIED OF OPERATION.

8- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.






9- USE OF A LIGHT SYSTEM ON ALL VEHICLES IS REQUIRED (REFER TO ROADWAY STANDARD DRAWING 1165.01, SHEET 1 OF 1).

10- USE OF CMS'S ARE REQUIRED WITH ADVANCE WARNING VEHICLES.

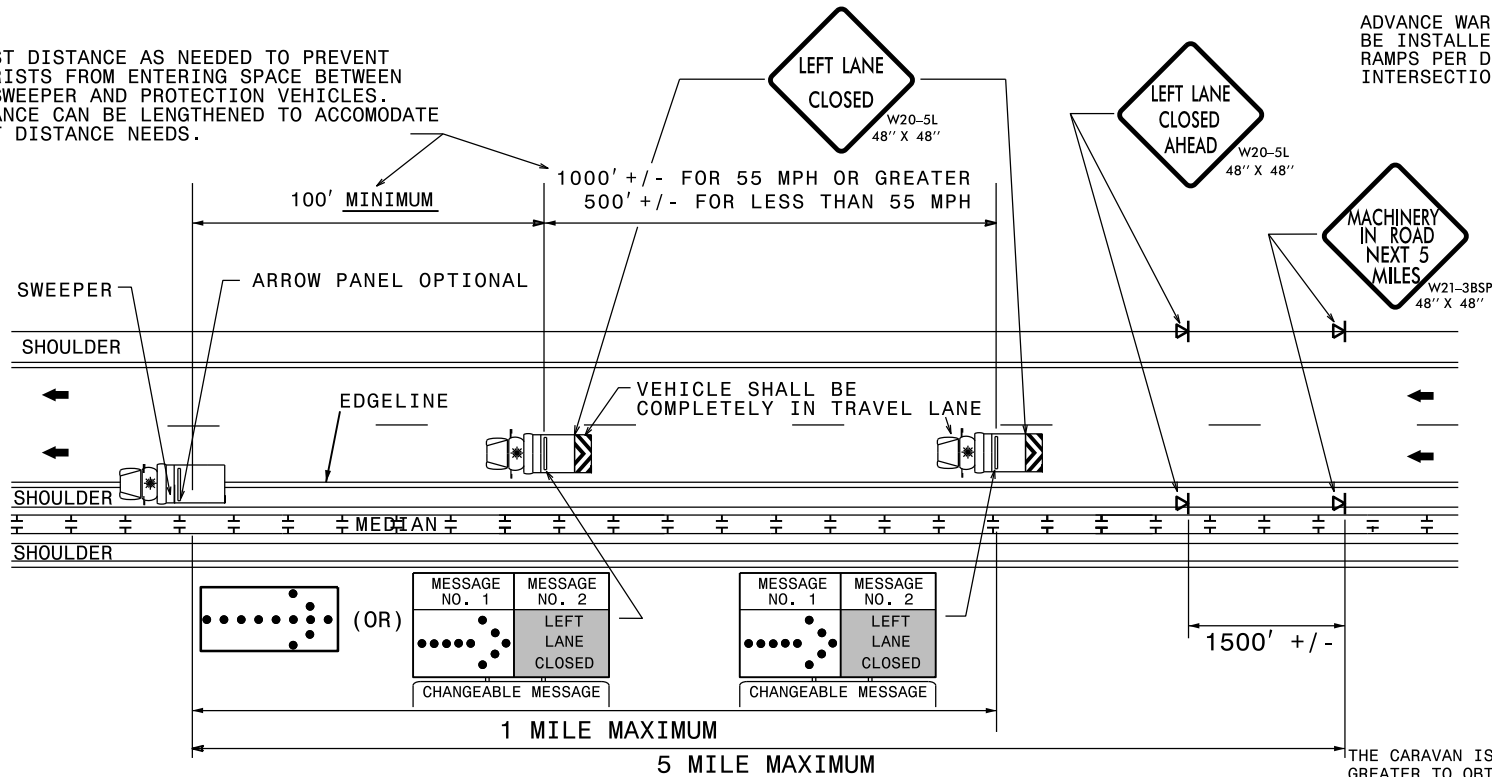
11- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.

12- IF USING GROUND MOUNTED ADVANCE WARNING SIGNS OR STATIONARY CMS, THE TOTAL DISTANCE BETWEEN THE FIRST ADVANCE WARNING SIGN OR CMS AND SWEEPER VEHICLE SHOULD NOT EXCEED FIVE (5) MILES AND SIGN W21-3BSP SHOULD READ 'MACHINERY IN ROAD NEXT 5 MILES'.

### LEGEND

-  PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.
-  DIRECTION OF TRAFFIC FLOW
-  SWEEPING VEHICLE
-  PROTECTION VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA). TMA MUST BE NCHRP-350 TEST LEVEL 3 (60+MPH) APPROVED.
-  FLASHING ARROW BOARD, TYPE "C" (96" X 48" MIN.), APPROPRIATE DIRECTION INDICATED

ADJUST DISTANCE AS NEEDED TO PREVENT MOTORISTS FROM ENTERING SPACE BETWEEN THE SWEEPER AND PROTECTION VEHICLES. DISTANCE CAN BE LENGTHENED TO ACCOMMODATE SIGHT DISTANCE NEEDS.



ADVANCE WARNING SIGNS SHOULD BE INSTALLED ALONG ENTRANCE RAMP PER DRAWING 1 AND AT INTERSECTIONS PER DRAWING 4.

## SHOULDER SWEEPING OPERATION MULTILANE DIVIDED FACILITIES IN AREAS WITH SHOULDER WIDTHS THAT DO NOT ACCOMMODATE VEHICLES

THE CARAVAN IS TO MOVE AT 3 MPH OR GREATER TO OBTAIN THE DESIRED LEVEL OF SAFETY FOR THE MOVING OPERATION. IF AT ANYTIME A VEHICLE STOPS DURING THE OPERATION, THE REMAINDER OF THE CARAVAN SHALL CONTINUE MOVING AND THE SWEEPING VEHICLE SHALL RESUME WORK OPERATIONS WITHIN 60 SECONDS. OTHERWISE, ALL VEHICLES ARE TO BE REMOVED FROM THE TRAVEL LANE AND THE OPERATION RESET.

LOCATION: SWEEPER VEHICLE IN TRAVEL LANE (MEDIAN OR SHOULDER)

**DRAWING 3 OF 4**  
IMPLEMENTATION DATE: 11/05/01  
REVISED: 06/06/12

## 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. GROUND MOUNTED ADVANCE WARNING SIGNS
- D. GROUND MOUNTED CHANGEABLE MESSAGE SIGN (CMS)

2- ALL ADVANCE WARNING SIGNS MUST BE 48" X 48" WITH FLUORESCENT ORANGE TYPE VII OR HIGHER SHEETING. 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 LIGHTBAR.

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- 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.

7- WORK ZONE SHOULD NOT EXCEED FIVE (5) MILES IN LENGTH. ROUND UP MILEAGE TO NEXT WHOLE MILE.

8- RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.

9- USE OF A LIGHT SYSTEM ON ALL VEHICLES IS REQUIRED (REFER TO ROADWAY STANDARD DRAWING 1165.01, SHEET 1 OF 1).

10- IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.

## LEGEND



PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.



DIRECTION OF TRAFFIC FLOW



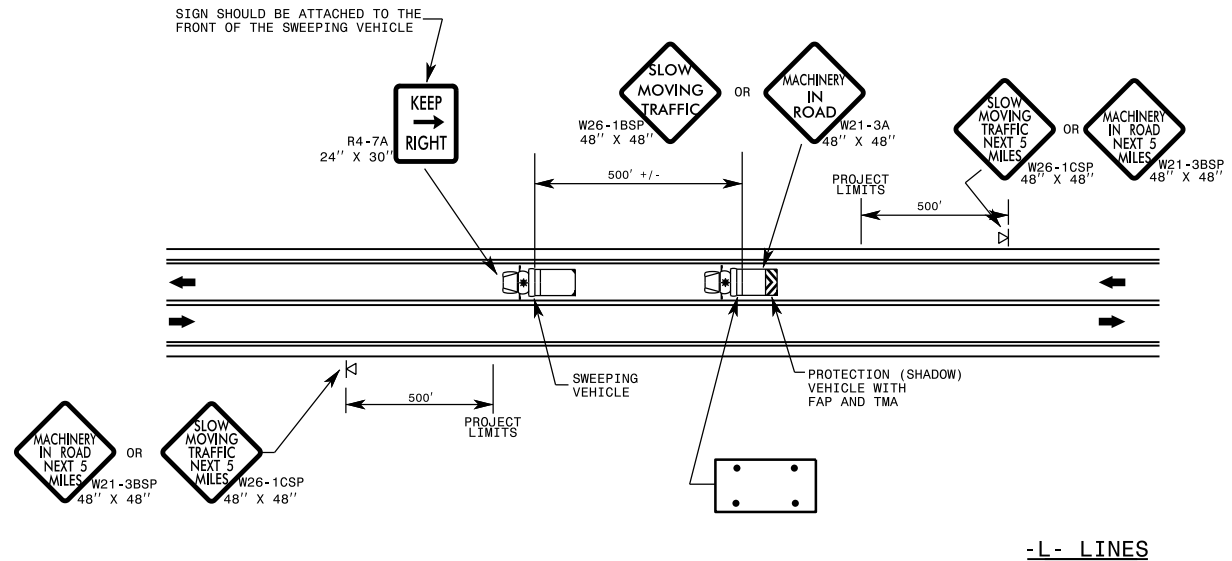
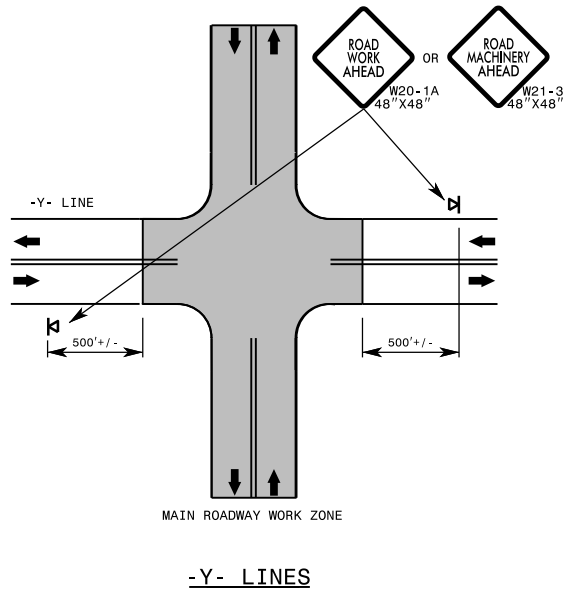
SWEEPING VEHICLE



PROTECTION VEHICLE WITH TRUCK MOUNTED ATTENUATOR (TMA). TMA MUST BE NCHRP-350 TEST LEVEL 3 (60+MPH) APPROVED.



FLASHING ARROW BOARD, TYPE "C" (96" X 48" MIN.), "CAUTION MODE"



# SHOULDER SWEEPING OPERATION

TWO-LANE TWO-WAY ROADWAYS

LOCATION: SWEEPER VEHICLE IN TRAVEL LANE (MEDIAN OR SHOULDER)

**DRAWING 4 OF 4**  
IMPLEMENTATION DATE: 11/05/01  
REVISED: 06/06/12