ROAD MAINTENANCE GUIDANCE DOCUMENT

DECEMBER 2022

Prepared For:

MIDLAND COUNTY, TEXAS

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1.0 GENERAL INFORMATION

Midland County, Texas has experienced a period of high growth over the last 20 years. This growth has been the result of increased oil and gas related activity in and around Midland County. Midland County has more than 415 miles of county roads as of October 2022, all of which have experienced some level of accelerated deterioration from this increased industrial activity. In response, Midland County started a road improvements program to rebuild many miles of roads in 2013. This guide was developed as a follow-on project to help preserve the recently constructed roads and develop a maintenance rhythm to keep Midland County roads in good condition.

1.1 Maintenance Plan Goals

This maintenance plan is intended to give guidance to everyone involved in the maintenance of the many miles of Midland County roads. The first goal of this plan is the keep the roads in good condition for use by the Midland County residents and those doing business in Midland County. The second goal is to maximize the effectiveness of all money spent on road maintenance to achieve the best result possible. The third goal is to minimize dollars spent on road reconstruction. Midland County intends to maintain its roads to maximize the life of the roads and delay the costs associated with reconstruction as long as possible. Finally, the most important goal of this plan is to increase safety on Midland County roads. This goal will be accomplished with a fast response to urgently needed road repairs and with the design and construction of road improvements that can increase safety and prevent accidents where possible.

1.2 Maintenance Plan Organization

This maintenance plan is organized to align with Midland County Road and Bridge's (MCR&B) existing road condition terminology and designations. For example, the section for Road Condition A corresponds to the designator used by Midland County to describe a road that has no damage. Alternately, the section for Road Condition D corresponds to the roads that have been so designated due to the level of cracking and pot-holing or other damage. The Ongoing Maintenance section describes the maintenance activities to be performed by the MCR&B Department with in-house equipment and labor. The section in this plan for Urgent Repairs corresponds to unforeseen repairs that need to be addressed urgently that were caused by weather, an accident, heavy or increased use, or other unforeseen cause.

2.0 USING THE ROAD MAINTENANCE PLAN

2.1 Road Inspection and Grading

When this plan is implemented, each road should be inspected and assigned a condition grade. Once a segment is assigned a condition grade, that road will follow the scheduled maintenance as a minimum for the entire 12-year cycle. The goal of this 12-year cycle is to bring every road in Midland County up to a Condition B or better. Once this 12-year cycle is completed, each road should be inspected again and assigned a condition grade. It is assumed that almost all of the roads will be Condition B or better at the end of the 12-year cycle and this maintenance guidance document will be revised to fit the overall road conditions and Midland County goals at that time.

Each road segment should be inspected separately. A road segment is a section of road that has similar traffic, similar construction, and similar condition. A road segment can be defined by road name and a start and end description. Start and end descriptions can be crossroad names, mile markers, or some other easily identifiable landmark.

Each segment of road should be graded according to Midland County Road and Bridge's road condition grading system (RCGS), which is somewhat similar to the system used by TxDOT (Serviceability Index), but uses a letter rating of A, B, C, D, & F. Visual examples of road conditions for each rating are included in the corresponding section. The Midland County road condition rating scale is shown below:

Condition Grade A: roads that have no damage
Condition Grade B: light cracks & potholes
Condition Grade C: medium cracks & potholes, rutting
Condition Grade D: heavy cracks & potholes, rough surfaces, rutting
Condition Grade F: deep cracks, deep potholes, & base failure

Additionally, the inspector should take note of other information related to each road segment, such as, condition of shoulders, striping, signage, and other information that is pertinent and could be used in the development of the 12-month Maintenance Plan.

The inspector should complete a road condition inspection form for each segment of road. The form is included in Appendix.

2.2 Road Segment Annual Maintenance Plan

MCR&B will complete an Annual Road Maintenance Plan in August each year as part of the annual planning effort. A sample of this Annual Road Maintenance Plan is shown in the Appendix. This should take place in August to allow for the creation for a 12-month plan well ahead of the next paving season (May-September). This 12-month plan is called a “maintenance year” and is intended to correspond to Midland County’s budget and funding cycle. If County budgeting requires earlier planning, adjust the timing of the completion of the annual maintenance plan accordingly.

After a road segment has been assigned a condition grade (A, B, C, D, or F), the planner should refer to the appropriate section as a reference for the maintenance items that could be included in the Annual Road Maintenance Plan and the schedule should be followed for the entire 12-year period for each segment.

3.0 Road Condition Maintenance Guidance

Each road segment should be inspected and graded according to the RCGS at the beginning of the implementation of the 12-year maintenance cycle. The scheduled maintenance for each segment, along with additional information gathered during the windshield inspection process, will determine the maintenance that should be planned for the next maintenance year. The following sections show the recommended maintenance/maintenance schedule for each road condition for the 12-year cycle.

3.1 12-year Maintenance Schedules

This plan will begin when all road segments have been assigned a road condition grade (A, B, C, D, or F). Once this condition has been assigned, the road should be maintained according to the plan, as outlined below for the entire 12-year cycle. The goal of this is to graduate all Midland County roads to Condition B or better by the end of the 12-year period. Table 1 below shows the summary of maintenance by road condition type to be completed each year.

POTHOLES & SEALCOAT		MAINTENANCE SEAL		DRAINAGE & SHOULDERS	
1	D	1	B	1	D
2	C	2	A	2	B
3	B	3		3	C
4	D	4	C	4	A/D
5	A	5	B	5	B
6	C	6	D	6	C
7		7	A	7	A/D
8	D	8	C	8	B
9	B	9		9	C
10	C	10	D	10	A/D
11	A	11	B	11	B
12	D	12	C	12	C

TABLE 1: 12-Year Maintenance Plan

3.2 Condition A

Road Condition A represents roads that have no visible damage and are generally less than 5 years old. An example of a Road Condition A road is shown below in Figure 1. The 12-year maintenance schedule is shown on the following page.

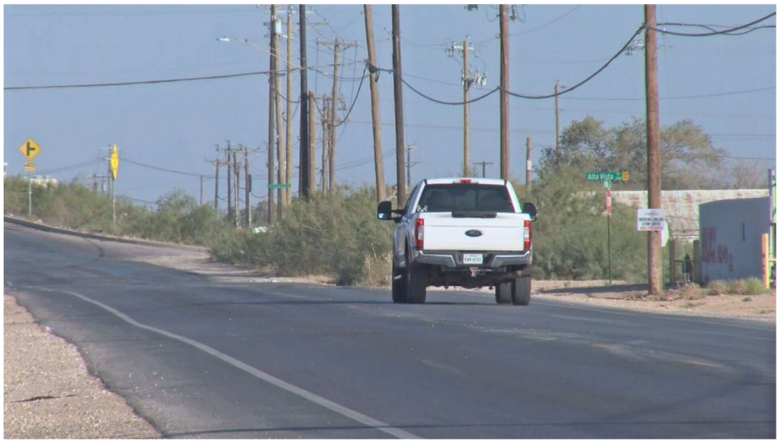

FIGURE 1: Road Condition A - Newly Constructed Cotton Flat Road

ROAD CONDITION A

YEAR	MAINTENANCE ITEMS					
	PAVEMENT		SHOULDERS		BAR DITCH	
1					Mow	CON
2	Maintenance Seal Re-stripe	MCR&B MCR&B			Mow	CON
3					Mow Reseed As Needed	CON CON
4			Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
5	Seal Coat Re-stripe	CON MCR&B			Mow	CON
6					Mow	CON
7	Maintenance Seal Re-stripe	MCR&B MCR&B	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
8					Mow	CON
9					Mow	CON
10			Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
11	Seal Coat Re-stripe	CON MCR&B			Mow	CON
12					Mow	CON

Table 2: Road Condition A 12-Year Maintenance Schedule

3.3 Condition B

Road Condition B represents roads that have light cracking and very few potholes and are generally less than 8 years old but could also be older roads that are in good condition and/or have had more recent maintenance, such as seal coat. Two examples of Road Condition B are shown below in Figure 2 & 3. The 12-year maintenance schedule is shown on the following page.

FIGURE 2: Road Condition B - E County Road 120

FIGURE 3: Road Condition B - E County Road 150

ROAD CONDITION B

YEAR	MAINTENANCE ITEMS					
	PAVEMENT		SHOULDERS		BAR DITCH	
1	Maintenance Seal Re-stripe	MCR&B MCR&B			Mow	CON
2			Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair & Hydro-mulch	CON CON
3	Pothole Repairs Seal Coat	MCR&B CON			Mow	CON
4	Re-stripe	MCR&B			Mow	CON
5	Maintenance Seal Re-stripe	MCR&B MCR&B	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair & Hydro-mulch	CON CON
6					Mow	CON
7					Mow	CON
8			Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair & Hydro-mulch	CON CON
9	Pothole Repairs Seal Coat	MCR&B CON			Mow	CON
10	Re-stripe	MCR&B			Mow	CON
11	Maintenance Seal Re-stripe	MCR&B MCR&B	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair & Hydro-mulch	CON CON
12					Mow	CON

3.4 Condition C

Road Condition C represents roads that have moderate cracking and moderate potholes. These roads may be older but are still serviceable with appropriate maintenance. If there are areas where water intrusion has occurred, drainage improvements should be prioritized and completed prior to general road maintenance. If shoulders or road edges are compromised, repairs to the shoulders should be prioritized prior to general pavement maintenance. An example of Road Condition C is shown below in Figure 1. The 12-year maintenance schedule is shown on the following page.

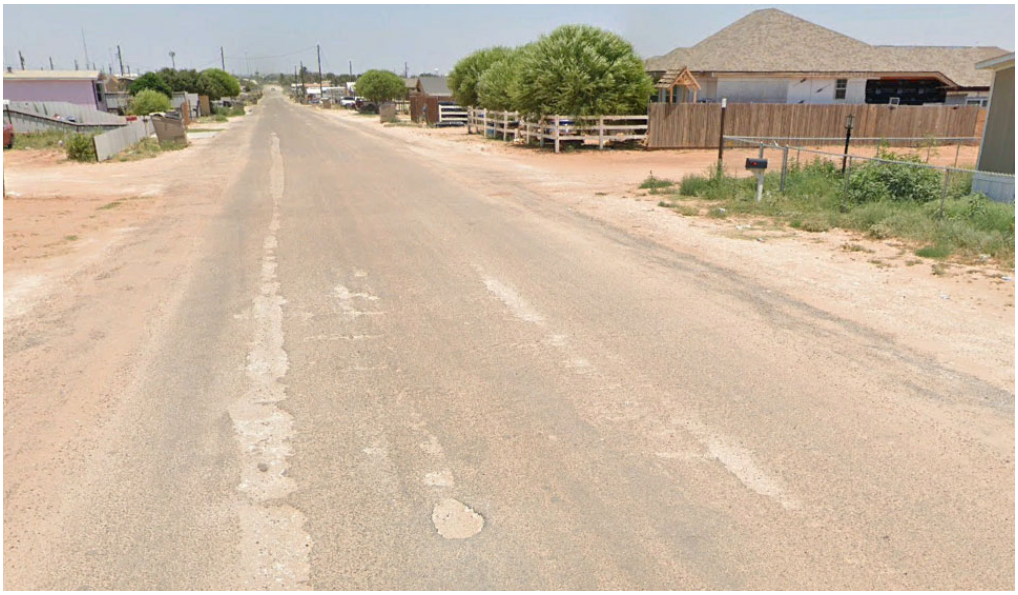

FIGURE 4: Road Condition C

ROAD CONDITION C

YEAR	MAINTENANCE ITEMS					
	PAVEMENT		SHOULDERS		BAR DITCH	
1					Mow	CON
2	Pothole Repairs Seal Coat	CON CON			Mow	CON
3	Re-stripe	MCR&B	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow/Reseed As Needed	CON
4	Maintenance Seal Re-stripe	MCR&B MCR&B			Mow	CON
5					Mow	CON
6	Pothole Repairs Seal Coat	MCR&B CON	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow/Repair & Hydro-mulch	CON
7	Re-stripe	MCR&B			Mow	CON
8	Maintenance Seal Re-stripe	MCR&B MCR&B			Mow	CON
9			Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
10	Pothole Repairs Seal Coat	MCR&B CON			Mow	CON
11	Re-stripe	MCR&B			Mow	CON
12	Maintenance Seal Re-stripe	MCR&B MCR&B	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON

3.5 Condition D

Road Condition D represents roads that have heavy cracking or frequent potholes. Condition D Roads that have light vehicle traffic and uncompromised base material can be repaired with a save coat, but roads with frequent heavy traffic will require more extensive repairs and maintenance. An example of Road Condition D is shown below in Figure 5. The 12-year maintenance schedule is shown on the following page.

FIGURE 5: Road Condition D - S County Road 1230

ROAD CONDITION D

YEAR	MAINTENANCE ITEMS					
	PAVEMENT		SHOULDERS		BAR DITCH	
1	Pothole Repairs Save Coat	CON CON	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
2	Re-stripe	MCR&B			Mow	CON
3					Mow	CON
4	Pothole Repairs Seal Coat	MCR&B CON	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
5	Re-stripe	MCR&B			Mow	CON
6	Maintenance Seal Re-stripe	MCR&B MCR&B			Mow	CON
7			Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
8	Pothole Repairs Seal Coat	MCR&B CON			Mow	CON
9	Re-stripe	MCR&B			Mow	CON
10	Maintenance Seal Re-stripe	MCR&B MCR&B	Blade/Roll/Raw Edge Seal Drainage Structure Maint.	MCR&B MCR&B	Mow Repair and Hydro-mulch	CON CON
11					Mow	CON
12	Pothole Repairs Seal Coat	MCR&B CON			Mow	CON

3.6 Condition F

Road Condition F represents roads that have very heavy cracking and/or large frequent potholes. Condition F roads are considered failed and should be referred to Public Works and scheduled for reconstruction. Immediate safety issues will be added to the Urgent Repairs List and repairs will be made according to the priority of items on the list. An example of Road Condition F is shown below in Figure 5. The 12-year maintenance schedule is shown on the following page.

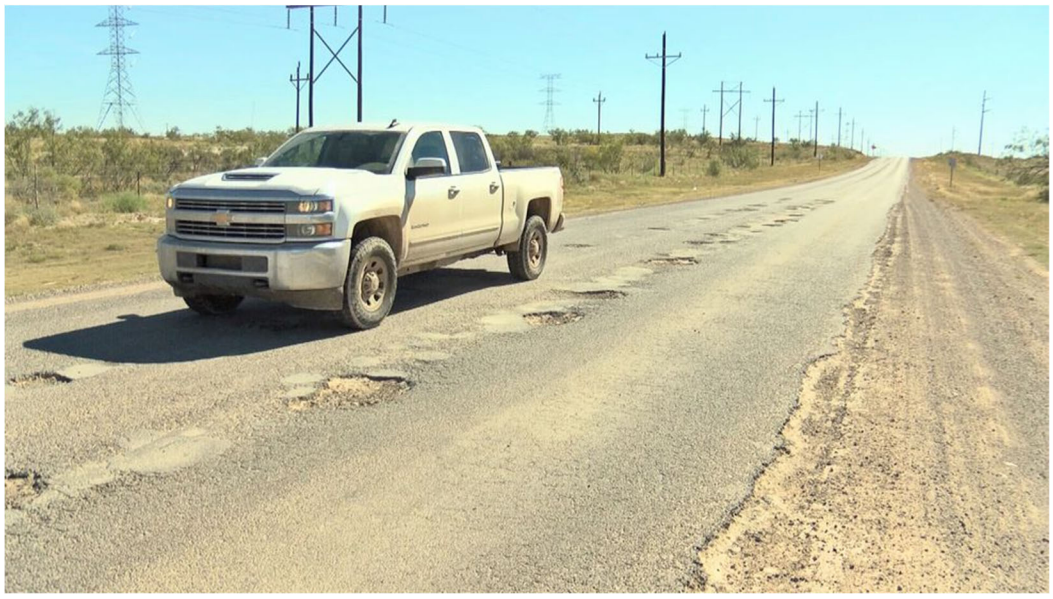

FIGURE 5: Road Condition F

ROAD CONDITION F

YEAR	MAINTENANCE ITEMS		
	PAVEMENT	SHOULDERS	BAR DITCH
1	Safety Repairs/Sched. Reconstruction	Drainage Structure Maint. MCR&B	Mow CON
2	Road to follow Condition A schedule once reconstructed.		

4.0 Ongoing Road Maintenance Items

Midland County Road & Bridge (MCR&B) plays a vital role in the ongoing maintenance and improvement of Midland County roads. The items below will be performed by MCR&B personnel and equipment. These items represent the current best practices for county roads in the west Texas region, but as technology improves and new products are introduced to the market, this plan should be updated to ensure that MCR&B is providing the best value for the funds spend on road maintenance.

Additionally, Public Works Department works alongside MCR&B and the two departments' efforts should be coordinated and be complementary to maximize the effectiveness of maintenance efforts and to ensure the best value for the funds spent maintaining Midland County roads.

For all maintenance activities, MCR&B should ensure adequate traffic control and other safety measures are in place prior to starting and during all maintenance activities. Equipment and personnel needed for each maintenance activity are included below, but do not include specific items needed for safety and traffic control, such as signage, barricades, personnel, and equipment. Traffic control and safety considerations are outside the scope of this plan. It is recommended to follow OSHA, TXDOT, and the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) requirements and recommendations for all activities taking place within the road right-of-way.

4.1 Windshield Inspection

MCR&B will drive each road and perform a windshield inspection of each road segment once a month at a minimum. This inspection should use the form included in the Appendix. This windshield inspection is in addition to the road grading inspection and should be done at least once per month. A windshield inspection should also be performed by personnel from Public Works at least twice per year to get an additional perspective and ensure Midland County roads remain safe and serviceable.

The focus of the windshield inspection is to identify safety concerns, conditions that could cause further damage to the road, or needed road design improvements (drainage improvements, road geometry, etc…). These items of concerns can occur from changing traffic patterns, weather changes, heavy usage or accidents and other causes. Items of concern could include damaged or missing signs, traffic issues (new traffic patterns of concern, etc.), corner shortcutting, faded striping, shoulder edge drop-off, new or deepening potholes, drainage issues or other concerns that appear throughout the year. Should the shoulders not meet the

safety standards, they should be scheduled for urgent repair (MCR&B) or should be referred to Public Works to engage a professional engineer for design and contractor completion.

The windshield inspection forms completed by MCR&B and by Public Works should be thorough and include accompanying photographs. This information will be shared with personnel in both departments and a joint meeting should be held twice annually to discuss the results. Any items identified in the windshield inspections should be either added to the Annual Maintenance Plan, Urgent Repair List, or referred to Public Works for contractor completion as mutually agreed in the meeting.

The procedure for the inspection includes driving the road to identify the items mentioned above for each road segment. As a noteworthy item is observed, the passenger inspector should take notes, but the driver should only take notes if they have pulled off the road in a safe location and stopped the vehicle. The driver should not take notes while driving.

Equipment Needed:	passenger vehicle
Personnel Needed:	2 inspectors

4.2 Pavement

Maintenance Seal: MCR&B will perform maintenance seals on road segments as scheduled in the 12-year maintenance schedule. Any other needed repairs (pothole repair, etc.) should be completed prior to the maintenance seal. Additionally, if areas of the road have excess dirt or debris, the road should be swept with a power broom to ensure a good seal. The maintenance seal should be performed during the paving season (May-September) and the product CMS-1P (or equivalent) should be applied to the full width of the pavement surface with an asphalt distributor at a rate between .12-.14 GAL/SY. Once this is performed, the road will be restriped.

Equipment Needed:	asphalt distributor power broom
Personnel Needed:	2 operators

Pothole Repairs: The MCR&B will perform pothole repairs on roads that are Condition A, B, and C prior to either a maintenance seal or seal coat maintenance. Pothole repairs should be completed in accordance with the instructions and procedures provided by the manufacturer of the flameless pothole patching truck. A particular focus should be placed on the compaction and finish of the patch to ensure that water does not pond on the new patch or adjacent to the new patch.

Generally, potholes will be patched prior to a seal coat or save coat maintenance year and the seal or save coat would be placed on top of the newly patched area.

Equipment Needed:	flameless pothole patcher
Personnel Needed:	2 operators

4.3 Shoulders

Blade/Roll/Raw Edge Seal: Scheduled shoulder maintenance will be performed by the MCR&B Department with Midland County labor and equipment in the cooler months from November to April because vegetation is dormant, and the base material will hold moisture longer for compaction operations.

Generally, this procedure would include "pulling" the shoulders with a grader, watering the base material, rolling and compacting the base material with a pneumatic roller, and then coming along behind and brooming off the excess base material from the pavement surface. Next, the base material along the shoulder will have a prime coat applied using AEP (or equivalent) blended 50/50 with water and applied at a rate of .15-.20 gal/sy and then edge sealing 12-inches of the asphalt surface and 6-inches on the base material with CMS-2P (or equivalent) applied at a rate of .20-.25 gal/sy with an asphalt distributor. A sign would be placed along the road warning vehicles to stay off the "wet" or uncured asphalt for 24-hours. Once the material is cured (less than 24-hours), then vehicles can drive on it without any issues.

In locations with high shoulders, the material above the edge of the pavement should be removed with a grader and loaded and hauled off. If the shoulder needs to be rebuilt, remove the excess material and place new base material, shape, and compact to allow for positive drainage and follow the above procedure for preparing the base and edge sealing.

For shoulders with major issues or large areas that need to be rebuilt, refer the road segment to Public Works for contract completion. Occasionally, unwanted vegetation should be sprayed along the shoulder, since emulsion (AEP) acts as a fertilizer and will encourage vegetation growth. Vegetation growth adjacent to the shoulder is wanted, but not within the 3-foot shoulder section adjacent to the pavement.

Equipment Needed:	motor grader
	pneumatic roller
	power broom
	asphalt distributor
	water truck

dump truck (if needed)
loader (if needed)

Personnel Needed: 4 operators

Drainage Structure Maintenance: Scheduled drainage structure maintenance will be performed by the MCR&B Department with Midland County labor and equipment. Generally, this procedure would include manual or mechanical removal of any large organic debris at the opening of the culvert or drainage structure and then manual or mechanical removal of silt, sand, and other debris located within the structure, which will then be hauled off. If the inlet and outlet areas need to be regraded and contoured to ensure proper drainage, then MCR&B would then grade and contour to ensure proper drainage and the area would then be hydro-mulched (this item to be completed by contractor effort) to ensure regrowth of native grasses to hold the soil in place during runoff events.

If the culvert has any damage to the inlet or outlet, headwall, or concrete riprap that is in need of repair or replacement, it should be referred to Public Works for design and contractor completion.

Equipment Needed: backhoe
skid steer
culvert clearing attachment
water truck
dump truck (if needed)

Personnel Needed: 3 operators

4.4 Striping

Centerline Striping: The centerline striping and any existing edge striping should be placed 45-60 days after the pavement has had a seal coat, save coat, or maintenance coat applied. The area to receive the striping should be power broomed to remove any loose rock or debris and then the striping applied in accordance with TXDOT Item 666 Retroreflectorized Pavement Markings, Type II traffic paint.

Equipment Needed: truck with striping attachment
power broom

Personnel Needed: 3 operators

Edge Delineation: In areas that have trouble with traffic driving on the pavement edge or onto the shoulder, a lane edge delineation stripe should be applied (pavements wider than 22-feet only). This has been shown to improve the frequency of edge driving and helps prevent pavement damage for several

reasons: (1) it signifies the road is wide enough for an edge line, (2) it clearly delineates the edge of pavement, and (3) the edge line is a type of psychological barrier. For a road to be considered for an edge stripe, it must be at least 22-feet wide. It is TxDOT policy to place an edge line on all undivided highways with a minimum traveled way width of 20 feet. This means that the practical minimum roadway width for placing edge lines is about 22 feet. This to provide enough room for the centerline stripe, the minimum-width travel lanes, and 6 inches of pavement outside the edge lines. The area to receive the striping should be power broomed to remove any loose rock or debris and then the striping applied in accordance with TXDOT Item 666 Retroreflectorized Pavement Markings, Type II traffic paint.

Equipment Needed:	truck with striping attachment power broom
Personnel Needed:	3 operators

4.5 Bar Ditches

Mowing: Mowing will continue to be completed by contractor effort.

Repair and Reseeding: For areas that have been damaged, eroded, or had the vegetation growth compromised, these areas will be repaired and reseeded by contractor effort.

4.6 Signage

Compliance Upgrades: Any signs that have not been upgraded to meet retroreflectivity requirements as stated in Texas MUTCD, Section 2A.09, Maintaining Minimum Retroreflectivity shall be replaced as soon as practical. The signs will be made in the sign shop operated by the MCR&B Department.

Signage Changes: If a windshield inspection or citizen complaint highlights the need for any change to signage pattern or communication, the issue will be referred to the Public Works Department for consideration and design by an engineer. For clarity, MCR&B will not make any changes to signage pattern or communication but will refer the issue to the Public Works Department and an engineer will evaluate and design the appropriate signage for the situation.

Replace Aged or Damaged Signs: Aged or damaged signs shall be replaced by the MCR&B Department. All signs shall meet the standards of the Texas MUTCD, Section 2A.09, Maintaining Minimum Retroreflectivity.

5.0 URGENT ROAD REPAIRS AND MAINTENANCE

5.1 Urgent Repair List

The Urgent Repair List (URL) is a running list of items identified by windshield inspections, citizen complaints, or other reported items that need to be addressed quickly for safety reasons and/or to prevent further road damage. This list will be maintained by the MCR&B Department, but the list will also be shared with the Public Works Department because some of the items on the list will need to be accomplished with professional engineer and/or contractor assistance. Anticipated repairs as described below will be performed by the MCR&B Department with Midland County equipment and labor. Additionally, when a quick response is needed for issues related to recently completed maintenance activities (loose rock, bleeding asphalt, etc.), the MCR&B will respond and alleviate the issue.

5.2 Urgent Repair Response

The MCR&B can significantly improve and maintain the safety and serviceability of Midland County Roads with a robust and efficient response to needed urgent repairs. These repairs would include issues that are safety concerns or issues that could lead to further road damage if not quickly repaired. The MCR&B is best suited to respond to these types of issues because of their in-house capability, proximity, and availability. Expected or anticipated types of repairs include pothole repairs, edge repairs, turn-out repairs or installations, short cutting repairs due to changing traffic patterns or other construction related detours, damages from traffic accidents or heavy usage, and others. Of all the maintenance activities in this plan, a fast and thorough response to urgent repairs will make the biggest difference in increasing safety and serviceability of the Midland County road system.

Equipment Needed: various
Personnel Needed: various

5.3 Response for Other Maintenance Items

Additional Rock on Recent Seal Coats: When a road had received a seal coat or a save coat and the summer temperatures are high and/or the traffic is heavy, it is common for the road to experience light to heavy bleeding. If this occurs, MCR&B should place additional grade 4 rock at a rate of approximately 1-CY/130+SY and follow the chip-spreader with a pneumatic roller to get the additional rock to stick to the livened asphalt. This effort is an attempt to get additional rock on the areas that are capable of holding the rock. A power broom should be on hand to sweep off any excess rock that is not likely to be held by the asphalt. Often this effort will

result in an improved pavement surface that is better long term than attempting to stop asphalt bleeding with lime/water or sand. Additionally, if the asphalt will hold additional rock, this effort will increase the value of the recent seal coat significantly.

Power Brooming Excess Rock: Roads that have had recent seal coat maintenance could have areas that end up with excess rock after a few months. MCR&B should add these areas to the URL and send a power broom to sweep the excess rock to the shoulder. This has the dual effect of removing loose rock from the pavement surface and placing good rock in the shoulder and improving the shoulder over time as the road is maintained. During the hot months and if the asphalt is showing signs of bleeding or being capable of holding additional rock, the loose rock can be spread to areas in the pavement that do not have loose rock and it will often be held by the livened asphalt. A pneumatic roller should be used to roll-in the loose rock if it is spread to other areas of the pavement. After the weather cools, the rock should only be swept to the shoulder.

Equipment Needed:	power broom pneumatic roller
Personnel Needed:	2 operators

6.0 CONTRACTOR PERFORMED MAINTENANCE ITEMS

Some of the maintenance items detailed in this plan will be accomplished using contractor effort. This section is intended to clarify how the Public Works Department and the MCR&B will cooperate and coordinate on the maintenance of Midland County roads regarding items performed by contractors.

First, items that are currently in MCR&B budget (like mowing) will still be budgeted and managed by MCR&B. Once a road is designated a condition grade F, or if a road is determined by the Commissioner's Court to be replaced – it will still be contracted and managed by Public Works.

Seal coat operations will be completed by contractor effort and will be budgeted and managed by MCR&B, but the Public Works Department will assist with the engineering design effort and the letting. Once the contractor has been selected and given the notice to proceed, the MCR&B will manage the work in the field and the coordination with the engineer and contractor.

7.0 APPENDIX

MIDLAND COUNTY ROAD & BRIDGE
ROAD CONDITION INSPECTION FORM

DATE
INSPECTOR

ROAD SEGMENT
COUNTY ROAD MAP QUADRANT

ROAD CONDITION INSPECTION GRADE
NOTES AND ADDITIONAL INFORMATION

PHOTOS

MIDLAND COUNTY ROAD & BRIDGE
ANNUAL MAINTENANCE PLAN EXAMPLE

MAINTENANCE YEAR 1 - 2023 **DATE**

CODES: PAVEMENT (SEAL COAT (SC); MAINTENANCE SEAL (MS); POTHOLE REPAIR (PH); SAVE COAT (SVC))
SHOULDERS (BLADE/ROLL/EDGE SEAL (ES); DRAINAGE STRUCTURE MAINTENANCE (DS))
BAR DITCH (MOW (M); REPAIR AND RESEED (RS); REPAIR AND HYDROMULCH (RH))

UNIT COSTS:

SEAL COAT (SC):	$4.15	(Can be provided by consulting Professional Engineer)
SAVE COAT (SVC):	$9.75	(Can be provided by consulting Professional Engineer)
POTHOLE REPAIR (PH):	$125.00	(Should be calculated per square yard and include material costs, equipment costs, and labor costs)
MAINTENANCE SEAL (MS):	$1.75	(Should be calculated per linear foot and include material costs, equipment costs, and labor costs)
BLADE/ROLL/EDGE SEAL (ES):	$2.00	(Should be calculated per linear foot and include material costs, equipment costs, and labor costs)
DRAINAGE STRUCTURE MAINT (DS):	$650.00	(Should be calculated per hour per drainage structure and include material, equipment, and labor)
MOW (M):	$400.00	(Should be calculated per hour per 1/4 mile and include equipment and labor)
REPAIR AND SEED (RS):	$12.00	(Should be calculated per SY and include material, equipment, and labor)
REPAIR AND HYDROMULCH (RH):	$50.00	(Should be calculated per SY and include material, equipment, and labor)

ROAD SEGMENT		PAVEMENT	QUANTITY	COST	SHOULDERS	QUANTITY	COST	BARDITCH	QUANTITY	COST	COST
Segment 1	SE 100 from CR A to CR B	SC	0.00	0.00	ES	0.00	0.00	M	3.79	1,515.15	
CONDITION	B	MS	6,111.11	10,694.44	DS	0.00	0.00	RS	0.00	0.00	
Length	2,500	PH	11.11	1,388.89				RH	0.00	0.00	
Width	22	SVC	0.00	0.00							
ROW Width	50			12,083.33			0.00			1,515.15	
											$13,598.48
Segment 2	SE 100 from CR B to CR E	SC	0.00	0.00	ES	14,000.00	28,000.00	M	10.61	4,242.42	
CONDITION	D	MS	0.00	0.00	DS	40.00	26,000.00	RS	0.00	0.00	
Length	7,000	PH	83.33	10,416.67				RH	250.00	12,500.00	
Width	22	SVC	17,111.11	166,833.33							
ROW Width	50			177,250.00			54,000.00			16,742.42	
											$247,992.42
Segment 3	SE 200 from CR G to FM 1788	SC	0.00	0.00	ES	0.00	0.00	M	8.55	3,418.18	
CONDITION	A	MS	0.00	0.00	DS	0.00	0.00	RS	0.00	0.00	
Length	5,640	PH	0.00	0.00				RH	0.00	0.00	
Width	25	SVC	0.00	0.00							
ROW Width	60			0.00			0.00			3,418.18	
											$3,418.18
Segment 4	SE 200 from FM 1788 to CR 120	SC	0.00	0.00	ES	0.00	0.00	M	5.53	2,212.12	
CONDITION	C	MS	0.00	0.00	DS	0.00	0.00	RS	0.00	0.00	
Length	3,650	PH	0.00	0.00				RH	0.00	0.00	
Width	25	SVC	0.00	0.00							
ROW Width	60			0.00			0.00			2,212.12	
											$2,212.12

MIDLAND COUNTY ROAD & BRIDGE
WINDSHIELD INSPECTION

DATE

WINDSHIELD INSPECTION FOCUS: Safety concerns, such as damaged or missing signs, traffic issues (new traffic patterns of concern, etc.), corner shortcutting, faded striping, shoulder edge drop-off, new or deepening potholes, drainage issues or other concerns that may appear throughout the year. Items identified as safety concerns or needed design improvements, such as drainage or road geometry, should either be referred to Public Works for contractor completion or placed on Urgent Repair List.

ROAD SEGMENT		PAVEMENT COMMENTS	SHOULDERS COMMENTS	BAR DITCH COMMENTS