TEXAS DEPARTMENT OF TRANSPORTATION JANUARY | 2020

DALLAS DISTRICT PROGRESS

Monthly Report on Dallas District Projects and Topics ★★★ COLLIN CO. | DALLAS CO. | DENTON CO. | ELLIS CO. | KAUFMAN CO. | NAVARRO CO. | ROCKWALL CO.

THE ONGOING BATTLE AGAINST HIGHWAY SLOPE BREAKDOWN

Award-winning research could help prevent hills and soil from sliding onto Texas highways

NORTH TEXAS — It's an epic battle that has spanned decades in Texas—engineers vs. sliding hills or slopes —until now.

"Slop failures" as they are called, happen when pieces of the embankment along a highway break away and collapse and pose a danger to drivers.

Thanks to TxDOT's research that was recently honored for being one of the best research projects in the nation, the agency can now address these soil issues early on, either through prevention or repair, and help keep drivers safe.

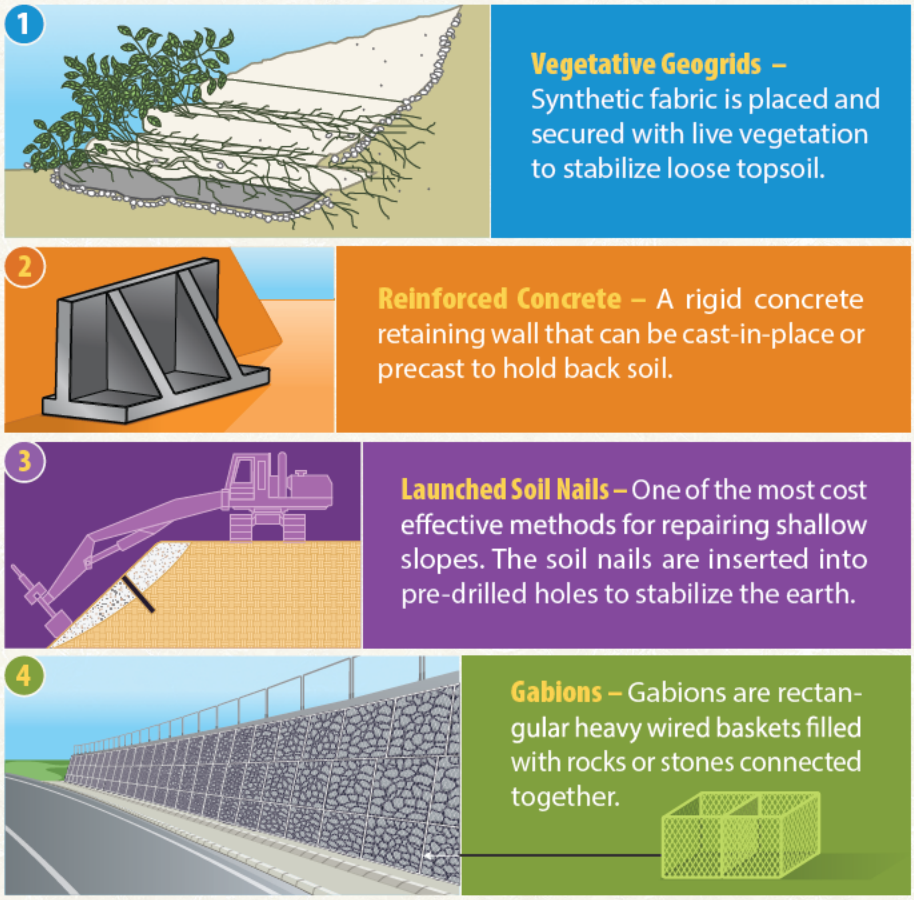
The researchers developed a unique system to track slopes, pavement, soil, underground pipelines, retaining walls and other structures. Researchers also created an online management system that helps TxDOT make repairs and keep tabs on slopes prone to failing.

"The work done on this project will be vital to how we approach slope failures in the future," said Darrin Jensen, TxDOT's project manager on the study. "With this information now at our finger tips, those repairs will be far more permanent than they were in the past."

Slope breakdowns are common in Texas—especially North Texas—because of soil conditions and extreme weather patterns. The seasonal swelling and shrinking of expansive soil on a slope, combined with the forces of gravity, causes soil movement down the face of the slope. Each year, TxDOT spends millions of dollars repairing slope failures along highways.

"We found that about half of those (slope failures) are recurring," said Mohsen Shahandashti, a professor of civil engineering at the University of Texas at Arlington. "Now, we project significant cost savings, and identify slopes that are likely to fail, so that TxDOT can address issues before a failure occurs."

This new information will help engineers quickly determine the best approach for each specific hill that's starting to crumble onto roadways. Knowing the conditions of the slope and which repair method to use will help produce more effective repairs and reduce recurring slope failures along Texas highways. ■



SOURCE: Texas Department of Transportation

DEAN HOLLINGSWORTH/TxDOT Information Specialist

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DECEMBER 2019 LET PROJECTS (SUBJECT TO CHANGE)

	CSJ NUMBER	HWY	LIMITS	TYPE OF WORK	COST EST. (M)	BID (M)	(%)	EST. TOTAL COST (M)*	CONTRACTOR
1	0092-01-052**	US 175; SH 310	On US 175 from S. of Budd St. to I-45 and on SH 310 from Pennsylvania Ave. to N. of Al Lipscomb Way and from Lenway St. to Good Latimer	Reconstruct freeway to 6-lane divided arterial and reconstruct I-45 and S.M. Wright interchange	$76.01	$78.67	3.37	$93.41	Johnson Bros. Corp.
2	0522-01-023	SH 243	At FM 2515 and FM 2727	Intersection improvements	$1.30	$1.27	-1.81	$1.47	Fitcher Constru. Services
3	2555-01-012	FM 2578	FM 987 to SH 34	Reconstruct existing pavement and add shoulders	$8.71	$7.17	-17.62	$8.14	A.K. Gillis & Sons, Inc.
				ESTIMATED DECEMBER 2019 TOTALS	$86.01	$87.11	1.27	$103.02	
				DISTRICT FY ACCUMULATIVE LETTINGS	$156.22	$163.03			
				DALLAS DISTRICT FY LETTING VOLUME CAP	$235.08				

* Estimated Total Project Costs includes est. PE, ROW, E&C, Indirect Costs and Potential Change Order Costs at the time of bid.

** Project is an A+B bidding project.

JANUARY 2020 PROJECTED LETTING PROJECTS (SUBJECT TO CHANGE)

	CSJ NUMBER	HWY	LIMITS	TYPE OF WORK	EST. COST (M)
1	0196-03-277	I-35E	Oak Lawn Avenue to Northwest Highway	Full depth repair, mill and inlay on mainlanes	$16.91
				ESTIMATED TOTAL	$16.91

NOTE: Project is an A+B bidding project.

COMPLETED CONSTRUCTION PROJECTS (FROM DECEMBER 1-31, 2019)

	CSJ NUMBER	HWY	LIMITS	TYPE OF WORK	EST. COST (M)	COMPLETED DATE
1	0047-06-133	US 75	PGBT to Park Blvd	Interchange improvements	$37.47	12/30/2019
2	0918-45-757	CS	Second Ave SB at Trib of White Rock Creek	Replace bridge and approaches	$2.88	12/20/2019
3	0095-03-093	US 80	Dallas C/L to FM 548	Mill and overlay existing roadway	$11.46	12/16/2019
4	0197-11-013	FM 1390	US 175 to FM 148	Restore existing pavement and add shoulders	$4.72	12/05/2019
5	0751-03-038	FM 148	FM 1388 to FM 3094 North	Reconstruct existing pavement and add shoulders	$4.09	12/12/2019
6	1016-06-011	FM 1392	US 80 to SH 205	Reconstruct existing pavement and add shoulders	$5.68	12/05/2019
7	0574-01-029	SH 309	At Rush Creek	Replace bridge and approaches	$2.60	12/02/2019
	0918-00-283*	VA	Various Locations in Dallas District	Installation of traffic signals	$1.47	12/16/2019
	0918-47-114*	VA	Various Locations on State Highways in Dallas County	Construct curb ramps in northeast dallas co. In cities of dallas and mesquite	$2.65	12/02/2019
				ESTIMATED TOTAL	$73.02	

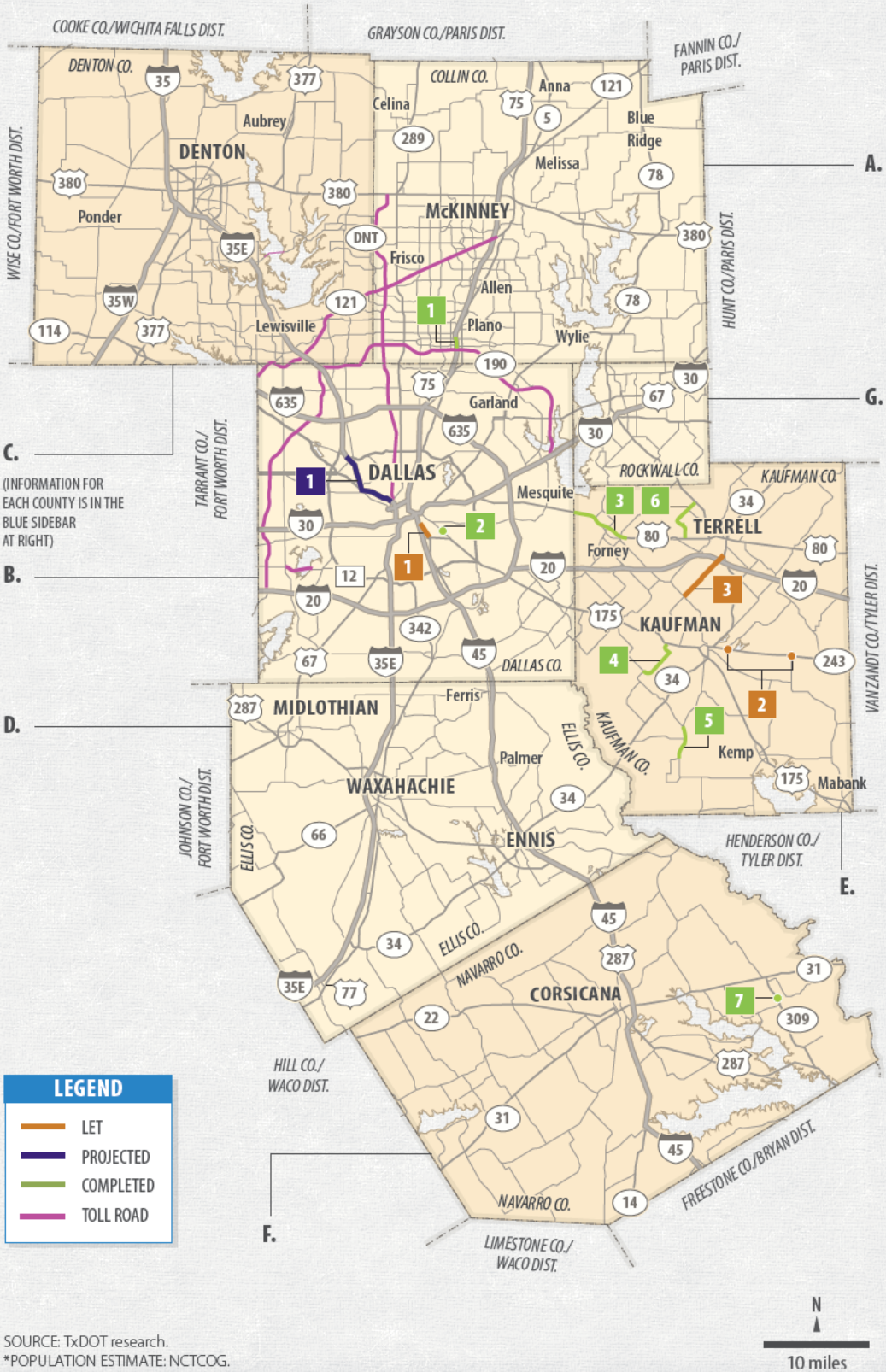
*Unmapped.

SOURCE: Texas Department of Transportation.

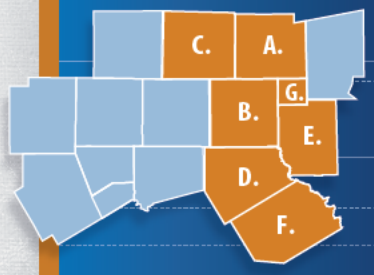
TxDOT graphics

DALLAS DISTRICT PROJECTS MAP

Colored and numbered boxes correspond with the charts on page 2 and show projects that have let in **December,** are projected to let in **January,** or have recently been **completed.**



SOURCE: TxDOT research.
*POPULATION ESTIMATE: NCTCOG.



2019 DALLAS DISTRICT ESTIMATE TOTALS

VEHICLE REGISTRATION | 4,085,742
*POPULATION ESTIMATE | 4,905,280
LANE MILES | 10,753.693

A. | COLLIN COUNTY

VEHICLE REGISTRATION: 799,926
*POPULATION ESTIMATE: 1,010,330
LANE MILES: 1,462.514

B. | DALLAS COUNTY

VEHICLE REGISTRATION: 2,155,995
*POPULATION ESTIMATE: 2,554,770
LANE MILES: 3,377.212

C. | DENTON COUNTY

VEHICLE REGISTRATION: 680,143
*POPULATION ESTIMATE: 874,240
LANE MILES: 1,633.926

D. | ELLIS COUNTY

VEHICLE REGISTRATION: 181,071
*POPULATION ESTIMATE: 189,820
LANE MILES: 1,526.862

E. | KAUFMAN COUNTY

VEHICLE REGISTRATION: 124,760
*POPULATION ESTIMATE: 124,850
LANE MILES: 1,215.130

F. | NAVARRO COUNTY

VEHICLE REGISTRATION: 52,355
*POPULATION ESTIMATE: 50,250
LANE MILES: 1,191.856

G. | ROCKWALL COUNTY

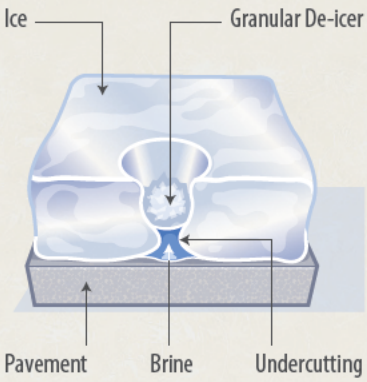
VEHICLE REGISTRATION: 91,492
*POPULATION ESTIMATE: 101,020
LANE MILES: 346.193

TxDOT PREPARED FOR WINTER WEATHER

HOW DO THE CHEMICALS WORK?

Granular De-Icer

A granular de-icer – salt for instance – lowers the freezing point of water from 32 °F to about 15 °F (depending on how much you use). When salt makes contact with ice, melting begins immediately and spreads out from that point, creating a salt/water mix (brine) that continues melting the ice, undercutting the bond between the ice and the road.



Melting Ice Takes Time

The temperature and the amount of ice or snow on the road determine de-icing material amounts and melting rates. As temperatures drop, the amount of de-icer needed to melt a given quantity of ice increases significantly.

WHAT MATERIALS ARE USED ON THE ROADS?

Before an Ice/snow event

- Liquid salt-based anti-icers help prevent ice formation

During an Ice/snow event

- Various salt-based granular de-icers are used to help melt ice already formed on the road

AFTER SNOW/ICE EVENT

- Stockpiles/supplies are replenished (multi-day storm)
- Roadways are swept/cleaned of excess aggregate
- Winter plan effectiveness is evaluated and adjusted
- Roadway repairs are scheduled (potholes, guardrails, structures, etc.)
- Equipment is serviced and prepared for the next winter storm

SOURCE: Texas Department of Transportation

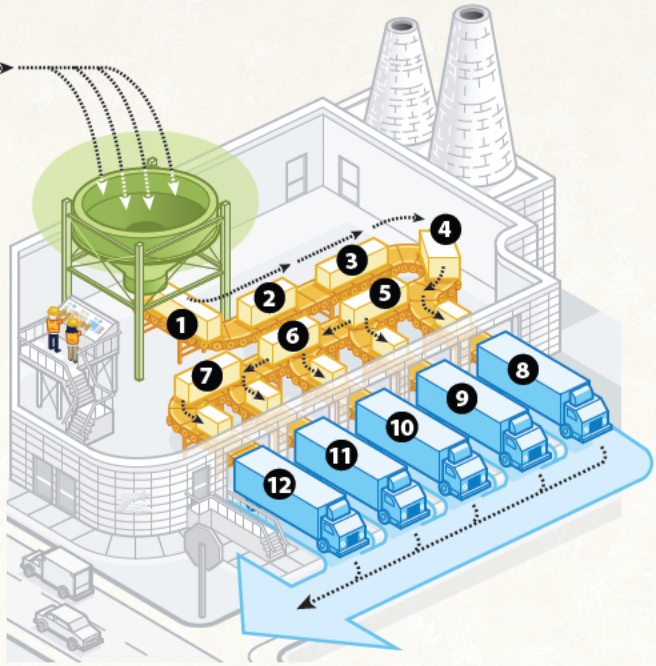
TxDOT graphic

A VISIONARY LOOK AT THE BUSINESS OF BUILDING ROADWAYS

A factory-themed metaphorical take on the business of how TxDOT builds roadways:

1. FUNDING SOURCES

- Motor Fuel Taxes
- Vehicle Registration Fees
- Prop 1/Prop 7
- Federal Reimbursements



2. ADVANCED PLANNING

1. Public Involvement
2. Feasibility Analysis
3. Environmental
4. Engineering
5. Right of Way
6. Utility Adjustment
7. Contractor Procurement

3. MOBILITY AND MAINTENANCE PROJECTS

8. Connectivity
9. Preservation
10. Safety
11. Mobility
12. Roadway Maintenance

SOURCE: Texas Department of Transportation

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REPORT A POTHOLE:
Visit *www.txdot.gov/contact-us/formhtml?form=Report_a_Pothole* or call 800.452.9292. Progress report can be downloaded at *http://www.txdot.gov/inside-txdot/district/dallas/progress.html*