



GIS and Road Maintenance Documentation

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San Antonio



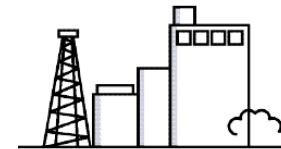
Austin



Dallas



Fort Worth



Midland



Farmersville

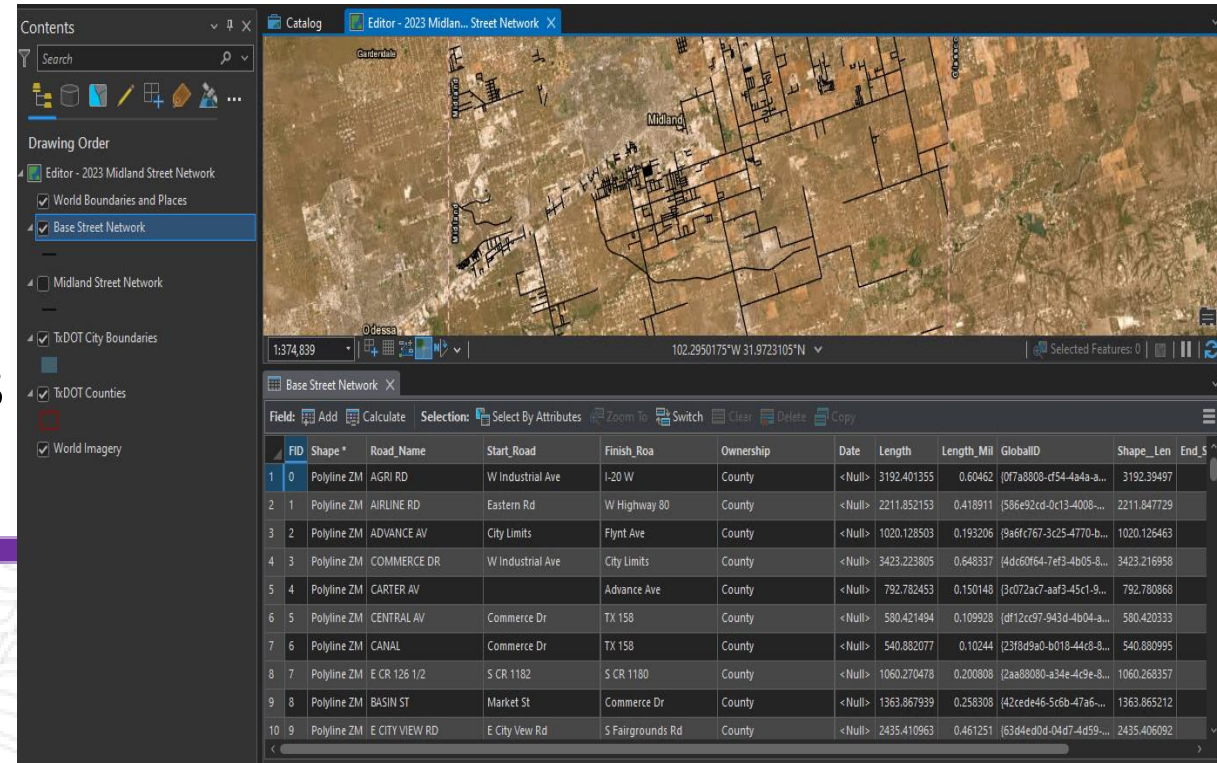
Building dreams since 1995

- What is GIS
- Midland County Example
 - Desktop Use
 - Mobile Use
- Can I still use spreadsheets?
- Access/License



What is GIS?

- Geographic Information System
- Creates, manages, analyzes, and maps data
- Integrates location data with descriptive information (customizable)
- Imagine Google/Apple maps on steroids



The screenshot displays a GIS application window titled "Editor - 2023 Midlan... Street Network". The main view shows a satellite map of Midland, Texas, with a black street network overlay. The interface includes a "Contents" pane on the left with a search bar and a "Drawing Order" list. The "Drawing Order" list shows the following layers:

- Editor - 2023 Midland Street Network
 - World Boundaries and Places
 - Base Street Network
- Midland Street Network
- TxDOT City Boundaries
- TxDOT Counties
- World Imagery

The "Base Street Network" layer is selected, and a data table is visible at the bottom of the window. The table has the following columns: FID, Shape, Road_Name, Start_Road, Finish_Road, Ownership, Date, Length, Length_Mil, GlobalID, Shape_Len, and End_S. The table contains 10 rows of data:

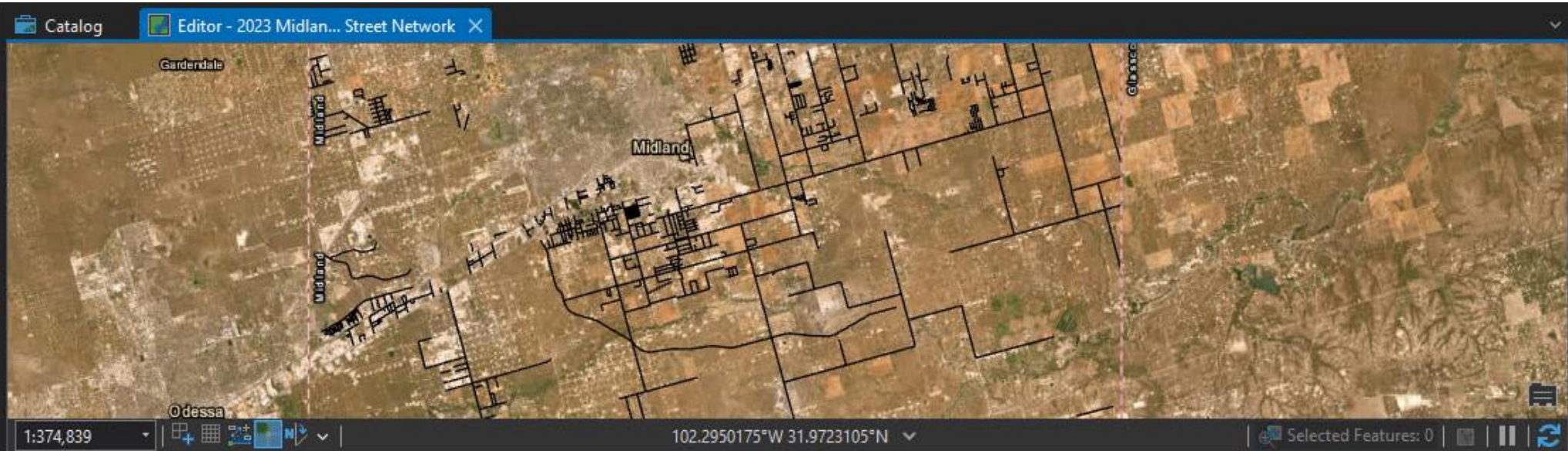
FID	Shape	Road_Name	Start_Road	Finish_Road	Ownership	Date	Length	Length_Mil	GlobalID	Shape_Len	End_S
1	0	Polyline ZM AGRI RD	W Industrial Ave	I-20 W	County	<Null>	3192.401355	0.60462	{0f7a8800-df54-464a-a...	3192.39497	
2	1	Polyline ZM AIRLINE RD	Eastern Rd	W Highway 80	County	<Null>	2211.852153	0.418911	{586e92cd-0c13-4038-...	2211.847729	
3	2	Polyline ZM ADVANCE AV	City Limits	Flynt Ave	County	<Null>	1020.128503	0.193206	{9a6fc767-3c25-4770-b...	1020.126463	
4	3	Polyline ZM COMMERCE DR	W Industrial Ave	City Limits	County	<Null>	3423.223805	0.648337	{4dc6f64-7ef3-4b05-8...	3423.216958	
5	4	Polyline ZM CARTER AV		Advance Ave	County	<Null>	792.782453	0.150148	{3d072a7-aa3-45c1-9...	792.780868	
6	5	Polyline ZM CENTRAL AV	Commerce Dr	TX 158	County	<Null>	580.421494	0.109928	{df12cc97-943d-4b04-a...	580.420333	
7	6	Polyline ZM CANAL	Commerce Dr	TX 158	County	<Null>	540.882077	0.10244	{23f8d9a0-b018-4448-8...	540.880995	
8	7	Polyline ZM E CR 126 1/2	S CR 1182	S CR 1180	County	<Null>	1060.270478	0.200808	{2aa88080-a34e-4c9e-8...	1060.268357	
9	8	Polyline ZM BASIN ST	Market St	Commerce Dr	County	<Null>	1363.867939	0.258308	{42cde4e46-5c6b-47a6-...	1363.865212	
10	9	Polyline ZM E CITY VIEW RD	E City View Rd	S Fairgrounds Rd	County	<Null>	2435.410963	0.461251	{63d4ed0d-04d7-4d59-...	2435.406092	

Contents

Search

Drawing Order

- Editor - 2023 Midland Street Network
 - World Boundaries and Places
 - Base Street Network
- Midland Street Network
- TxDOT City Boundaries
- TxDOT Counties
- World Imagery



Base Street Network

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

	FID	Shape *	Road_Name	Start_Road	Finish_Roa	Ownership	Date	Length	Length_Mil	GlobalID	Shape_Len	End_S
1	0	Polyline ZM	AGRI RD	W Industrial Ave	I-20 W	County	<Null>	3192.401355	0.60462	{0f7a8808-cf54-4a4a-a...	3192.39497	
2	1	Polyline ZM	AIRLINE RD	Eastern Rd	W Highway 80	County	<Null>	2211.852153	0.418911	{586e92cd-0c13-4008-...	2211.847729	
3	2	Polyline ZM	ADVANCE AV	City Limits	Flynt Ave	County	<Null>	1020.128503	0.193206	{9a6fc767-3c25-4770-b...	1020.126463	
4	3	Polyline ZM	COMMERCE DR	W Industrial Ave	City Limits	County	<Null>	3423.223805	0.648337	{4dc60f64-7ef3-4b05-8...	3423.216958	
5	4	Polyline ZM	CARTER AV		Advance Ave	County	<Null>	792.782453	0.150148	{3c072ac7-aaf3-45c1-9...	792.780868	
6	5	Polyline ZM	CENTRAL AV	Commerce Dr	TX 158	County	<Null>	580.421494	0.109928	{df12cc97-943d-4b04-a...	580.420333	
7	6	Polyline ZM	CANAL	Commerce Dr	TX 158	County	<Null>	540.882077	0.10244	{23f8d9a0-b018-44c8-8...	540.880995	
8	7	Polyline ZM	E CR 126 1/2	S CR 1182	S CR 1180	County	<Null>	1060.270478	0.200808	{2aa88080-a34e-4c9e-8...	1060.268357	
9	8	Polyline ZM	BASIN ST	Market St	Commerce Dr	County	<Null>	1363.867939	0.258308	{42cede46-5c6b-47a6-...	1363.865212	
10	9	Polyline ZM	E CITY VIEW RD	E City Vew Rd	S Fairgrounds Rd	County	<Null>	2435.410963	0.461251	{63d4ed0d-04d7-4d59-...	2435.406092	

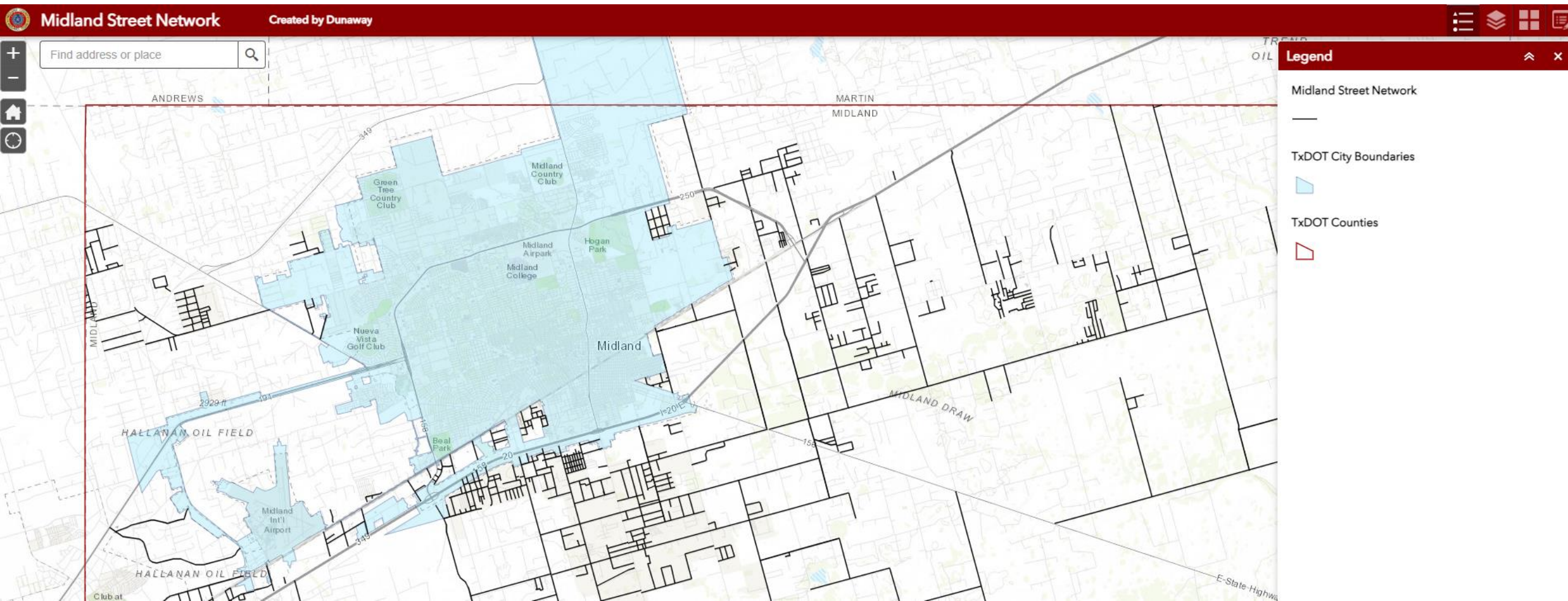
Midland County Example

- Started with existing roadway layer
- Divided roads into ~2-mile segments
- Include field(s) to assess remaining service life
- Analyze data using dashboards



Midland County Example

- Started with existing roadway layer



Midland County Example

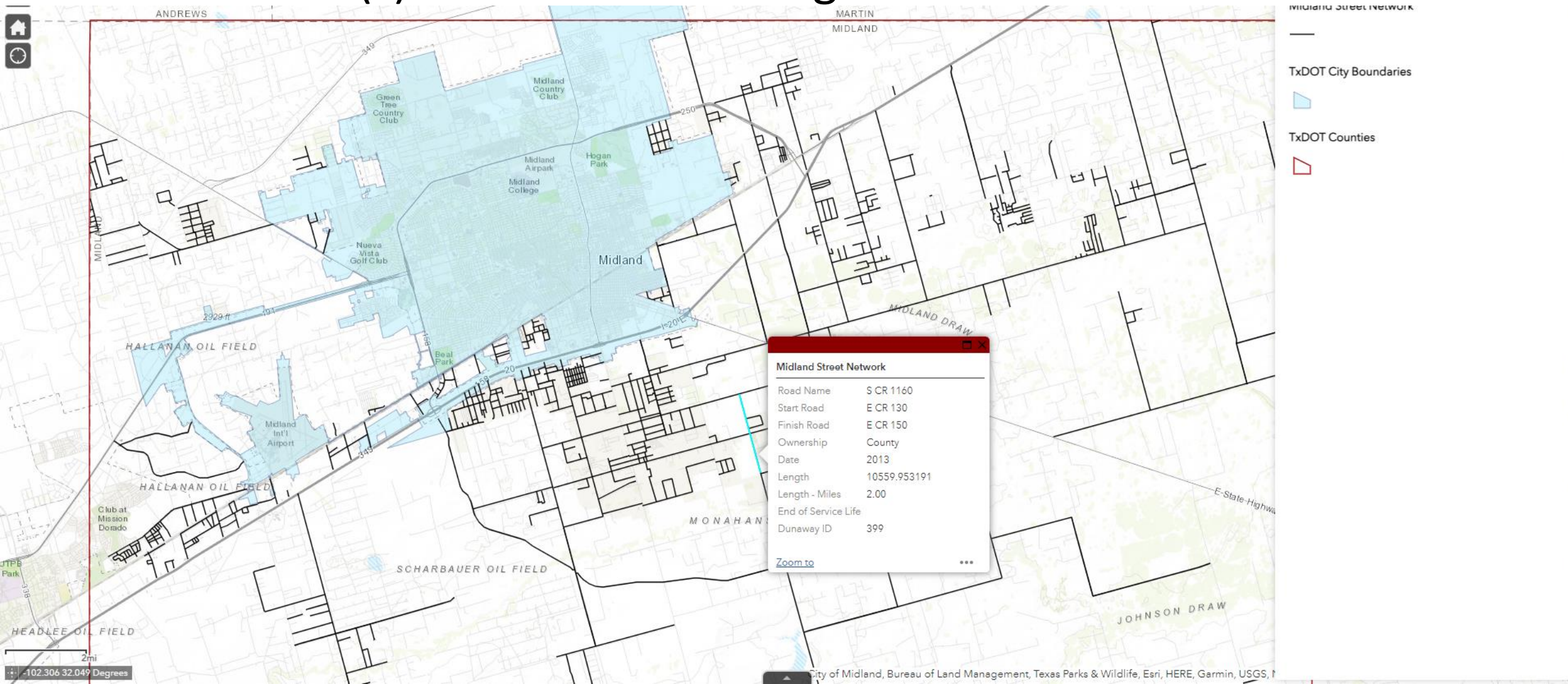
- Divided roads into ~2-mile segments

The screenshot displays a web application interface for the 'Midland Street Network'. The top navigation bar includes the title 'Midland Street Network' and 'Created by Dunaway'. Below the navigation bar is a map showing a street network in Midland, Texas, with a search bar and a legend. The legend identifies the 'Midland Street Network' layer. Below the map is a data table with the following columns: Road Name, Start Road, Finish Road, Ownership, Date, Length, Length - Miles, End of Service Life, and Dunaway ID. The table contains 20 rows of data, each representing a road segment.

Road Name	Start Road	Finish Road	Ownership	Date	Length	Length - Miles	End of Service Life	Dunaway ID
N CR 1150	Loop 250		County	2020	9662.707831	1.83		541
E CR 160	E CR 160	E CR 160	County		10388.552005	1.97		397
S CR 1200	W CR 130	W CR 150	County	2020	10417.248072	1.97		428
E CR 135	FM 349	FM 715	County		10549.281165	2.00		424
E CR 120	FM 715	FM 1213	County		10551.831634	2.00		391
N CR 1130		E CR 55	County		10557.012195	2.00		542
E CR 150	S CR 1040	CL	County		10557.619200	2.00		68
W CR 60	W State HWY 158		County		10559.878146	2.00		439
E CR 120	Rankin Hwy	FM 715	County		10559.898743	2.00		37
E CR 120	E State Highway 158	S CR 1120	County		10559.922756	2.00		392
S CR 1200	W CR 111	W CR 130	County	2020	10559.923114	2.00		206
S CR 1210	I-20 E		County	2020	10559.947335	2.00		409
S CR 1160	E CR 130	E CR 150	County	2013	10559.953191	2.00		399
E CR 130	Rankin Hwy	S CR 1160	County		10559.955878	2.00		421
E CR 160	E State Highway 158	E CR 160	County		10559.965765	2.00		396
E CR 120	S CR 1120	S CR 1110	County		10559.966101	2.00		393
N CR 1120	E CR 90	E CR 110	County		10559.998037	2.00		484
S CR 1130	FM 307	E CR 120	County		10559.999946	2.00		456
S CR 1140	E CR 120	E CR 140	County		10562.065890	2.00		177

Midland County Example

- Include field(s) to assess remaining service life



Midland County Example

- Set up for edits

Editor - 2023 Midland Street Network

Open in Map Viewer Classic

Dunaway Midland
DunawayMCounty

Layers

- Midland Street Network
- TxDOT City Boundaries
- TxDOT Counties

Add

AND FARM OIL FIELD

STANTON

SPRABERRY TREND OIL FIELD

MIDLAND

GARDENDALE

MIDLAND AIRPARK

HALLANAN OIL FIELD

MIDLAND AIRPARK

HALLANAN OIL FIELD

SCHARBAUER OIL FIELD

JOHNSON DRAW

E 42nd St

HEADLEE OIL FIELD

ODESSA

PARKS OIL FIELD

EDIT feature

Settings

Road Name
S CR 1160

Start Road
E CR 190

Finish Road

Ownership
County

Date
MM/DD/YYYY

Validated
No

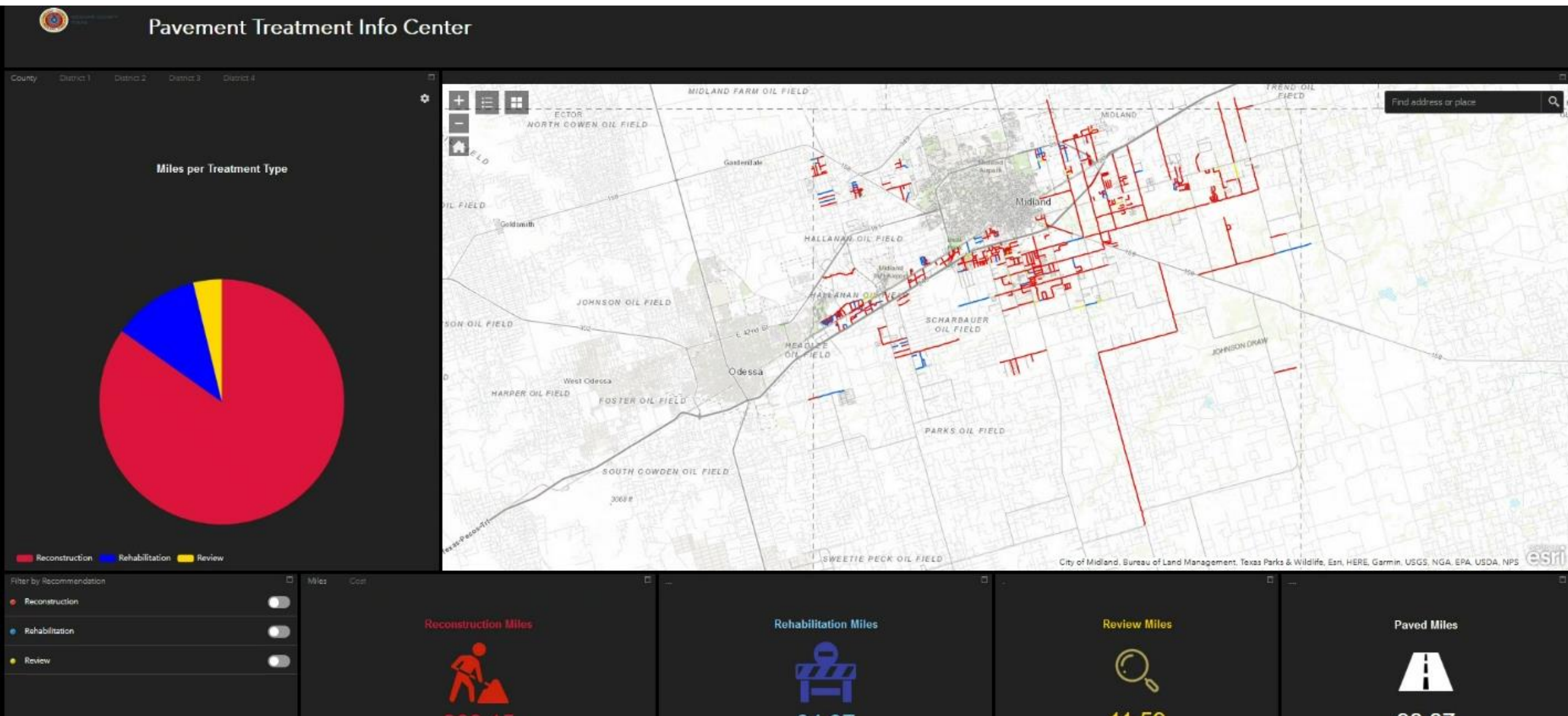
Length
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Length - Miles
1.9999958993737583

Construction Date
MM/DD/YYYY

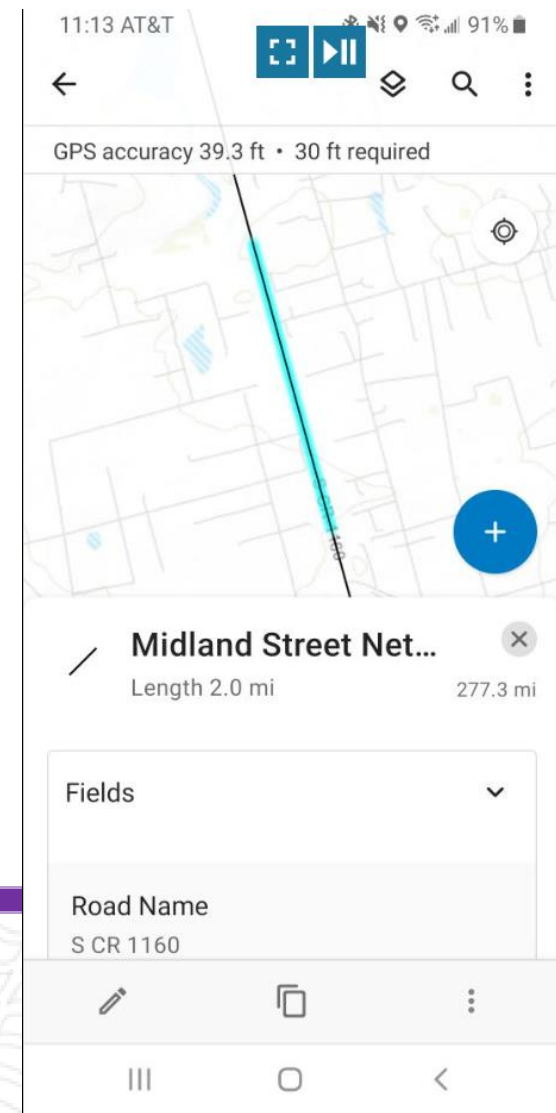
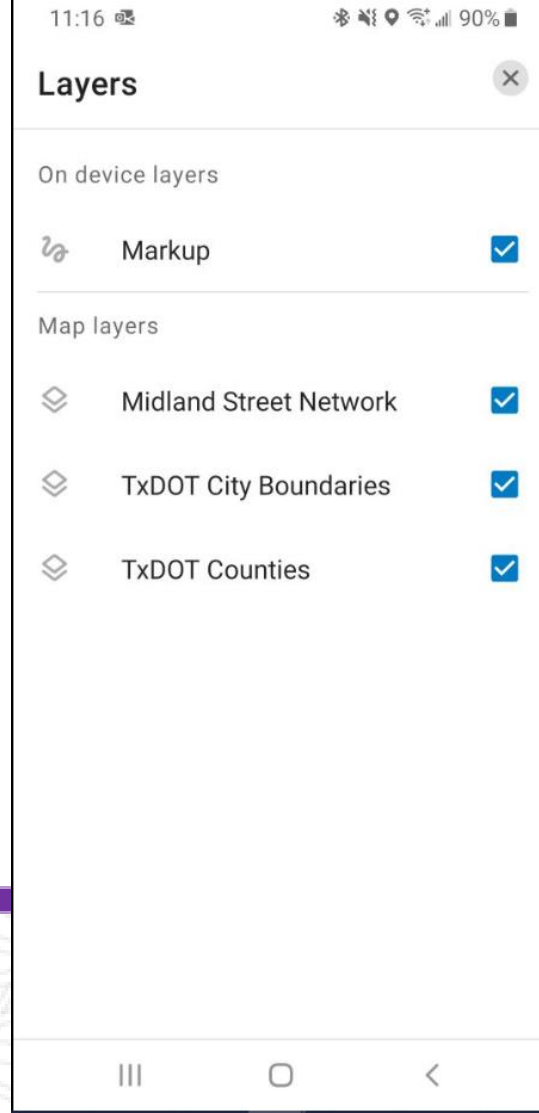
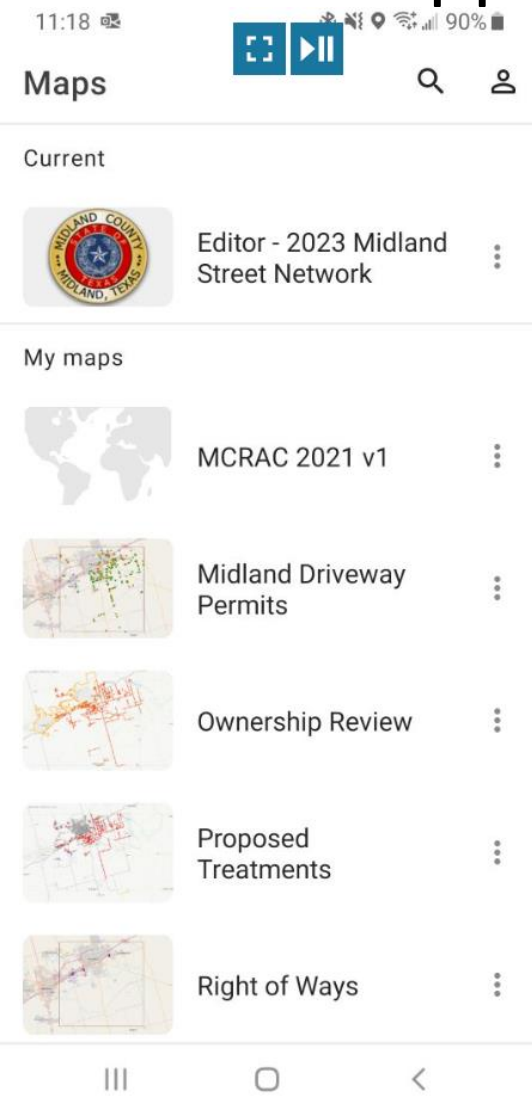
Midland County Example

- Analyze data using dashboards



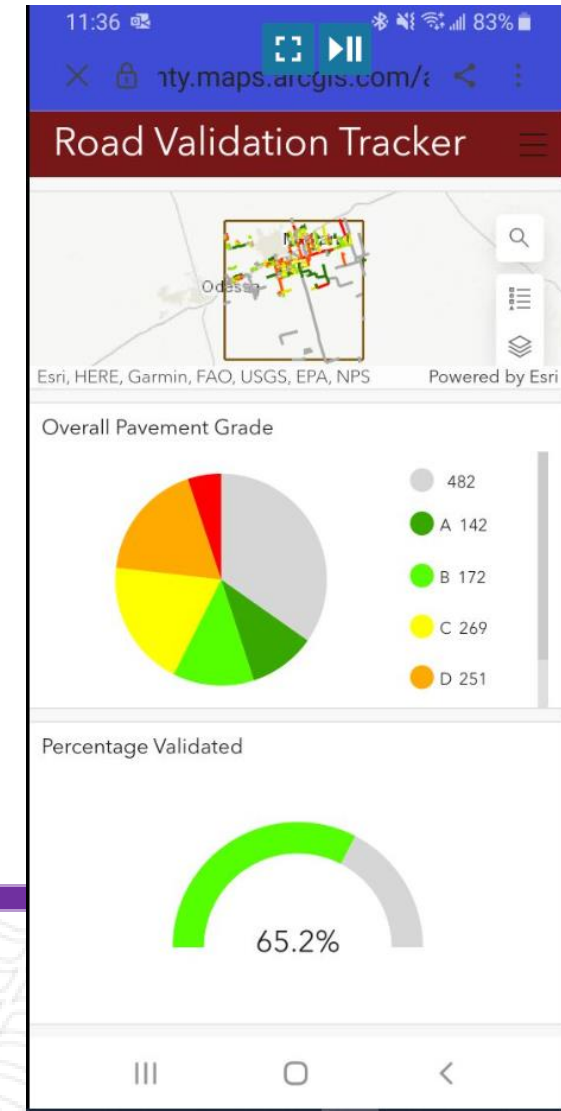
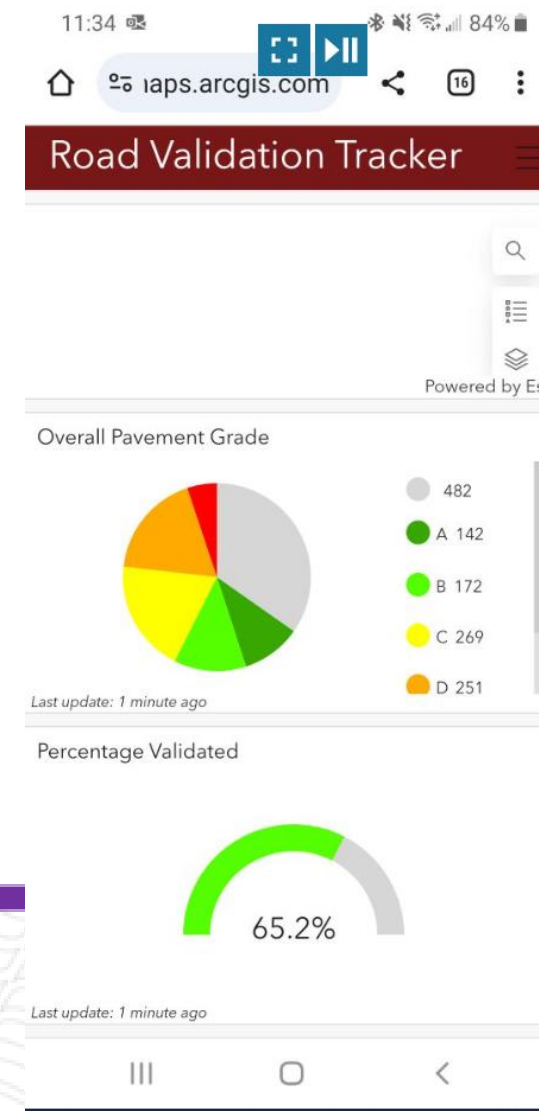
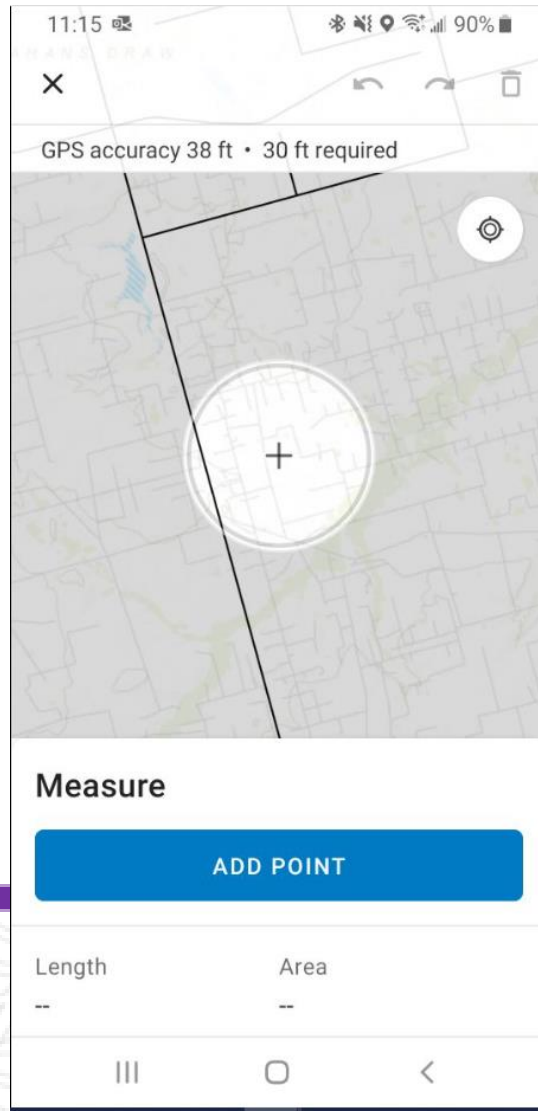
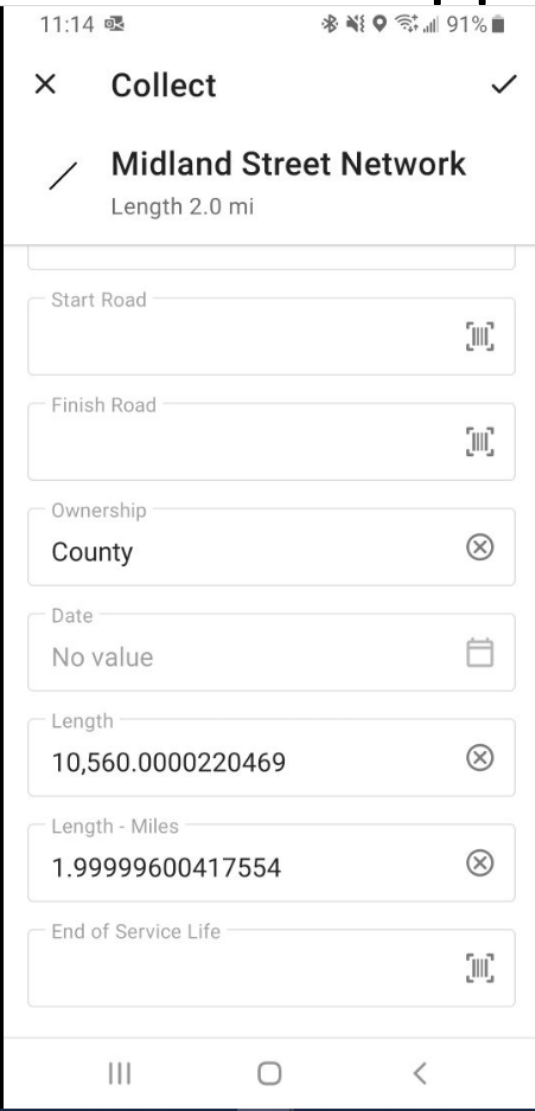
Midland County Example

- Mobile Application



Midland County Example

- Mobile Application



Spreadsheets?

- ArcGIS Add-in for Excel

The screenshot shows the Microsoft Excel interface with the ArcGIS add-in installed. The ArcGIS menu is circled in red. The data table below is titled "ArcGIS Layer: Midland Street Network".

Road Name	Start Road	Finish Road	Ownership	Date	Validated	Length	Length - Miles	Construction Date	Shape_Length	End of Service Life	Dunaway ID
AGRI RD	W Industrial Ave	I-20 W	County		Yes	3192.401355	0.604620		3192.39497		1
AIRLINE RD	Eastern Rd	W Highway 80	County		Yes	2211.852153	0.418911		2211.847729		2
ADVANCE AV	City Limits	Flynt Ave	County		Yes	1020.128503	0.193206		1020.126463		3
COMMERCE DR	W Industrial Ave	City Limits	County		Yes	3423.223805	0.648337		3423.216958		4
CARTER AV		Advance Ave	County		Yes	792.782453	0.150148		792.7808678		5
CENTRAL AV	Commerce Dr	TX 158	County		Yes	580.421494	0.109928		580.4203329		6
CANAL	Commerce Dr	TX 158	County		Yes	540.882077	0.102440		540.8809948		7
E CR 126 1/2	S CR 1182	S CR 1180	County		Yes	1060.270478	0.200808		1060.268357		8
BASIN ST	Market St	Commerce Dr	County		Yes	1363.867939	0.258308		1363.865212		9
E CITY VIEW RD	E City View Rd	S Fairgrounds Rd	County		No	2435.410963	0.461251		2435.406092		10
S CLARK ST	W Francis Ave	Harris Ave	County		No	1307.696565	0.247669		1307.69395		11
W CR 113	State Highway 349	S CR 1192	County		No	2718.278139	0.514824		2718.272702		12
E CR 101	S CR 1044	S CR 1040	County	2014	Yes	2091.319543	0.396082		2091.315361		13
E CR 102			County		No	1759.904356	0.333315		1759.900836		14
S CR 1066	S CR 1068	S CR 1066	County		Yes	1441.008990	0.272918		1441.006108		15
E CR 103		S CR 1101	County	2014	No	3618.889005	0.685394		3618.881767		16
E CR 103		CR 1087	County		No	1112.954962	0.210787		1112.952736		17
E CR 103	S CR 1063	S CR 1060	County		Yes	1765.956395	0.334461		1765.952863		18
E CR 104	S CR 1085	FM 1379	County		No	3048.157387	0.577301		3048.151291		19
E CR 104	E CR 1044	S CR 1040	County	2014	Yes	2086.901694	0.395246		2086.897521		20
E CR 105	S CR 1130	S CR 1120	County		No	5308.891728	1.005470		5308.88111		21
S CR 1118	S CR 1120	S CR 1118	County		No	1313.456255	0.248760		1313.453628		22
E CR 105		FM 1379	County		No	3864.957860	0.731998		3864.95013		23
E CR 106	S CR 1082	FM 1379	County		No	1164.154834	0.220483		1164.152506		24
E CR 107		E CR 109	County		No	1407.976645	0.266662		1407.973829		25
E CR 107	S CR 1083	FM 1379	County		No	1559.053414	0.295275		1559.050296		26
E CR 108	S CR 1120		County		No	2072.800408	0.392575		2072.796262		27
E CR 108	S CR 1082	FM 1379	County		No	1147.274437	0.217286		1147.272142		28

Access/License

- Access through web browser or mobile application
- Unique login per user, SSO capable
- ArcGIS Online has 4 license types
 - Creator – Full online ability
 - Mobile Worker – Data collection and Edit ability
 - Editor – Edit ability
 - Viewer – only view data/apps



Access/License

- Creator - \$550/year
- Mobile Worker - \$385/year
- Editor - \$220/year
- Viewer - \$110/year

- Must Purchase Creator to start



Access/License



Property Search

Layer List

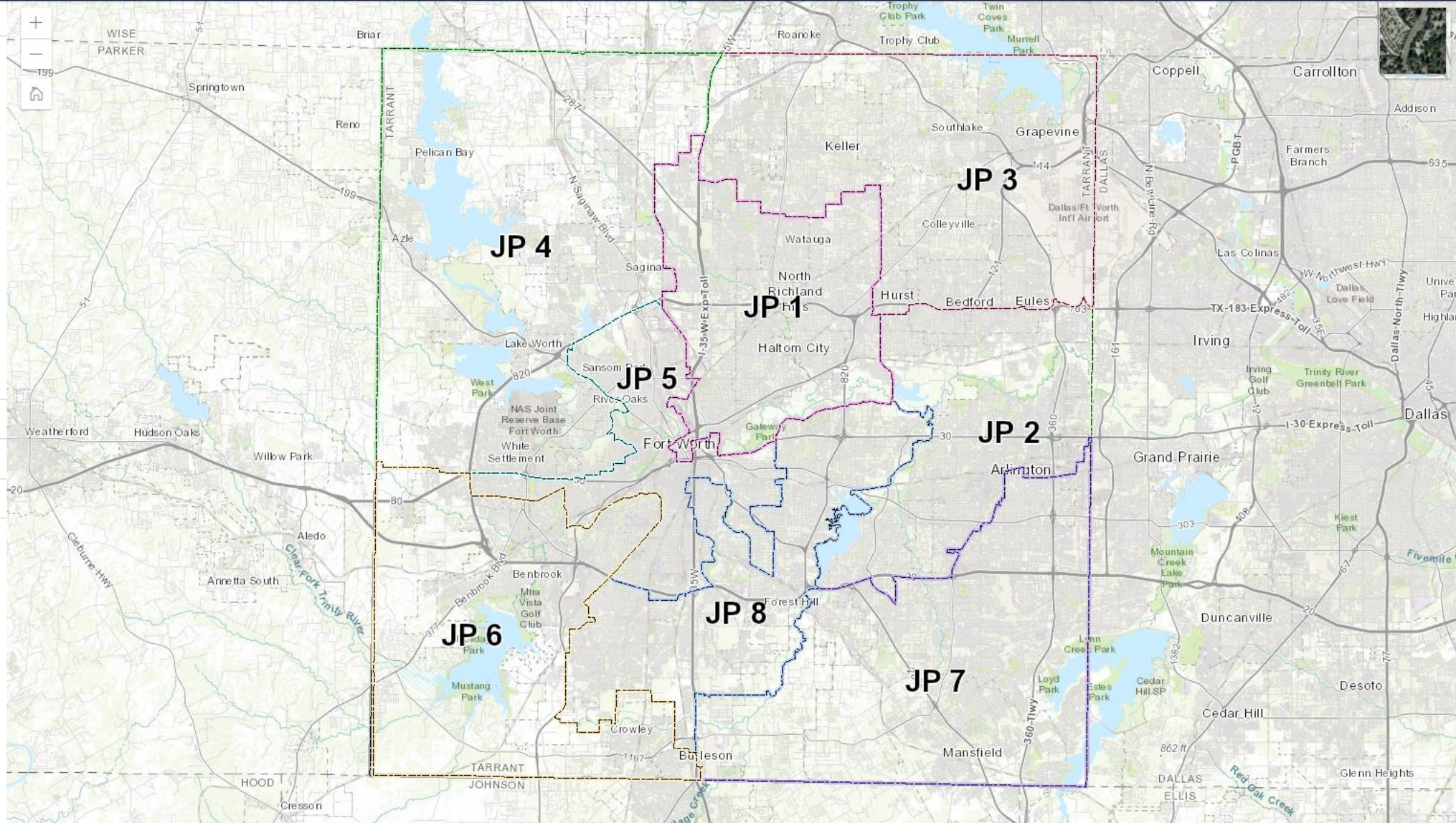
Customize Legend

- Zip Codes
- Wet/Dry
- Voting Precinct
- Schools
- School Districts
- Property
- Mapsco

Facilities

Crime Map Portal

Links



Questions?



GIS provides a framework for data that gives it context and meaning — that's why it is called 'Location Intelligence'.

- JACK DANGERMOND
FOUNDER & PRESIDENT, ESRI

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