

Orbital Predictive Maintenance



STATE HIGHWAY 130

KXON WEATHER & TRAFFIC

5



Wait, wait...rewind





Further...

🛞 E059 💵



Further...

🛞 E059 💵



Akhtubinsk Airfield, Russia. Oct 4, 2021

Sukhoi Su-34

FULLBACK

Ra Capella Space

SAR satellite imagery © 2021 Capella Space. All Rights Reserved

Sukhoi Su-57 FELON

H I Sutton, 2021







A-DInSAR. A tested orbital technique.







Many Available Missions

COSMO Sky Med \\ TerraSAR-X \\ RadarSAT Constellation







How Radar Samples Appear

Sentinel-1 (radar)



Optical









The amplitude

The phase



How Radar Samples Appear





Scalability #1

COSMO-SkyMed



Scalability #1







Scalability #2





Quantitative Information





Bridge and Rail





Bridges and Road Infrastructure





Bridge and Road Infrastructure







Bridge and Road Infrastructure





SH 130 Concession Company operates and maintains southern 41 miles of SH 130 toll between Austin and San Antonio

Roadway opened in 2012 under a 50-year concession agreement with State of Texas

Recent remediation project undertaken to address pavement issues and subsurface conditions

Major improvement projects completed, and road is in condition it was supposed to be in when it opened

In 2021, traffic up 25% over 2019 (pre-covid) levels, with heavy truck traffic up 33%

SH 130 Segments 5&6





We collected 30,000 data points along the corridor, measuring the relative deformation to 1mm accuracy

We looked back at historic data to 2016 and compared the movements over time

We've seen a 35 % decrease in movement along the pavement

Gives us confidence that remediation work was effective, and we now expect a normal maintenance routine

Demonstrating Improvement





Movements discernable with the satellites are on the order of 8mm per year which would not be detected in conventional inspection

Ability to program preventative maintenance at a low cost before a more serious repair is required

Examples could include applying a seal coat to prevent alligator cracking from materializing

Expect to see savings over the concession term of 10-20% on the pavement item

Future Uses





Insar

Yours to Explore



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