



# Aerial Imagery: A Rapidly Evolving Technology for the Future of Smart Cities

April 15, 2021



- Headquartered in Sydney, Australia. Listed on ASX – S&P/ASX Global 200 Index Company
- Proudly streaming high-resolution aerial imagery and location content since 2007 to 10,000+ active customers
- Growing global footprint in Australia, USA, Canada, and New Zealand – processing and delivering location intelligence that businesses can count on
- Pioneered and patented the world’s first end-to-end processing pipeline that delivers high resolution location intelligence within days of capture
- In March 2020, Fast Company named Nearmap one of the World’s 10 Most Innovative Enterprise Companies
- Esri Gold Partner since 2019, winning the title “Best New Content Provider” in 2017 with Esri



# YOUR SPEAKERS FOR TODAY



Bryce Hall  
Account Executive  
Nearmap

Bryce is based out of our South Jordan, Utah office and is an Account Executive in the Government sector nationwide. He works closely with population cities, towns and counties less than 500K in population to integrate imagery into their processes. Bryce is most passionate about showing governments new ways in which to increase their effectiveness and quicken workflows.



Chuck Dostal  
Manager,  
Solutions Engineering

Chuck is based out of our South Jordan, UT office and is the Manager of the Solutions Engineering Team globally at Nearmap. As a Solutions Engineer, Chuck helps customers to integrate Nearmap imagery into their solutions and get the most value from our various 2D/3D/AI Products. Chuck has degrees in GIS/Geography/Geology from the University of Colorado and the University of Denver.

# THE NEARMAP DIFFERERECE



## CURRENT

New imagery up to 3 times per year



## CLOUD-BASED

Instantly stream imagery via the cloud



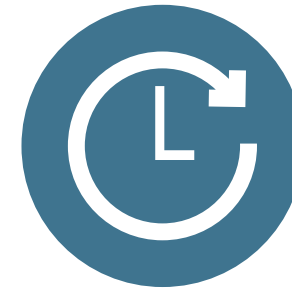
## WIDE-SCALE COVERAGE

- 70% US Population
- 74M residential parcels
- 3.3M commercial parcels
- Over 700 urban & regional areas, 339,000+ sq. miles



## HIGH RESOLUTION

Always sub-3" (7.5cm) GSD



## HISTORICAL

Catalogs of historical imagery at your fingertips



AUG 2018 | SALT LAKE CITY, UT U.S.

# DIVERSE SET OF LOCATION CONTENT



## VERTICAL

- High-res top down imagery
- Measure line, area, or radius
- Overlay roads
- Uninterrupted pan & zoom
- Integration with GIS & CAD



## OBLIQUE

- Multi-perspective aerial views
- Mosaic view or individual source images
- Accurate measurement



## PANORAMA

- Multi-perspective aerial views
- View four cardinal directions
- Uninterrupted pan & zoom
- Mosaic continuous view without “geo-fencing”



## 3D/AR/VR

- Immersive 3D visualization
- 3D point cloud and mesh



## DSM

- Highly accurate Digital Surface Model
- Visualize earth surface objects



## AI/ML

- Early Investment Exploring Opportunity /Support of Our

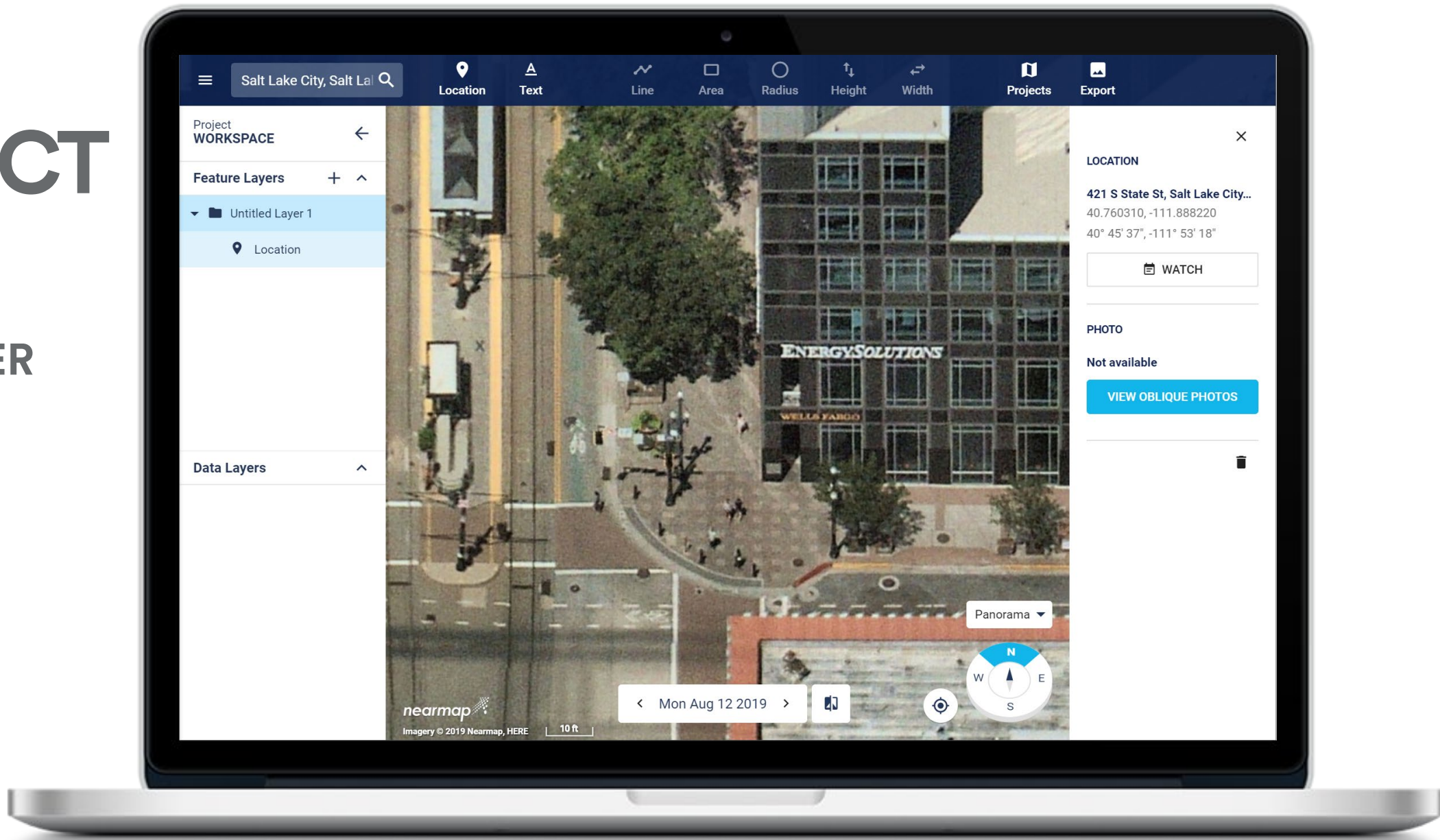
# 2.2" VERTICAL IMAGERY

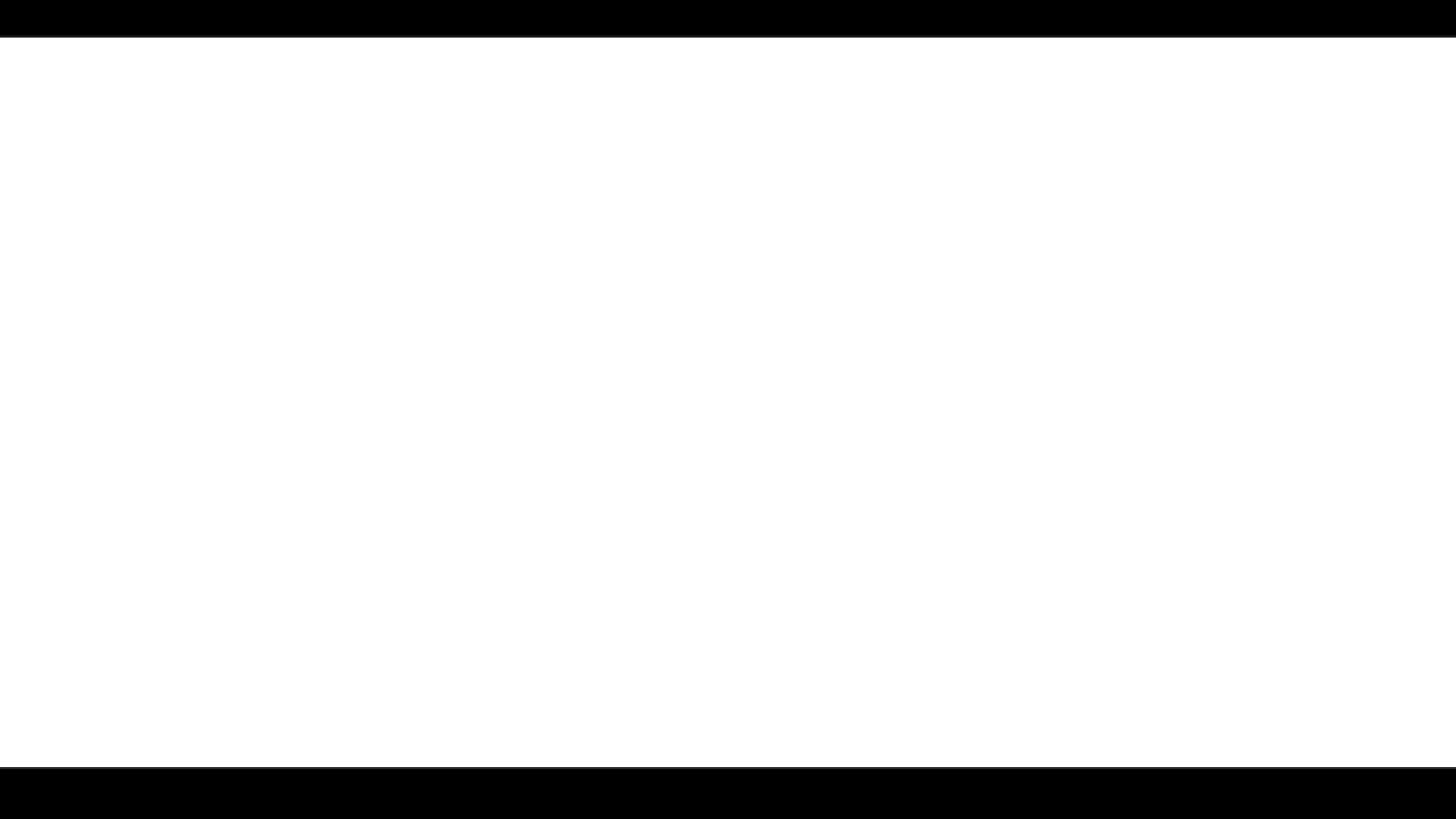
AER SUBSCRIPTION SERVICE  
FLYING 113 FLIGHTS PER YEAR



# PRODUCT DEMO

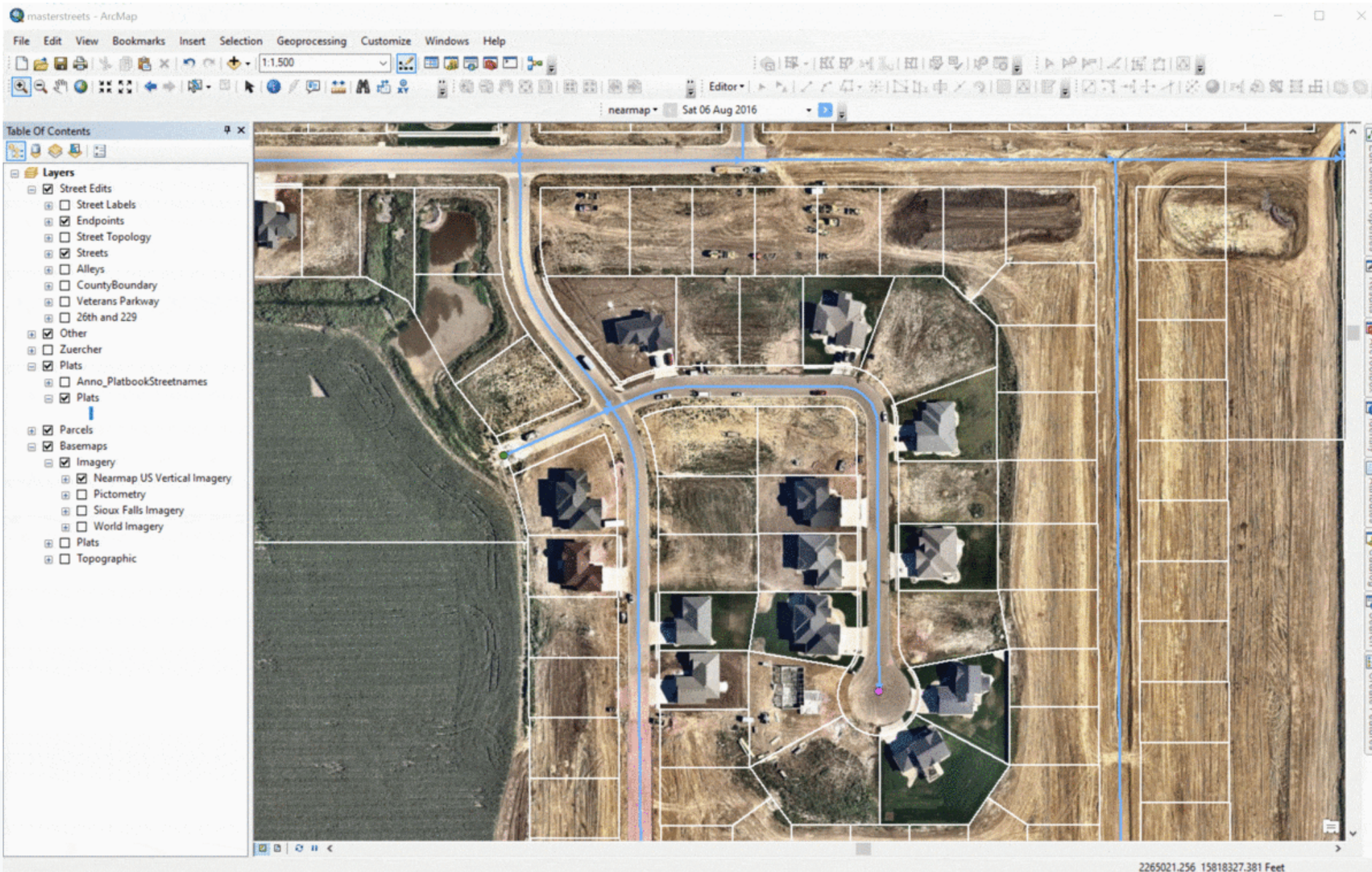
## MAPBROWSER IN ACTION







# HISTORICAL ARCHIVE ACROSS THE ENTIRE ESRI STACK



# VERTICAL IMAGERY INSIDE ARCGIS WEB APP BUILDER



# VERTICAL IMAGERY IN SIOUX FALLS PUBLIC WEB MAP

City of Sioux Falls Utility Mapping Application

Search...

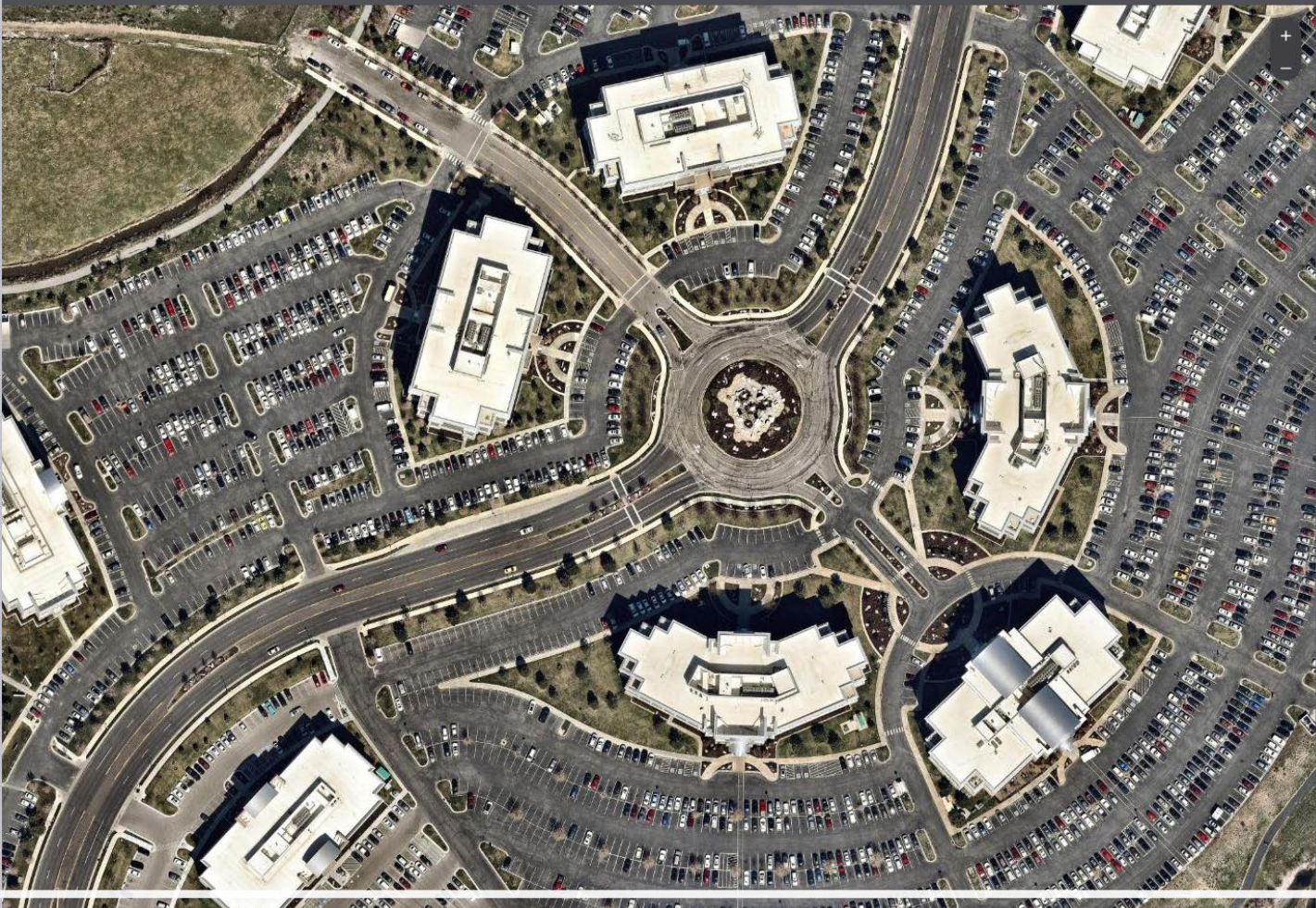
Layers

Filter Layers... Filter

- Wastewater
- Treatment Plant
- Sewer
- Vault
- Sanitary
- Main
- Sewer
- Service Line
- Sewer
- Force Main
- Abandon
- Sewer Main
- Sanitary
- Sewer Basin

I want to...

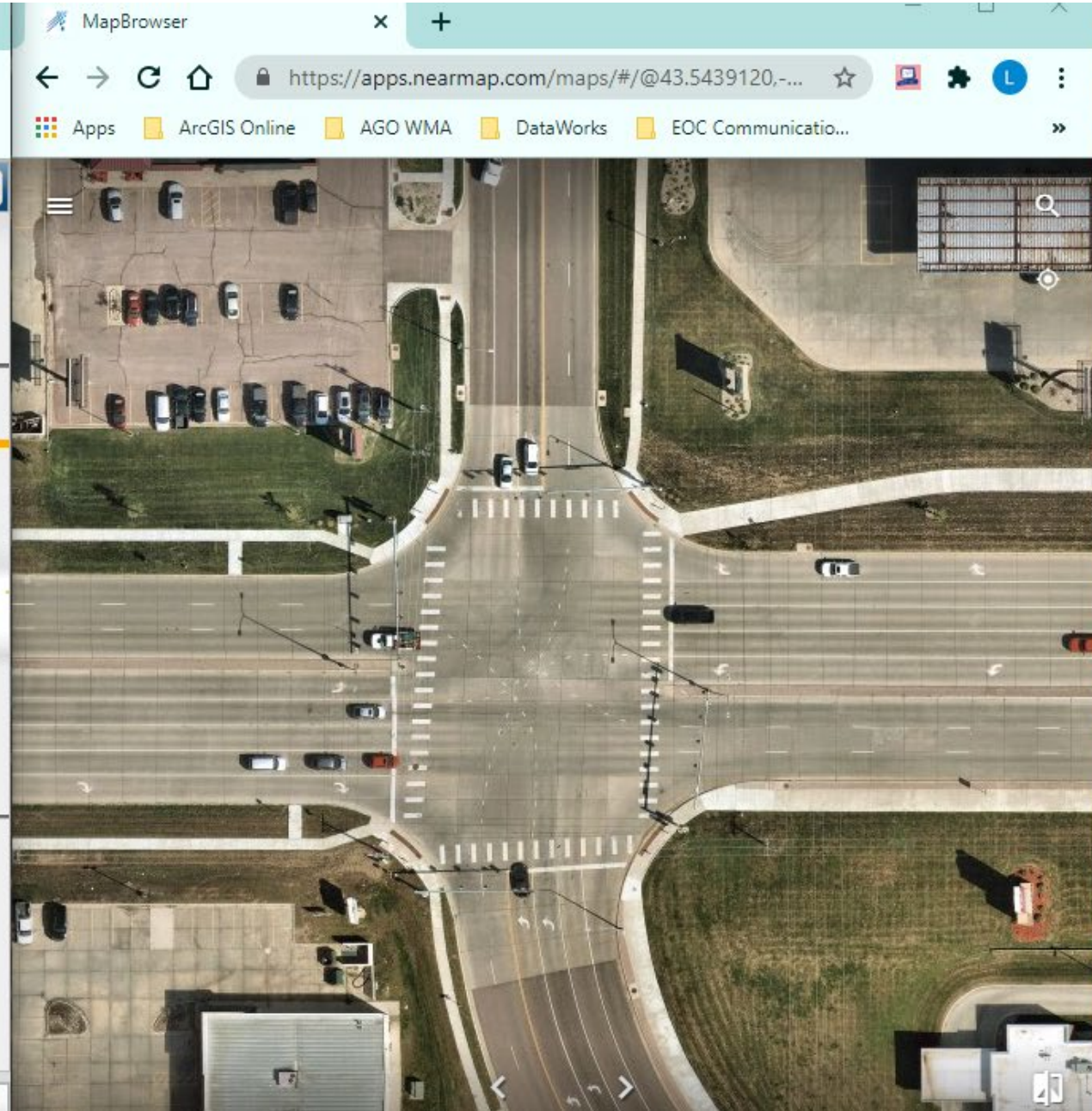
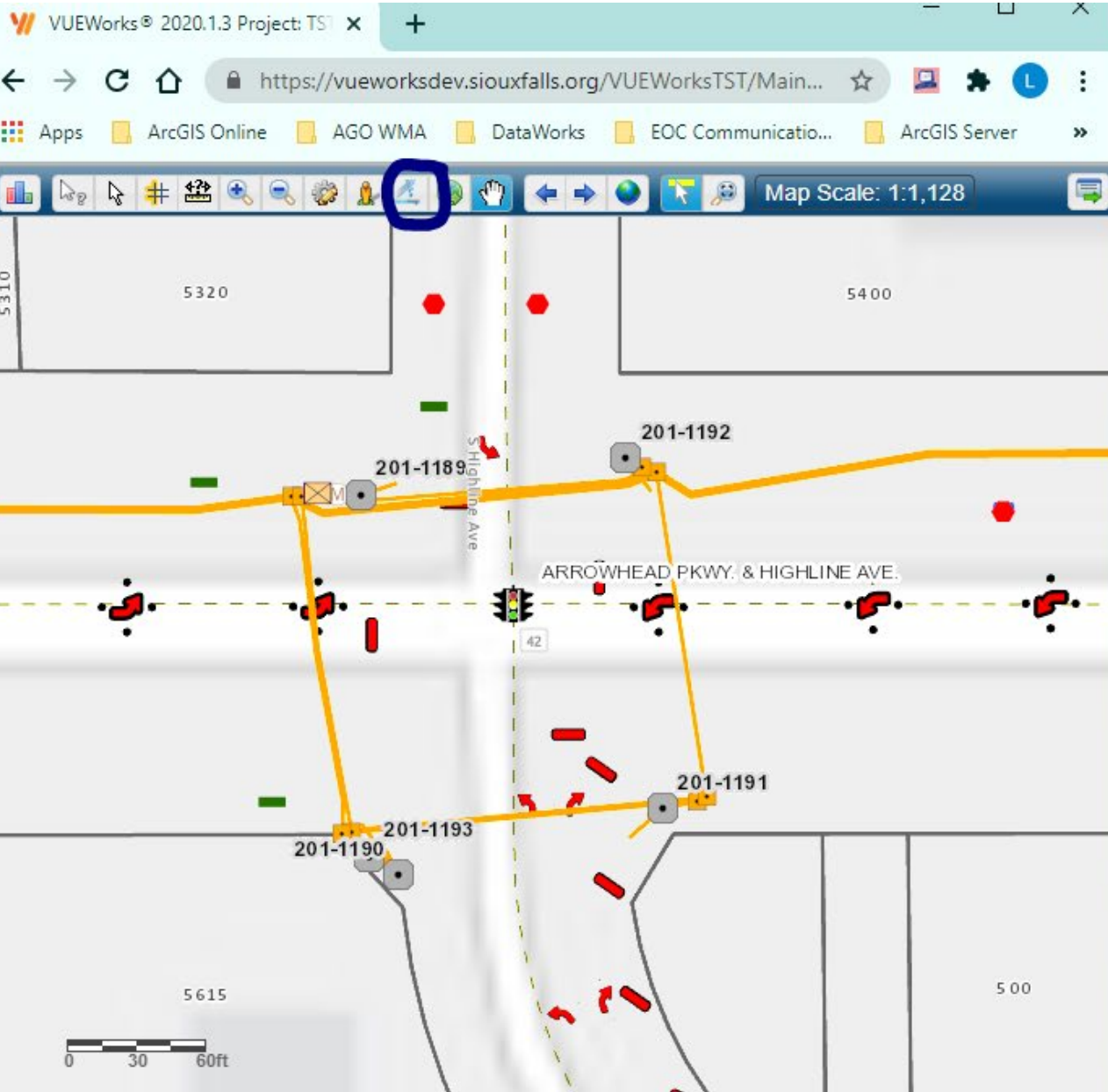
VETERANS PKWY



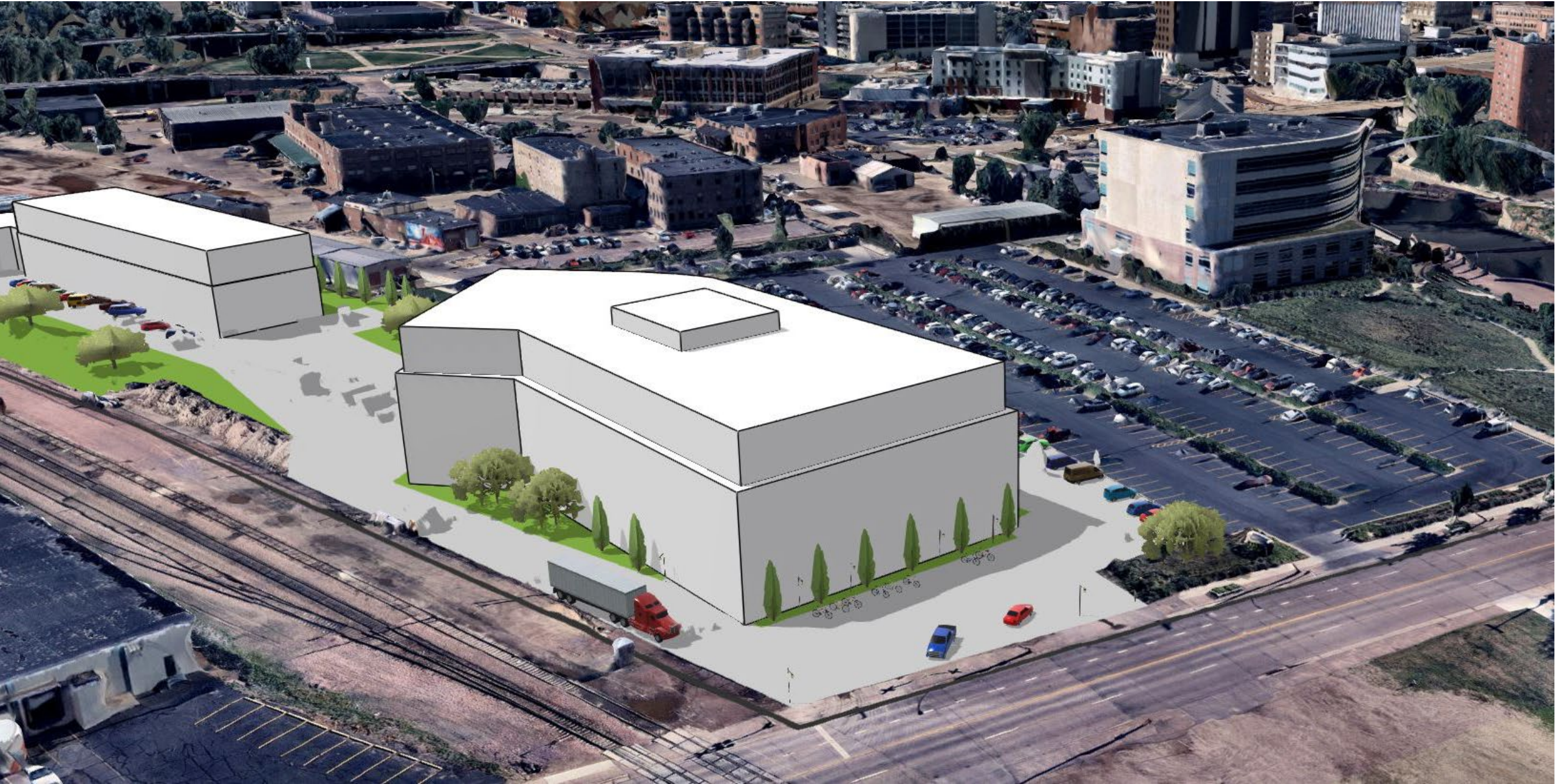
# NEARMAP PARTNERED WITH GEOCORTEX



# NEARMAP INTEGRATION WITH VUEWORKS



# NEARMAP 3D TEXTURED MESH INSIDE OF ARCGIS URBAN



# CASE STUDY: SHELBY COUNTY COUNTY 9-1-1



The screenshot displays the ArcMap interface with a map of a residential development. The map shows streets including Acadia Place, Darren Circle West, Easley Place, Cayuga Loop, Darren Circle East, Darren Circle South, and Afton Grove Road. Numerous house numbers are visible on the map. The left pane shows the Table of Contents with layers for Topology, Cell Towers, Addressing, Streets, and Imagery. The right pane shows the Attributes table for the selected 'DARREN' object.

OBJECTID	361034
GIS Identifier	993538
Route Segment Identifier	136370
Address Segment Identifier	136370
Segment Side	L
Parcel Link Identifier	D0215 00665
Structure Type	1
Structure Description	HOUSE
Street Number High	9482
Street Number Low	9400
Street Number	9436
Street Number Suffix	
Building	
Floor	
Unit Type	
Unit Number	
Prefix Directional	
Prefix Type	
Street Name	DARREN
Street Type	CIR
Suffix Directional	S
Post Modifier	
Address	9436 DARREN CIR S
Address with ESN	9436 DARREN CIR 001
Full Spelling Proper Case	9436 Darren Circle South
Subdivision Name	Afton Grove
Landmark Name	
USPS ZIP Code	38018
USPS ZIP Plus 4	2522
Emergency Service Number	001
MSAG Community Name	CORDOVA
County	SHELBY
USPS State Abbreviation	TN
Longitude Decimal Degrees	-89.748250
Latitude Decimal Degrees	35.154697
State Plane X Coordinate	848264.888990
State Plane Y Coordinate	320440.694482
Elevation (Feet)	295
Initial Edit Date	9/7/2018
Addressing Authority	MLGW
Derived Source	3
Editor	SHELBY911
Geometry Modification Type	
Geometry Modification Source	SA
Geometry Modification Date	9/7/2018 3:44:25 PM
Attribute Modification Type	

Shelby County is the largest county in Tennessee in both population (927,644) and geographic area (785 mi<sup>2</sup>). Memphis is the county seat, home to the county's Emergency Communications District, for the operations of the local 9-1-1 emergency system. The District provides Shelby County residents with an efficient emergency telephone number service using the latest technology, equipment and training for the various emergency service providers and dispatch centers.



“I REALLY LIKE HOW NEARMAP IS INTEGRATED INTO THE GIS STACK. WE’RE ABLE TO STAY ON TOP OF NEW DEVELOPMENTS, ROADS, AND ADDRESSES. BEING ABLE TO HAVE NEARMAP IMAGERY INTEGRATED INTO OUR GIS SYSTEMS HELPS US BE MUCH MORE ACCURATE.”

**TIMOTHY ZIMMER**  
GIS ADMINISTRATOR, SHELBY COUNTY 9-1-1





# RESPONSE



**EVERY DAY CHICAGO  
RECEIVES  
13,000 -15,000 CALLS TO 911**

**ALL ROUTED WITH NEARMAP  
IMAGERY**



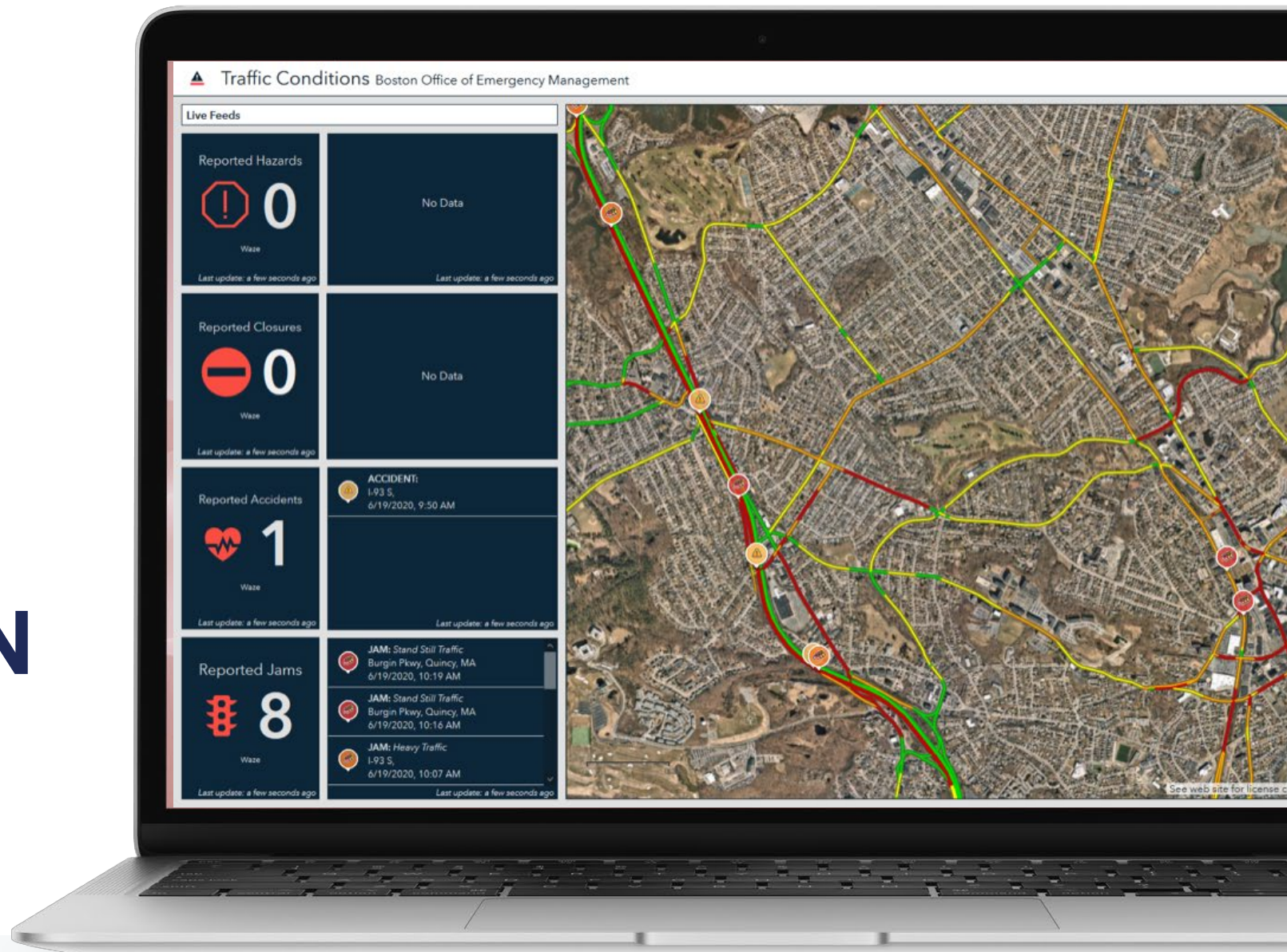


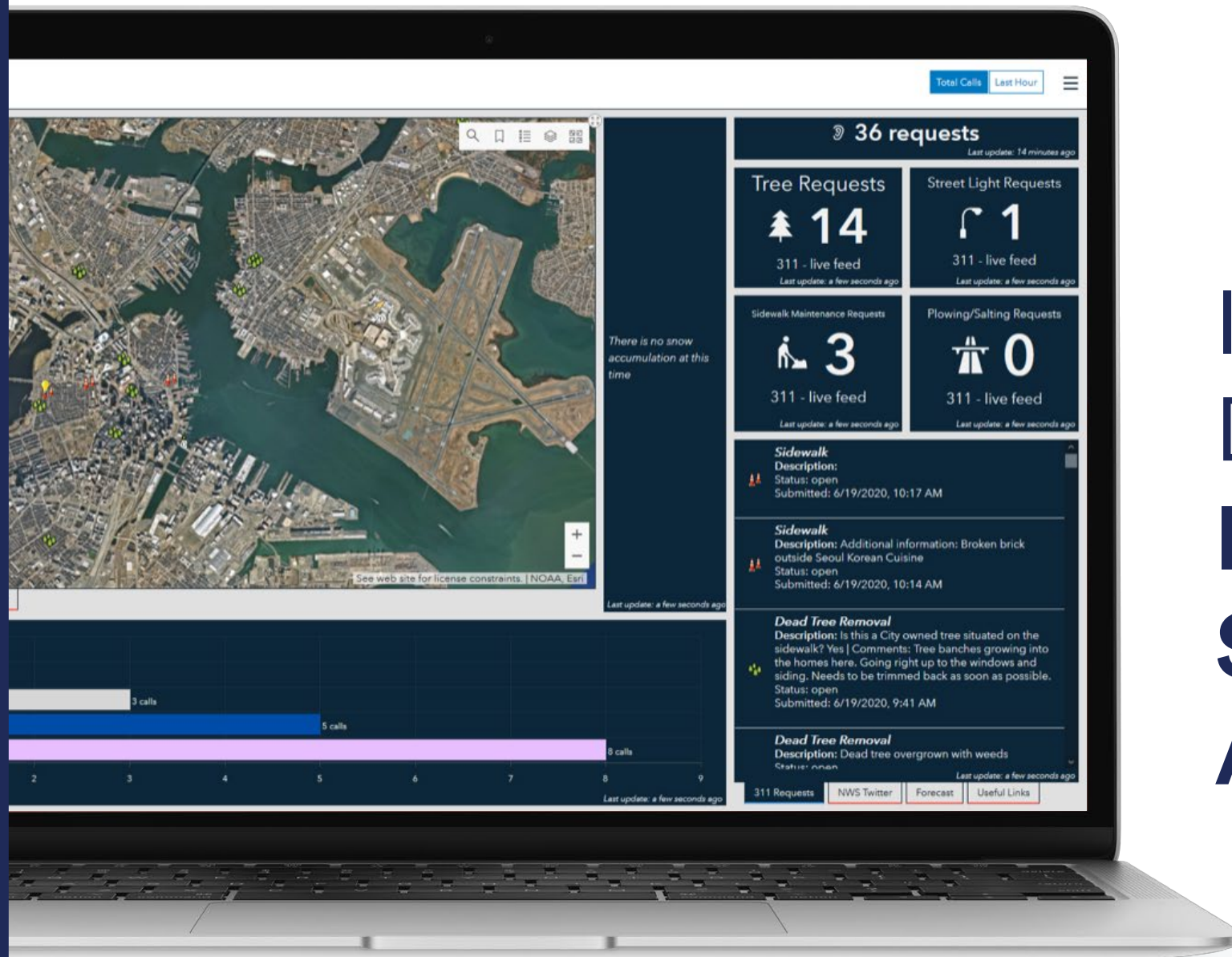
# BOSTON OFFICE OF EMERGENCY MANAGEMENT



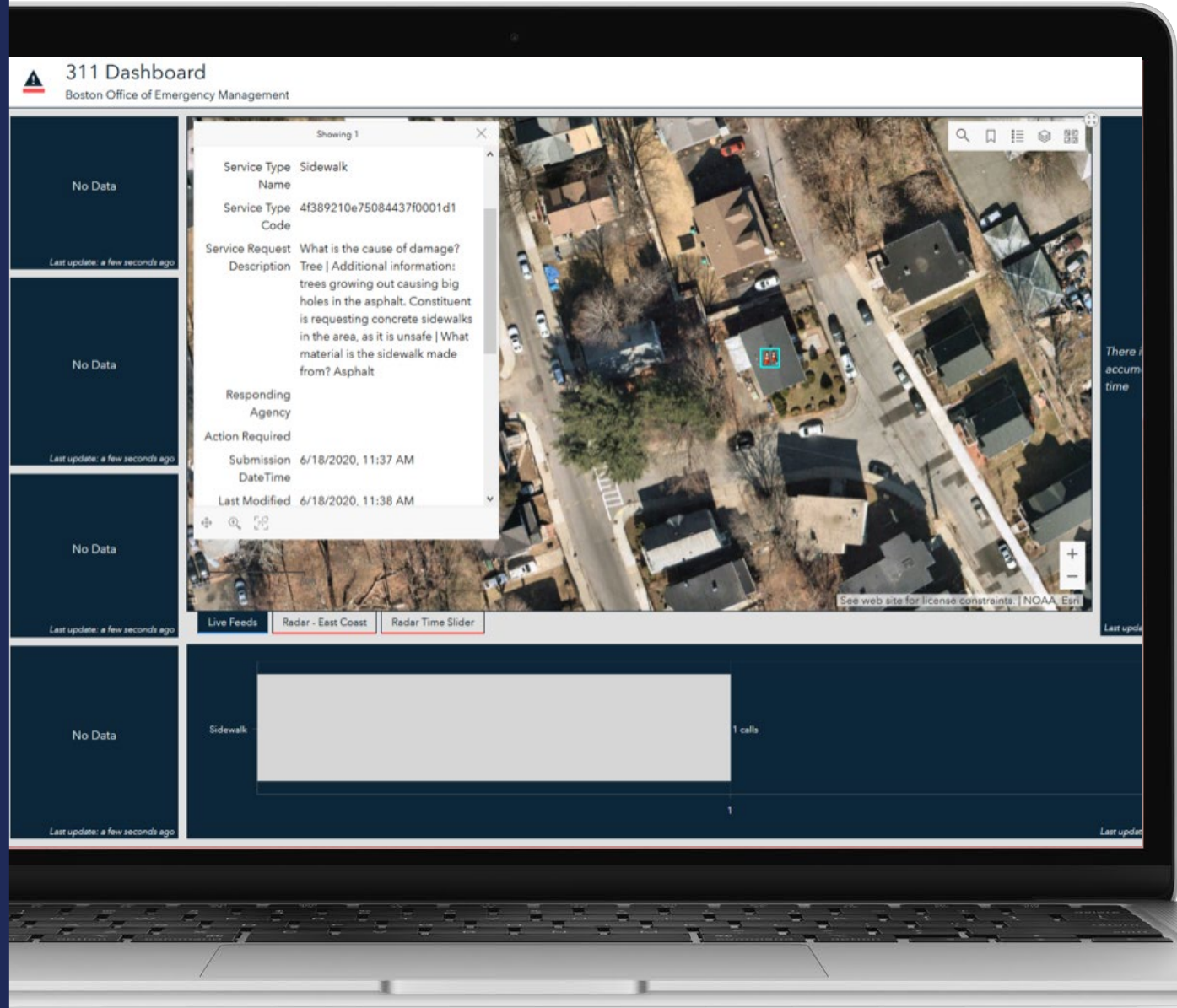
“We use the imagery in our Resource Tracker for Covid19 PPE so that our logistics team can use the imagery to coordinate deliveries”

# INTEGRATED WITH TRAFFIC INFORMATION





# INTEGRATED IN DASHBOARDS INCREASED SITUATIONAL AWARENESS



No Data  
Last update: a few seconds ago

No Data  
Last update: a few seconds ago

No Data  
Last update: a few seconds ago

No Data  
Last update: a few seconds ago

Showing 1

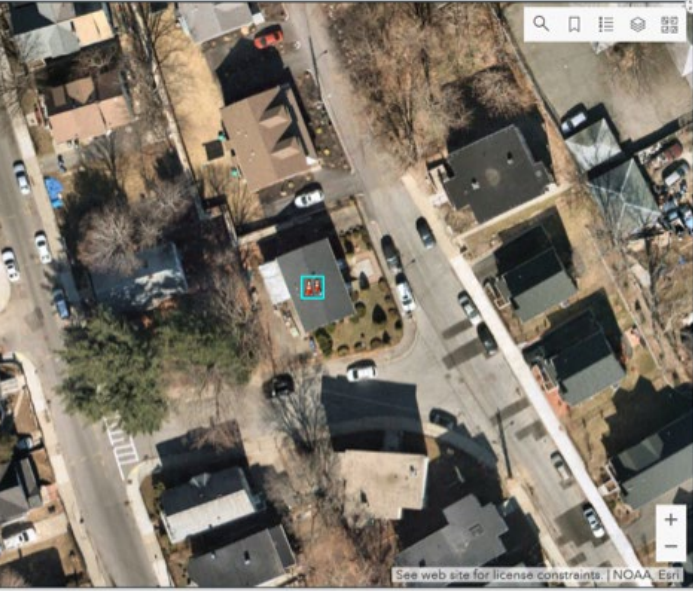
Service Type: Sidewalk  
Name: [redacted]  
Service Type Code: 4f389210e75084437f0001d1  
Code: [redacted]

Service Request Description: What is the cause of damage?  
Tree | Additional information: trees growing out causing big holes in the asphalt. Constituent is requesting concrete sidewalks in the area, as it is unsafe | What material is the sidewalk made from? Asphalt

Responding Agency: [redacted]

Action Required: [redacted]

Submission DateTime: 6/18/2020, 11:37 AM  
Last Modified: 6/18/2020, 11:38 AM



There is  
accum  
time

Live Feeds Radar - East Coast Radar Time Slider

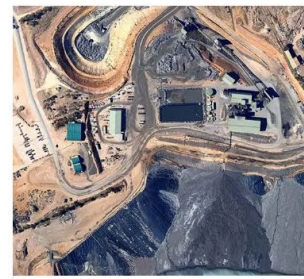


# ACCESS TO RELEVANT INFORMATION IN MORE DETAIL

# WANT MORE CUSTOMER STORIES?

Head to [Nearmap.com](https://www.nearmap.com), click on the Resources tab, and choose Customer Stories

<https://www.nearmap.com/us/en/aerial-map-view-customer-stories>



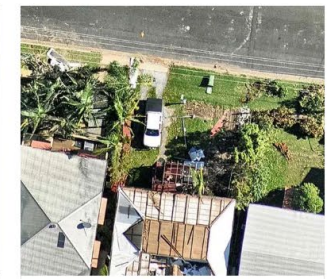
## DEDICATED TO PROTECTING LAND FROM POLLUTION &

Nearmap enables us to monitor unauthorised activities at a particular site... [Read more](#)



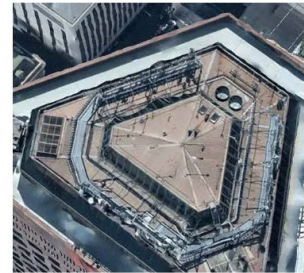
## DURHAM PUBLIC WORKS DRIVES NEW

With over four to five different image captures at high resolution, we can see... [Read more](#)



## ROTH PLUMBING CUTS OUT THE NEED FOR ON-SITE INSPECTIONS...

At the time (right after Cyclone Marcia), Nearmap had already snapped current... [Read more](#)



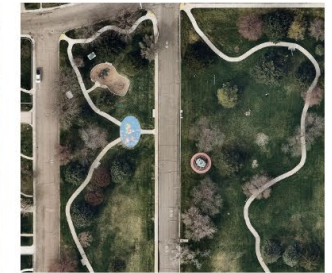
## EXPANDING INSIGHT INTO URBAN PLANNING

The benefit of Nearmap is that, when we're creating detailed planning-permit... [Read more](#)



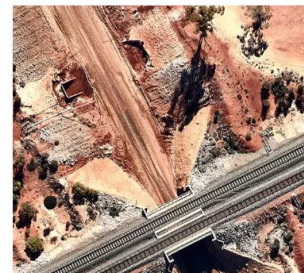
## YARRA VALLEY WATER SETTLES DISPUTES IN

We used the timeline to view an image of the property pre-dating the... [Read more](#)



## ELITE GROUNDS ACHIEVES GROUND-BREAKING INCREASES IN...

With the time and cost savings we've achieved through Nearmap, I only wish that... [Read more](#)



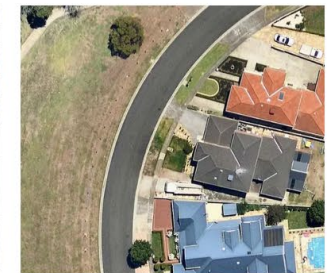
## ARC INFRASTRUCTURE NEEDED TO EXPAND VISIBILITY INTO A...

Nearmap's outstanding, high resolution, browser-based imagery enabled us to... [Read more](#)



## POWERCOR WANTED TO ENHANCE THE ACCURACY OF ITS...

By implementing Nearmap as a layer inside Google Earth Enterprise, we can... [Read more](#)

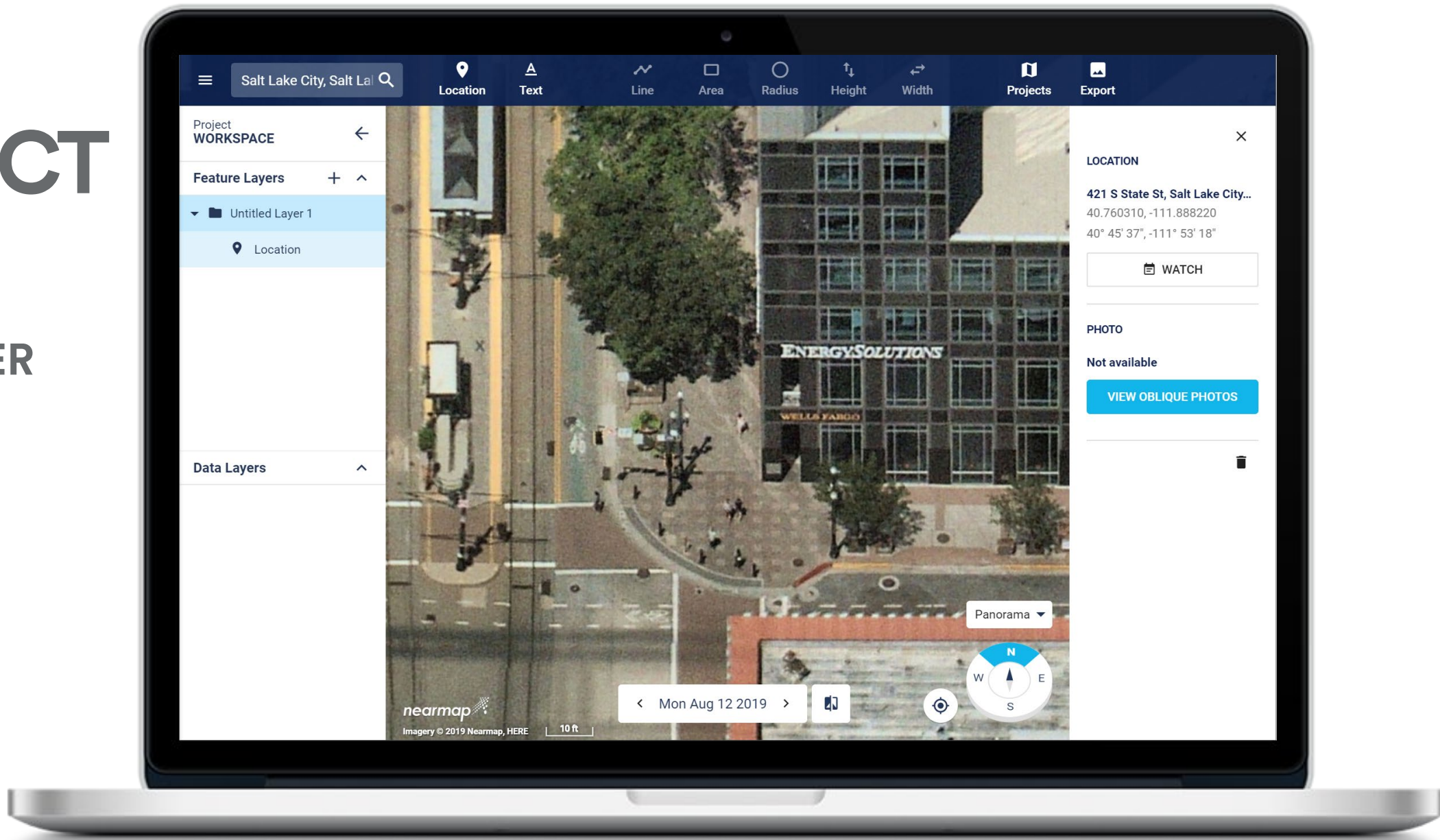


## ABSOLUTE BUILDING CONSULTANCY HALVES TIME TO PREPARE...

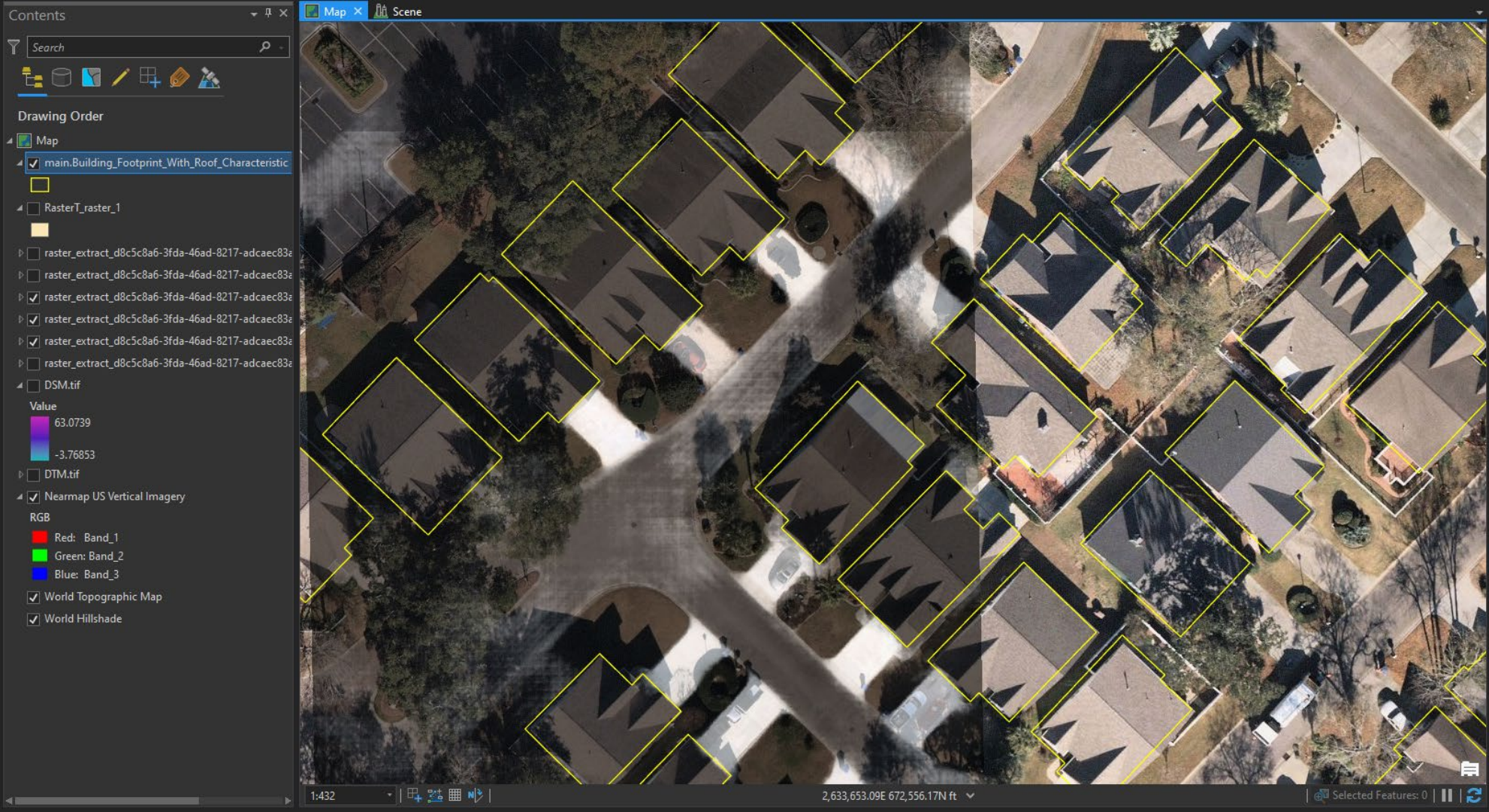
When somebody rings up requesting a quote, I access Nearmap to get an... [Read more](#)

# PRODUCT DEMO

## MAPBROWSER IN ACTION



# NEARMAP AI & ARCGIS PRO – EXTRACTING INSIGHTS





# NEARMAP AI & ARCGIS PRO – EXTRACTING INSIGHTS

The screenshot displays the ArcGIS Pro interface. On the left, the 'Contents' pane shows the 'Drawing Order' with 'main.Building\_Footprint\_With\_Roof\_Characteristic' selected. The main map area shows an aerial view of a residential neighborhood with red outlines around several buildings. Below the map, a data table is visible, showing extracted building data.

fid	geom	property_id	survey_date	address	longitude	latitude	building_confidence_percentage	area_estimate_sqft	dom_roof_material	roof_material_confidence_perce
1	Polygon	0904-014-00-01-00-101-000	2019-09-25	84 ANNS LN	-72.405887	40.880415	99	2454	Shingle Roof	
2	Polygon	0904-014-00-01-00-026-000	2019-09-25	60 JOHNNY LN	-72.405098	40.881647	88	147	Other	
3	Polygon	0904-014-00-01-00-026-000	2019-09-25	60 JOHNNY LN	-72.405351	40.881463	99	4251	Shingle Roof	
4	Polygon	0904-014-00-01-00-099-000	2019-09-25	72 ANNS LN	-72.405472	40.880412	99	3016	Shingle Roof	
5	Polygon	0904-014-00-01-00-096-000	2019-09-25	38 ANNS LN	-72.404244	40.88036	99	2175	Shingle Roof	
6	Polygon	0904-014-00-01-00-048-000	2019-09-25	29 ANNS LN	-72.404022	40.880874	99	3386	Shingle Roof	
7	Polygon	0904-014-00-01-00-083-000	2019-09-25	69 LEOS LN	-72.403374	40.881568	99	648	Shingle Roof	
8	Polygon	0904-014-00-01-00-083-000	2019-09-25	69 LEOS LN	-72.403178	40.881423	99	3522	Shingle Roof	

# NEARMAP AI – EXTRACTING INSIGHTS



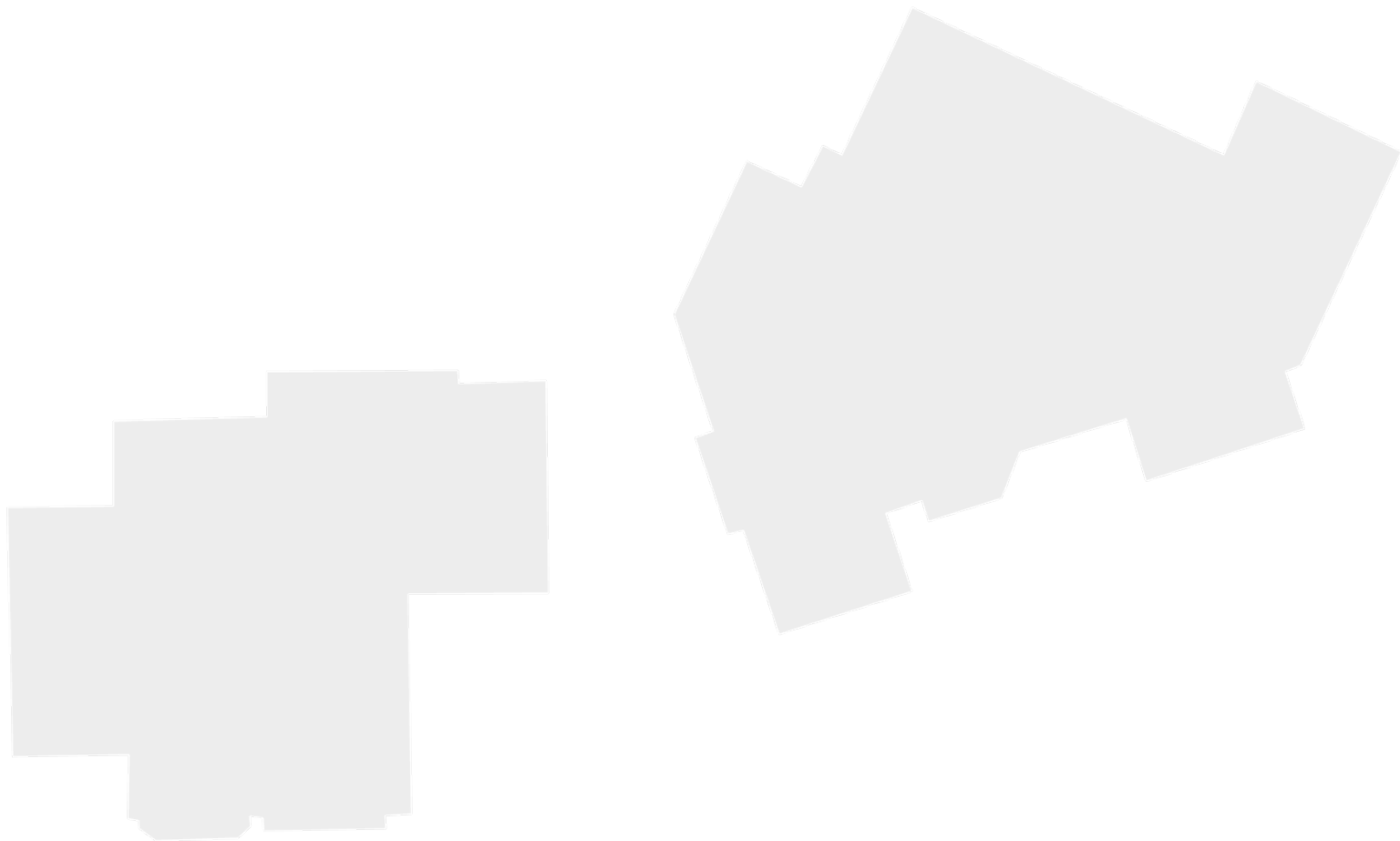


# NEARMAP AI AND 3D – EXAMPLE OF WHAT'S POSSIBLE

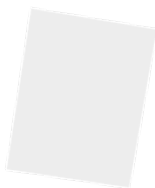


ArcGIS Pro



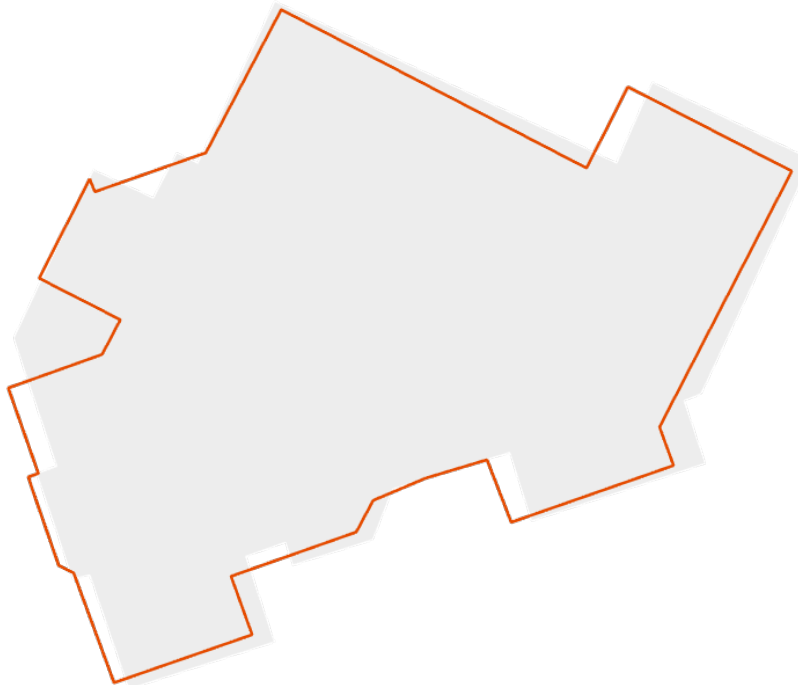
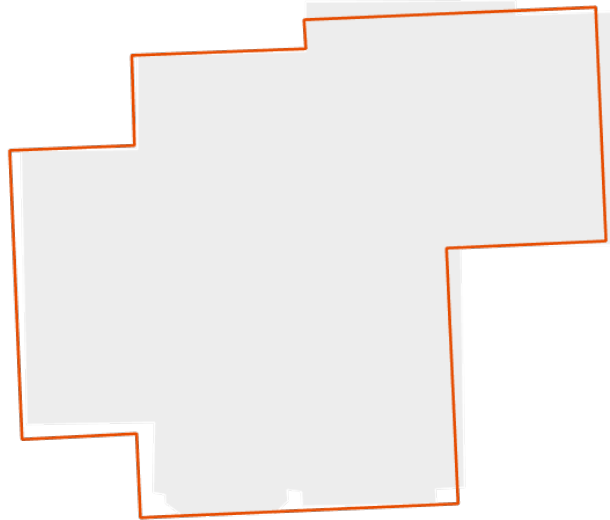


# BUILDING OUTLINES FROM ESRI'S LIVING ATLAS

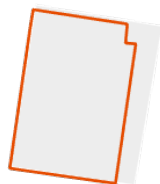


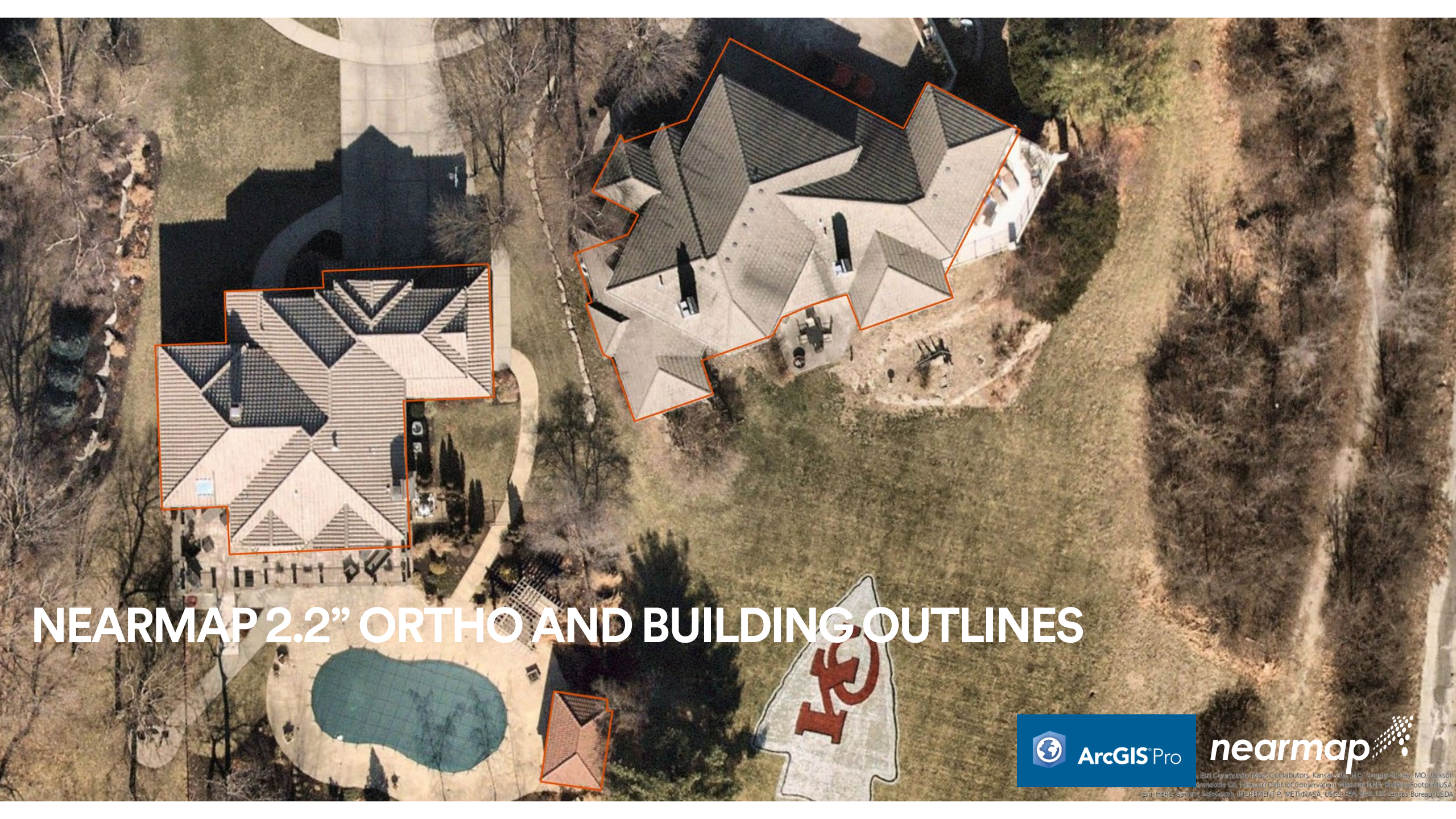
# ESRI DEFAULT IMAGERY





# NEARMAP BUILDING OUTLINES FROM AI ON LIVING ATLAS





# NEARMAP 2.2" ORTHO AND BUILDING OUTLINES



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# DIGITAL SURFACE MODEL + AI BUILDING OUTLINES



ArcGIS Pro



Esri, Esri Community Maps Contributors, Kansas City, MO, County of Clay, MO, Jackson  
Wyandotte Co, Missouri Dept. of Conservation, Missouri DNR, BuildingFootprintUSA,  
Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA



# BARE EARTH DEM + AI BUILDING OUTLINES



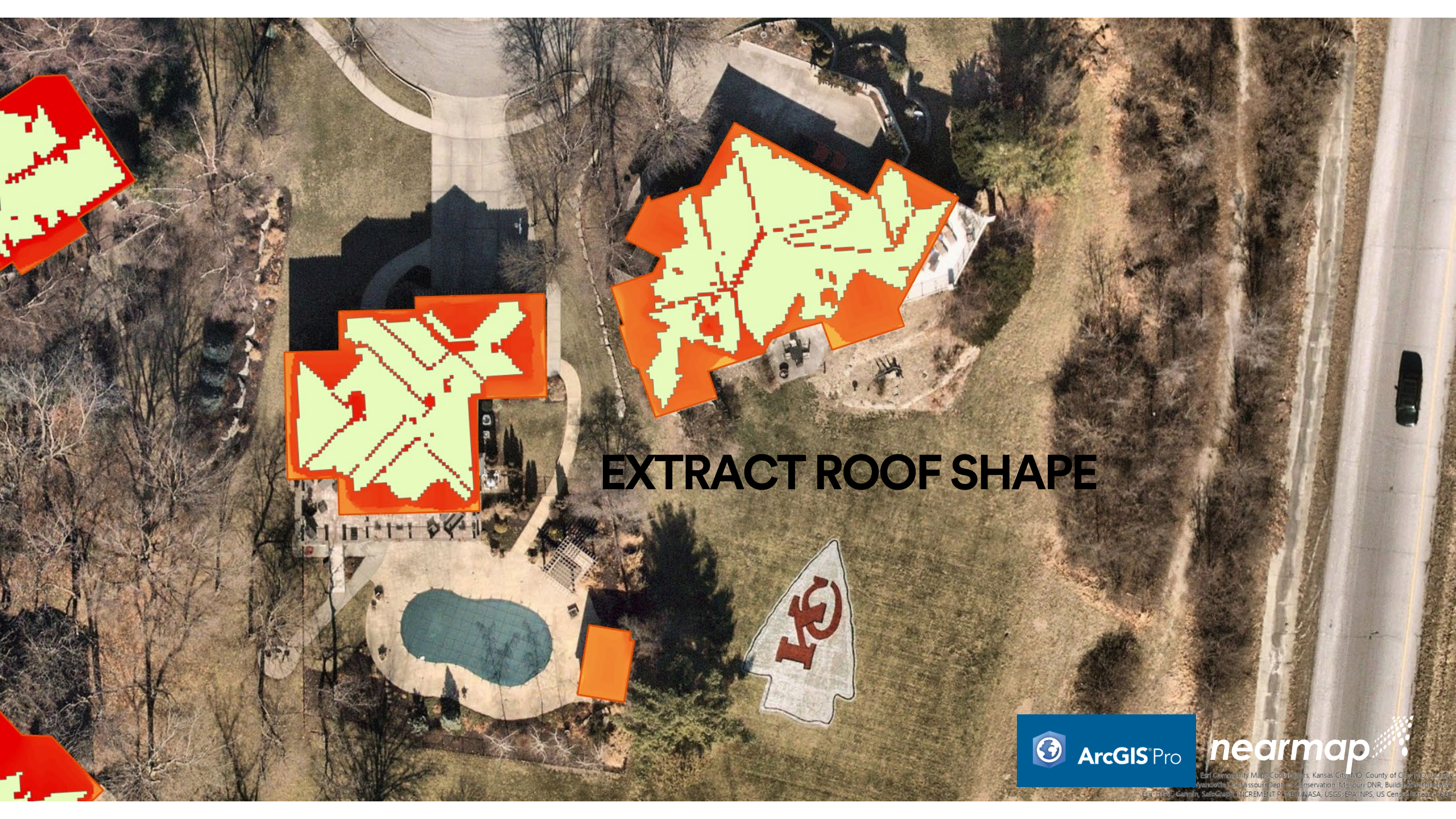
ArcGIS Pro



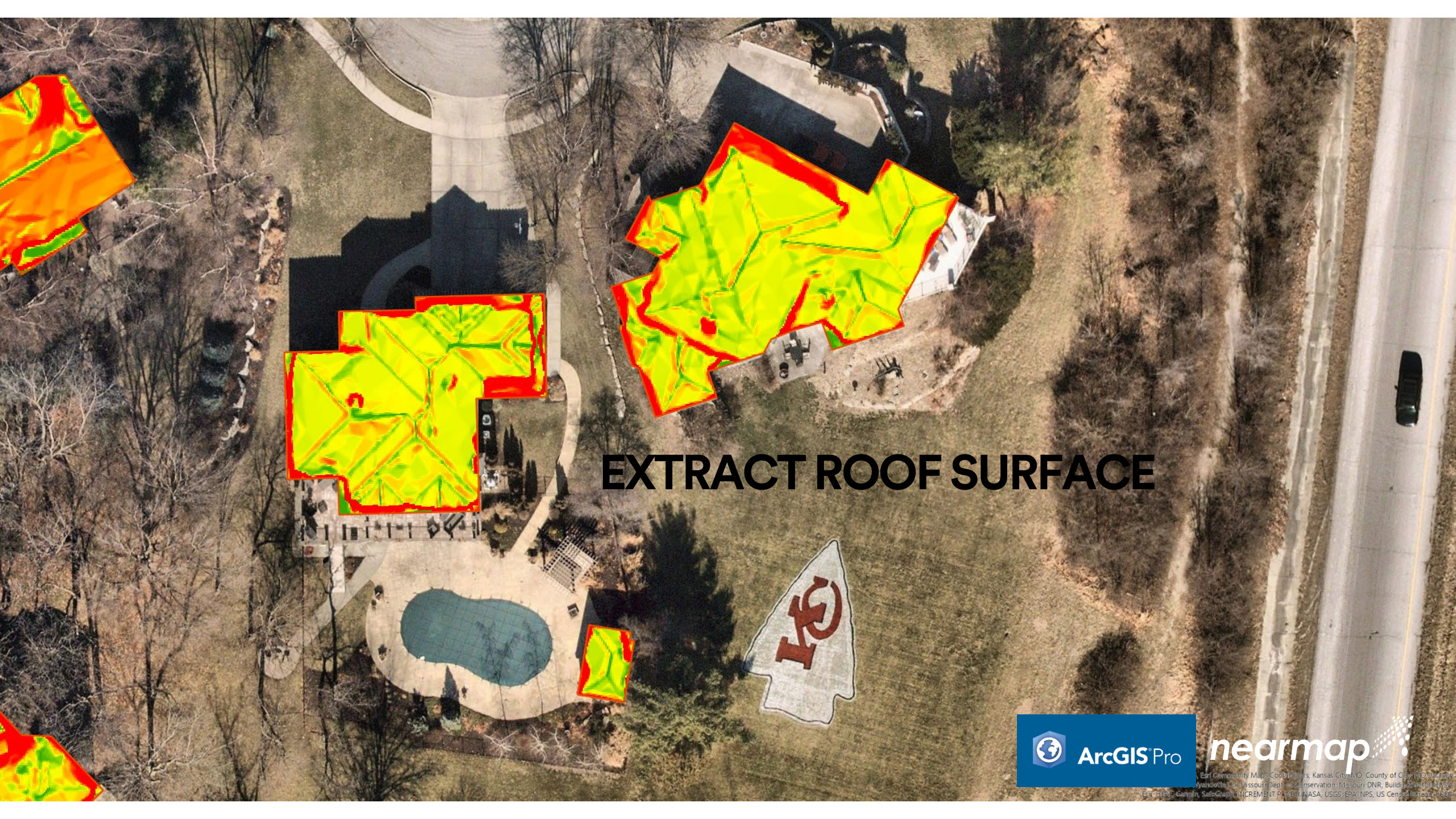
Esri, Esri Community Maps Contributors, Kansas City, MO, County of Clay, MO, Jackson  
Wyandotte Co, Missouri Dept. of Conservation, Missouri DNR, BuildingFootprintUSA,  
Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

**DSM MINUS DEM = NORMALIZED DSM (NDSM)**





# EXTRACT ROOF SHAPE



# EXTRACT ROOF SURFACE















# LOD2 BUILDINGS OVERLAID ON NEARMAP TEXTURED MESH





3D TEXTURED MESH TREES FORM LEAF ON CAPTURE  
CLIPPED FROM AI VEGETATION LAYERS AND ADDED TO  
LEAF OFF CAPTURE



ArcGIS Pro

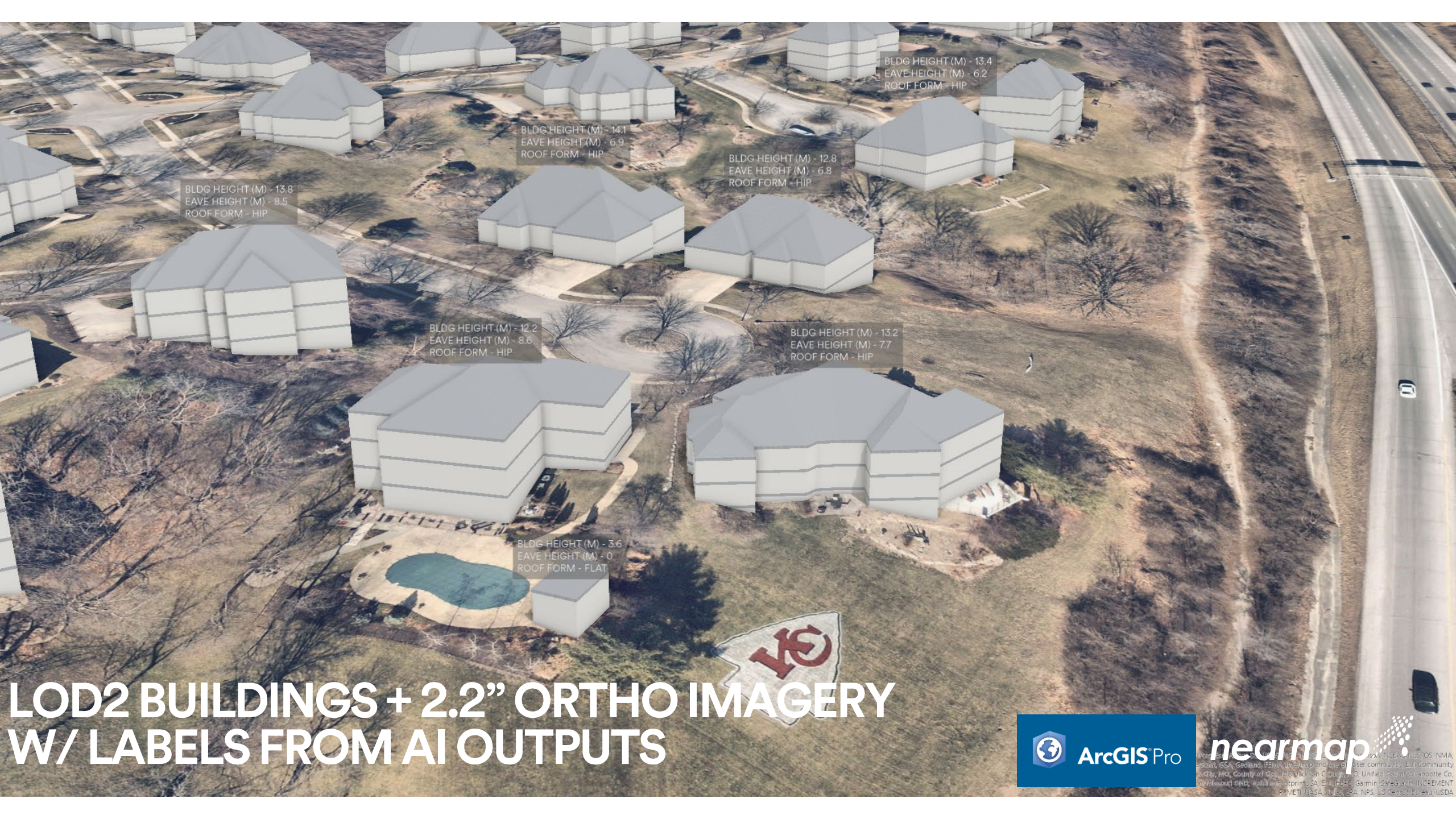


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**LOD2 BUILDINGS + 3D TEXTURED  
MESH TREES + 2.2" ORTHO IMAGERY**



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BLDG HEIGHT (M) - 13.4  
EAVE HEIGHT (M) - 6.2  
ROOF FORM - HIP

BLDG HEIGHT (M) - 14.1  
EAVE HEIGHT (M) - 6.9  
ROOF FORM - HIP

BLDG HEIGHT (M) - 12.8  
EAVE HEIGHT (M) - 6.8  
ROOF FORM - HIP

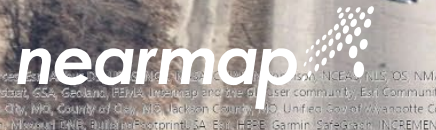
BLDG HEIGHT (M) - 13.8  
EAVE HEIGHT (M) - 8.5  
ROOF FORM - HIP

BLDG HEIGHT (M) - 12.2  
EAVE HEIGHT (M) - 8.6  
ROOF FORM - HIP

BLDG HEIGHT (M) - 13.2  
EAVE HEIGHT (M) - 7.7  
ROOF FORM - HIP

BLDG HEIGHT (M) - 3.6  
EAVE HEIGHT (M) - 0  
ROOF FORM - FLAT

# LOD2 BUILDINGS + 2.2" ORTHO IMAGERY W/ LABELS FROM AI OUTPUTS



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BLDG HEIGHT (M) - 13.4  
EAVE HEIGHT (M) - 6.2  
ROOF FORM - HIP

BLDG HEIGHT (M) - 14.1  
EAVE HEIGHT (M) - 6.9  
ROOF FORM - HIP

BLDG HEIGHT (M) - 12.8  
EAVE HEIGHT (M) - 6.8  
ROOF FORM - HIP

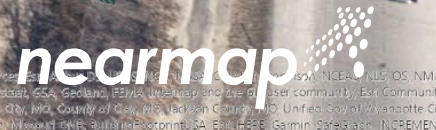
BLDG HEIGHT (M) - 13.8  
EAVE HEIGHT (M) - 8.5  
ROOF FORM - HIP

BLDG HEIGHT (M) - 12.2  
EAVE HEIGHT (M) - 8.6  
ROOF FORM - HIP

BLDG HEIGHT (M) - 13.2  
EAVE HEIGHT (M) - 7.7  
ROOF FORM - HIP

BLDG HEIGHT (M) - 3.6  
EAVE HEIGHT (M) - 0  
ROOF FORM - FLAT

# LOD2 BUILDINGS + TREES EXTRACTED FROM POINT CLOUD + 2.2" ORTHO IMAGERY



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