

we image and map what your eyes can't see

e4 can image and map existing conditions below the waterline and into the subsurface. Our measurements are crucial to our clients' ability to plan, design, build, and monitor marine construction near shorelines.

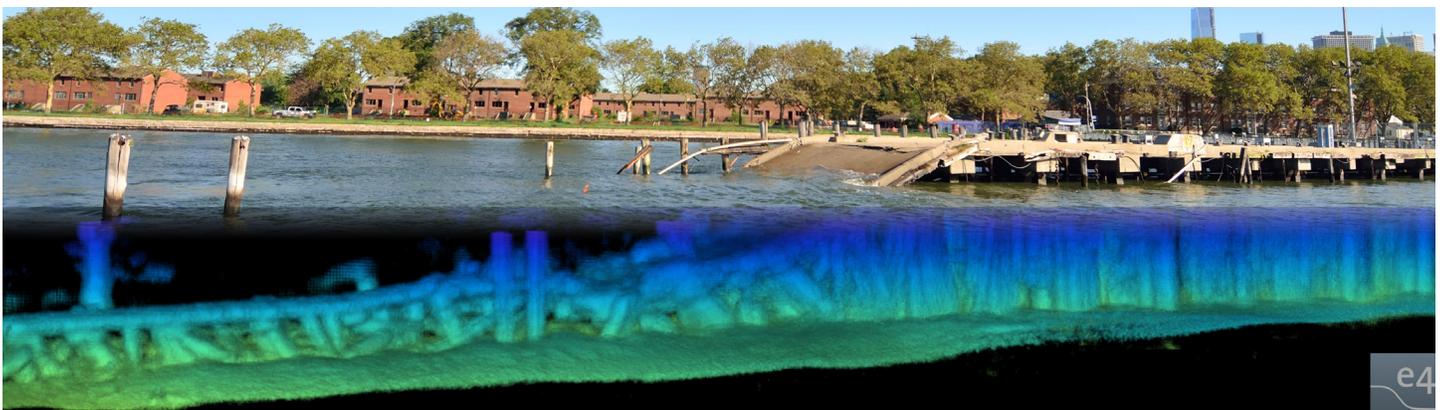
- Remote measurements fill in the gaps between borings and identify changes in subsurface geology. This means less guesswork and a clearer picture of what lies below the surface.
- Remote measurements are faster and less expensive and cover more area than comprehensive boring programs. Because data density is greater, obstructions and hazards are more likely to be identified.
- Accurate imaging and mapping of existing structures and subsurface conditions reduces the likelihood of change orders during rehabilitation and replacement.
- Structural inspection and assessment combined with geophysical as-builts allow for accurate Auto CAD modeling of life expectancy and loading limits.
- Geophysical mapping provides high resolution maps of existing conditions. These maps can quantify changes and help monitor construction progress to ensure that specifications are met.
- Measurements can be exported into Auto CAD and GIS software and integrated into design and construction software. Data is only as valuable as its utility to the decision makers and site operators.

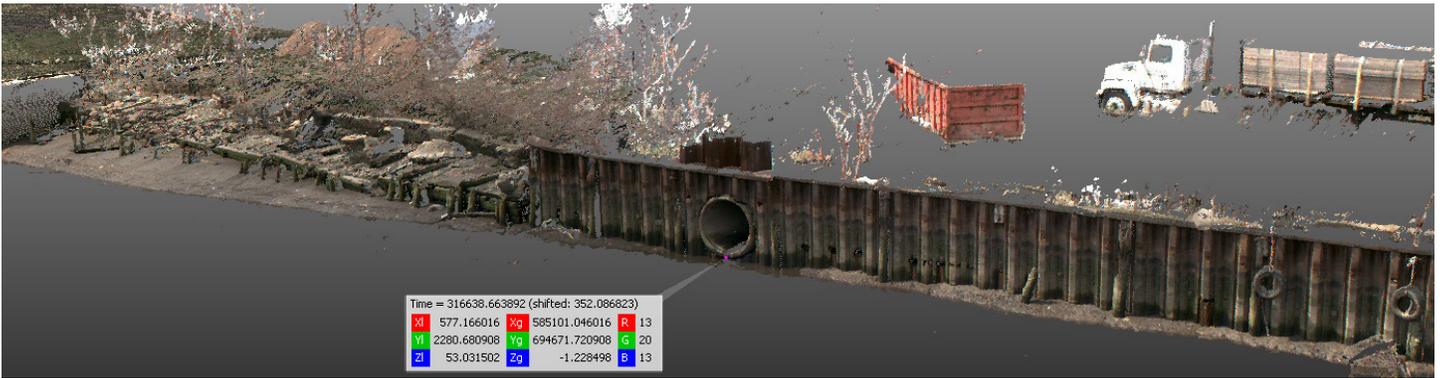
e4 results put you in control

- Locate, image and assess condition of marine structures.
- Map stratigraphy in high definition
- Map top of rock in high definition
- Identify and quantify contaminated sediments
- Locate map, and image piles, piers, bulkheads and docks
- Locate and map existing utilities and infrastructure
- Locate and map subsurface obstructions
- Locate and map geohazards
- Monitor pile driving sound levels in water

measurements

- 3-D point cloud mapping above water line
- 3-D imaging and point clouds below water line
- Bathymetry
- Side scan orthosonography
- Magnetic field mapping
- Seismic profiling
- Geotechnical borings and rock cores
- Sediment sampling and testing
- Geologic cross sections
- Pile tip elevations
- Hydro acoustic monitoring

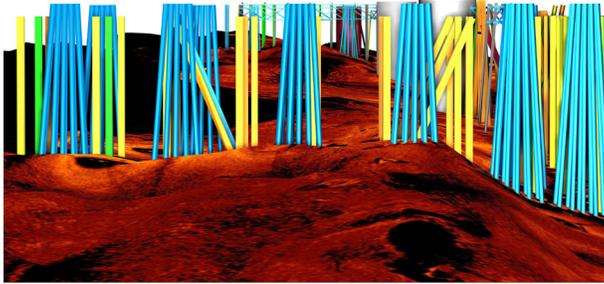




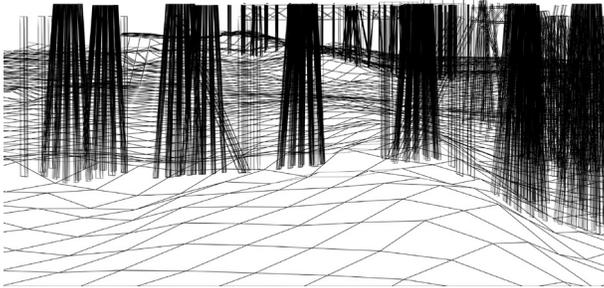
Mobile LiDAR acquired from a vessel on river. The point cloud mapped the location and condition of existing waterfront structures. Locations and elevations were incorporated into final design drawings for a major riverside park redevelopment. This 3-D point cloud is colored by co-located photos.



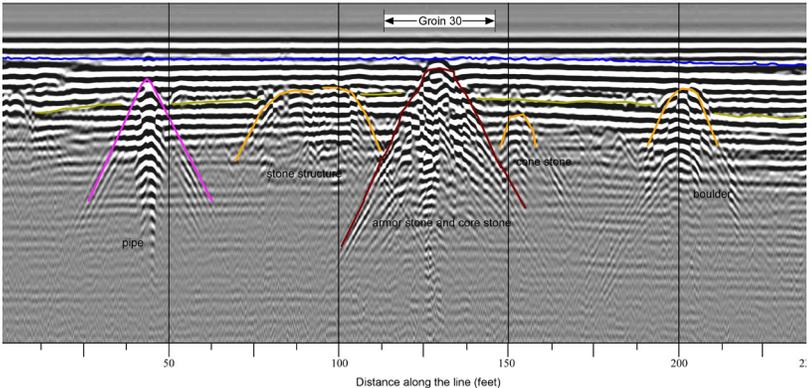
works model with Ocean and Coastal Consultants damage grade



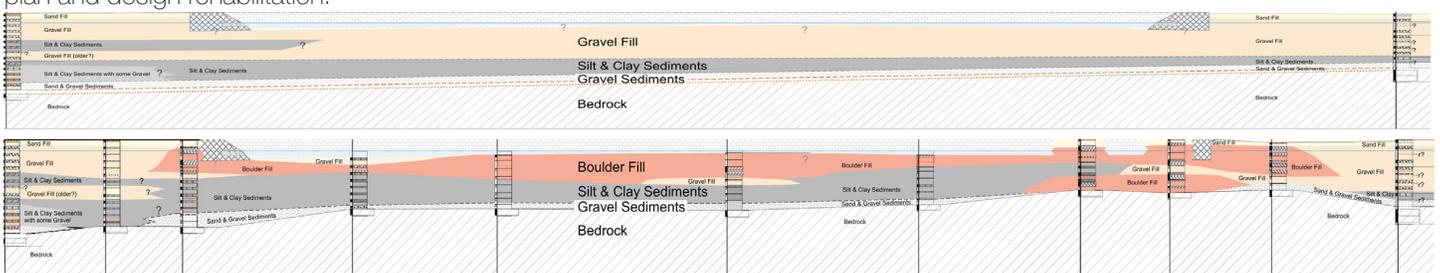
works wireframe model



Underwater 3-D mapping and CAD model. The owner of this pier hired e4sciences to image, map, inspect and evaluate a petroleum transfer dock. Data was combined to create an as-built CAD model used for finite element analysis. Armed with this data the owner was able to forecast remaining lifespan and efficiently plan and design rehabilitation.



GPR locates buried infrastructure and debris in the near shore (top). Oblique aerial photography documenting the condition of groins (bottom left).



Borings and geotechnical cross sections. Originally the project owner drilled only two borings to determine the subsurface stratigraphy resulting in a simple stratigraphic model (top), the contractor hired e4 to resolve the exiting conditions through appropriately spaced geotechnical investigation resulting in a refined model (bottom). The contractor used this data to support a \$5MM change order.