Planning & Design Visualization

Westchester Municipal Planning Federation Land Us Training Institute

March 15, 2023

7PM LUTI Session 2

An Integrated Process
A Collaborative discussion with Architects, Engineers, and Planners

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JMC Planning & Engineering | Rob Aiello, PE

Westchester Municipal Planning Federation
2023 Design and Land Use Visualization Program Outline

Effective presentation techniques enhance Review Board's ability to visualize design decisions.
How are the levels of visualization material influenced by municipal submission standards or specific Review Board requests.

1

Overview of traditional design, land use documentation focusing on visual communication techniques relied upon for centuries.

2

Evolution of design visioning and land use review communication.

3

Emerging technologies … the future is here for next generation design and visualization.

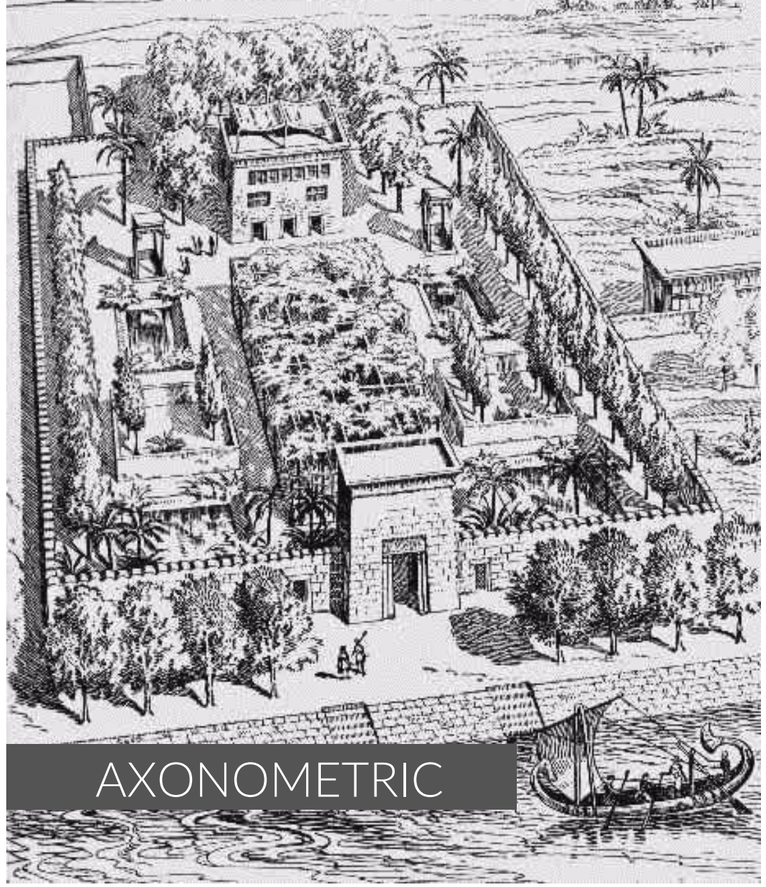
Evolving Methodology

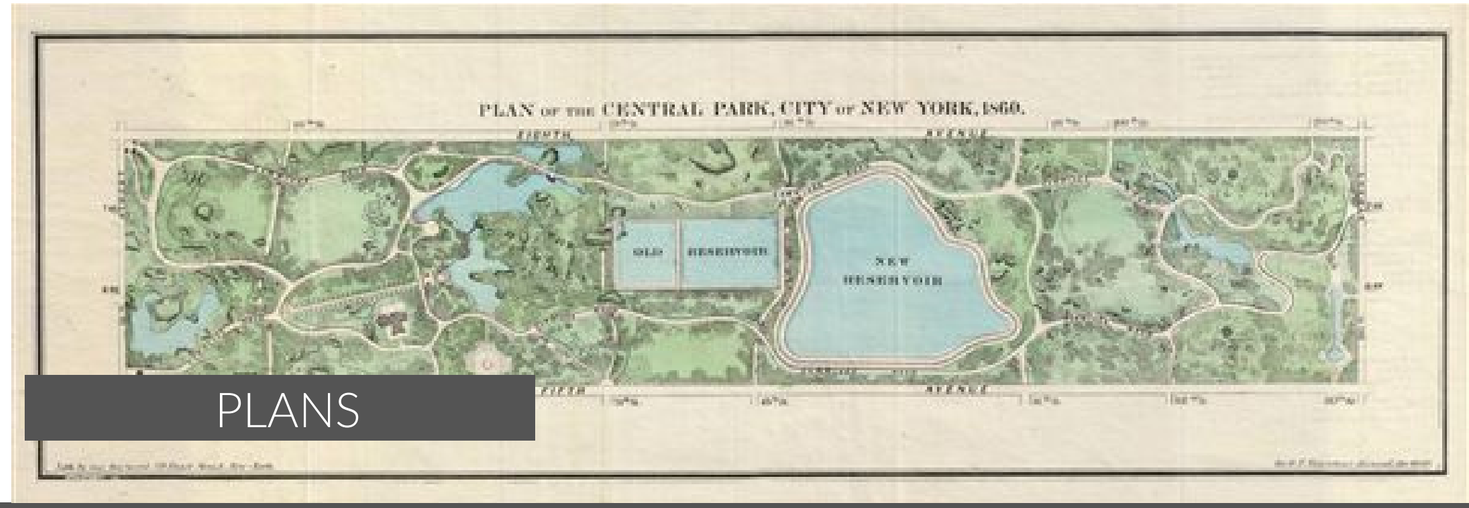
Historically much of this interface has been facilitated by plan graphics as micro and macro design communication tools and/or axonometric image tools and static perspectives.

- **Static Perspectives**
- **Axonometric**
- **Plan Graphics**

Design and Land Use visualization review have utilized numerous graphic methodologies throughout history towards depicting anticipated built environment outcomes.

Plan, section and elevation graphics have been predominantly relied upon for depiction and visually communicating. Stationary view 3D perspectives were laboriously created and rendered supporting visualization.





Evolving Methodology

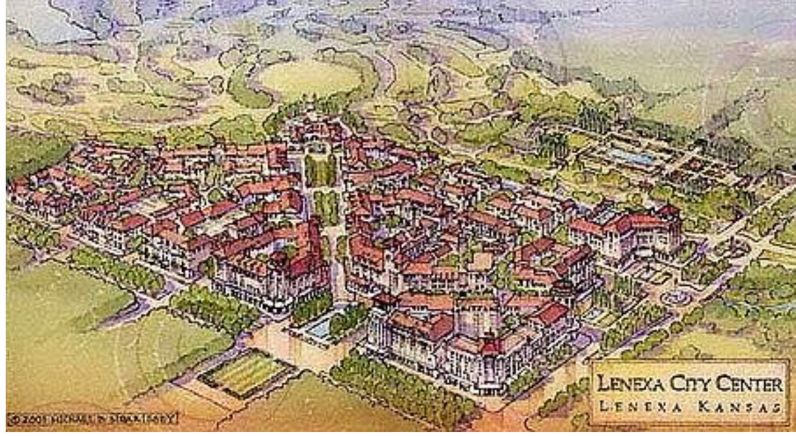
Ranges of techniques have emerged over time…from photo realism to more artful presentation.

- **Site and building modeling via Revit or similar software.**
- **Google Earth image captures with layered rendering techniques.**

Evolving Methodology

Integration of context and site analysis.

- **Municipal/GIS base plan data.**
- **AutoCAD/other plan/elevation data.**
- **Photo survey/established station point views.**
- **Rendering via various software, filters/techniques or 'hand-rendered'.**



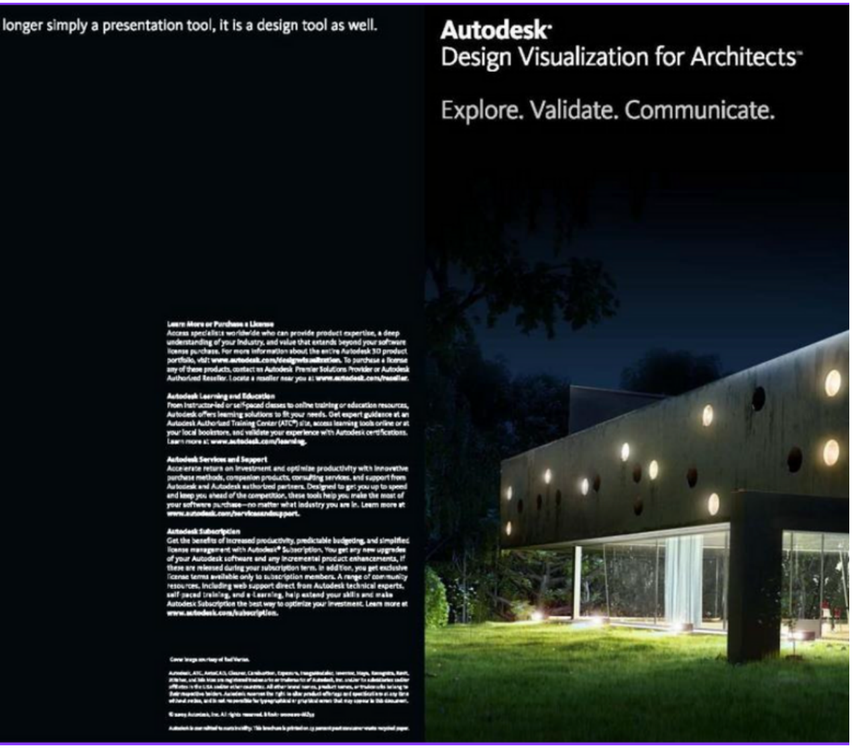
EXISTING PROPOSED

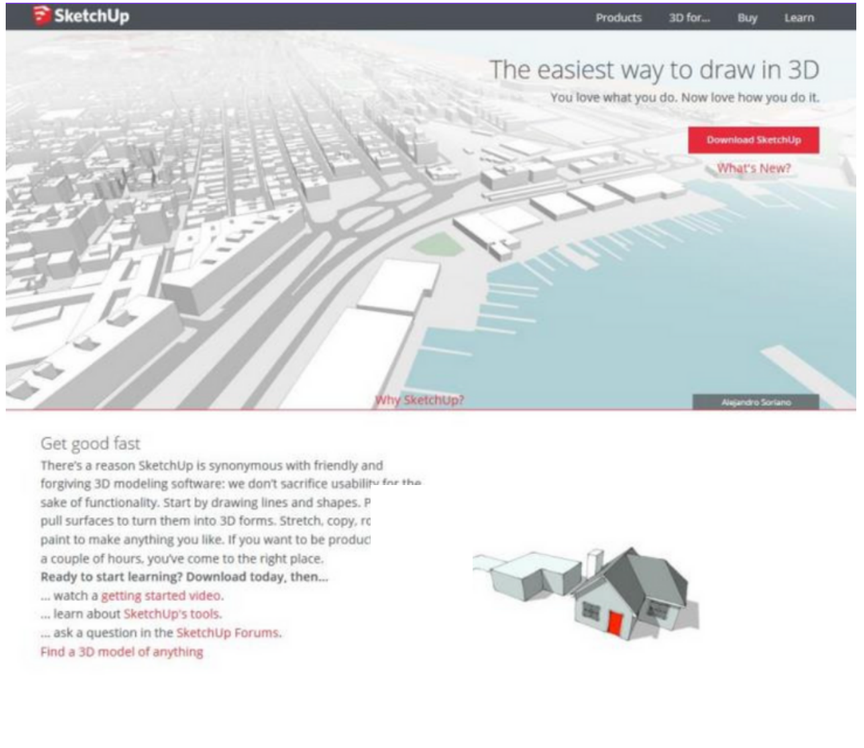
Complex visualizations achieve via numerous integrated site context and building modeling software.

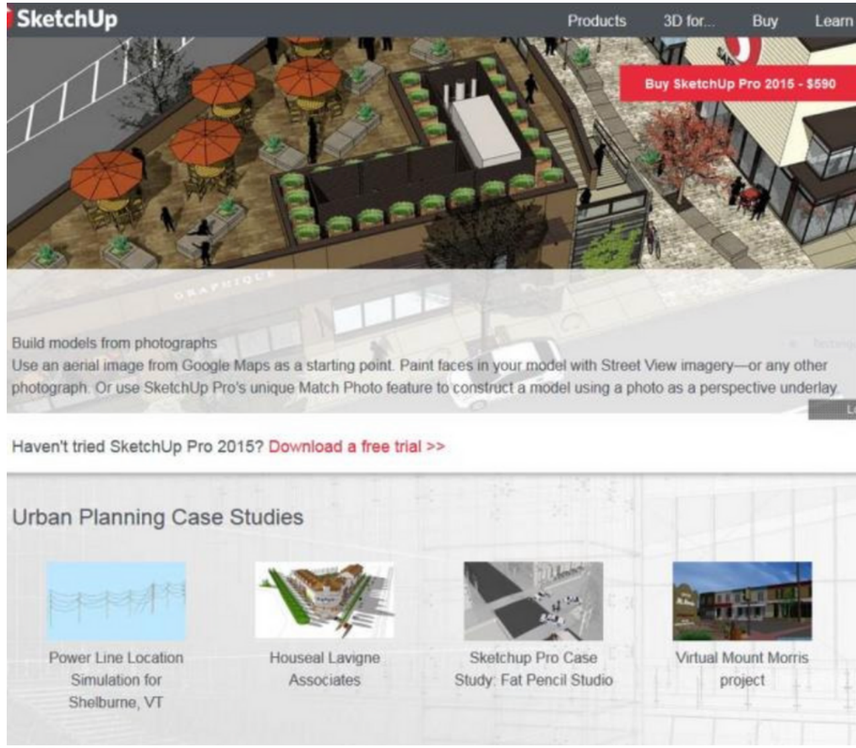
Visualization Plateau

Utilizing 3D software enhancements over the past 25 years, simplistic wireframe massing models have also supported hand drawn design overlay renderings.

Traditional 2D drawing software platforms are 3D enabled.







Beyond the introduction of computer aided drafting and design during the late 70's through the late 90's next generation tools emerged in the 2000's enhancing 3D visualization methodologies.

To a limited extent, these methodologies still relied on merging science and art.

Land Use Design, Review and Visualization Mesh Points

Application submission materials, municipal/staff review, municipal consultant review, land use board or commission review, stakeholder/public review.

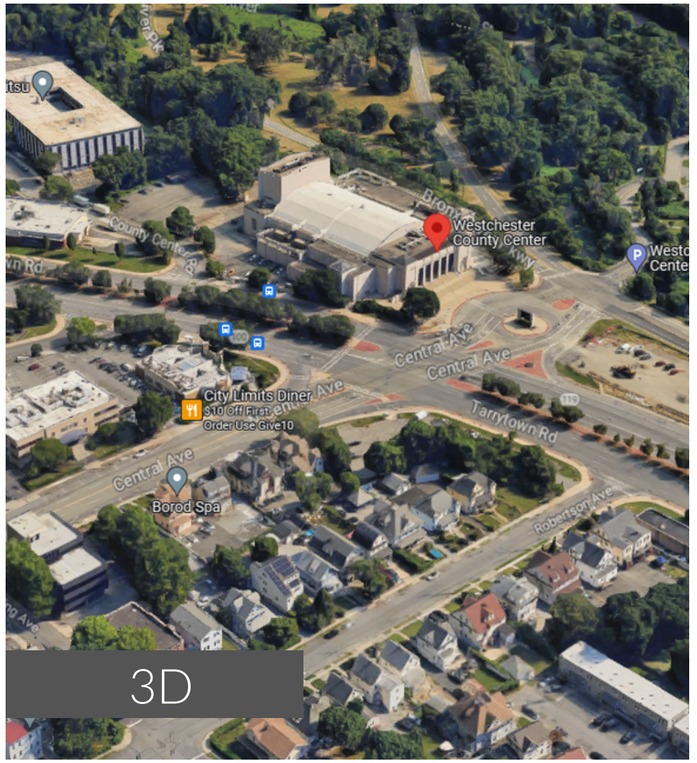
Municipal Land Use review boards, stake holders and end users have access to the next generation of emerging technology in unprecedented levels compared to the past 50 years of visualization.

Advanced tools and resources include…

Google Tools

The world according to Google:

- **Google Earth Maps**
- **Google 3D Maps**
- **Google Street View**
- **Google Volumetric Metrics**



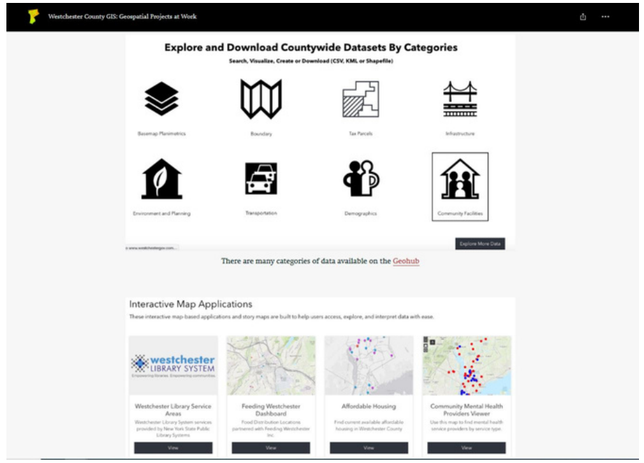
Enhanced Government Data Bases

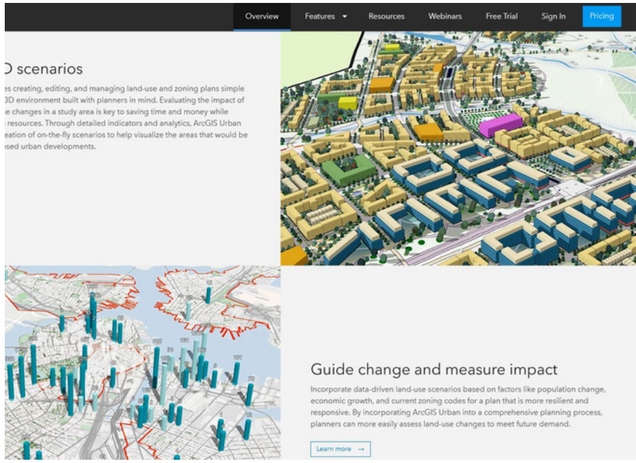
Demographic and Economic Statistics in conjunction with land use-based data.

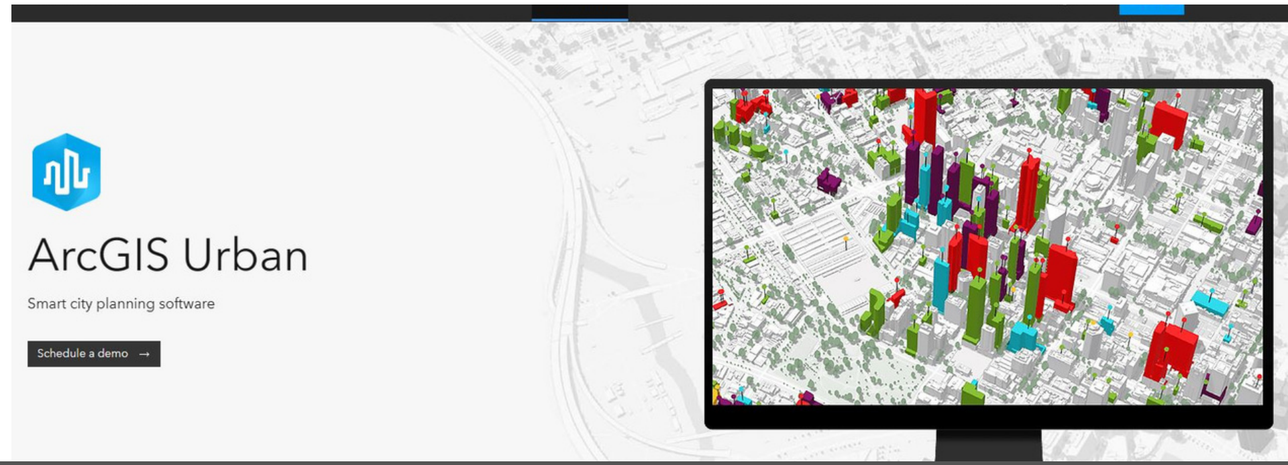
- 2D Data
- 3D Data

Evolving software resources for design visualization beyond SketchUp, AutoCAD based modeling or similar drafting-based programs include: REVIT, Rhino, Twin Motion, Vector Works, TinkerCAD, digital ‘in field’ scanning and drone scans …

In conjunction with these platforms numerous supporting resources exist which include local and regional land use data [Westchester GIS and local municipal resources of existing community fabric modeling] which can be utilized towards enhancing your work in accurately visualizing design communication



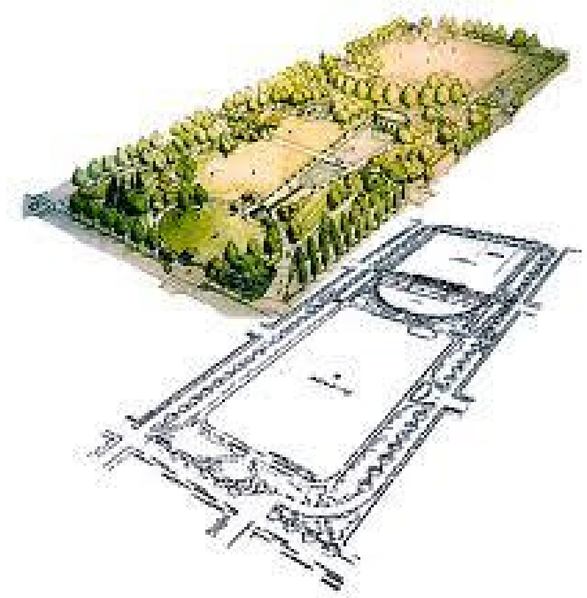




Evolving Methodology

Integrating layers of land use and design data, concepts and theory:

- **Merging plan graphics and 3D visualizations aligned for comparison.**
- **Macro Planning and Design Visualization.**
- **Visualization depicting Micro examples of desired design relationships.**



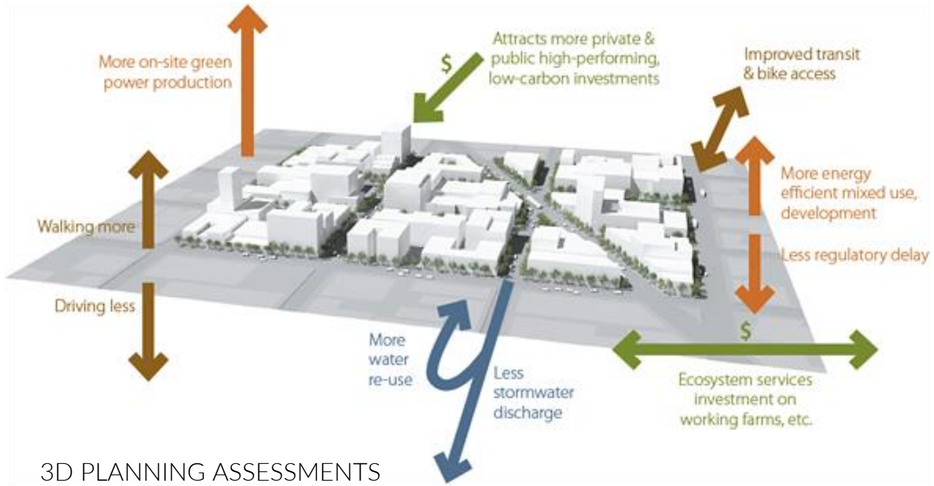
MACRO

MICRO

Evolving Methodology

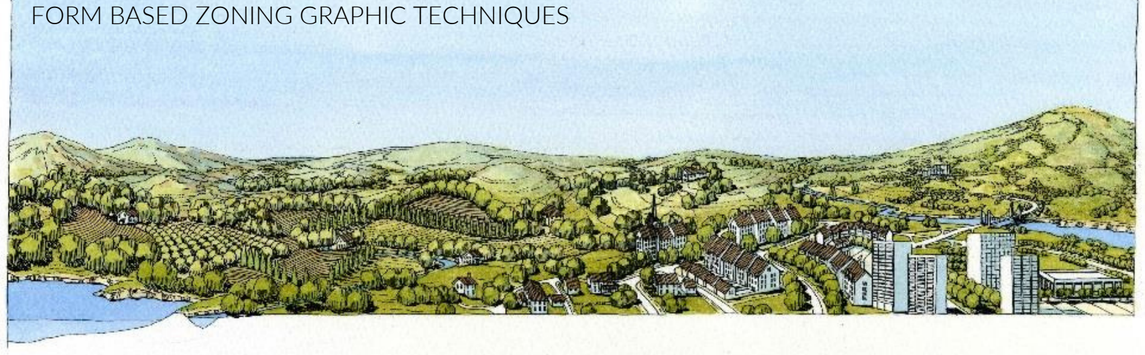
Planning and design theory or initiatives enhanced visualization of all supporting information

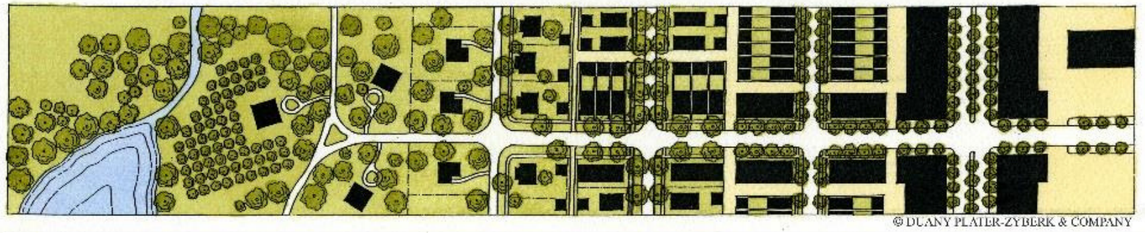
- 3D Planning Assessments
- Form based zoning graphic techniques
- Multi Layered Planning Data Utilization Enhanced Graphics Techniques



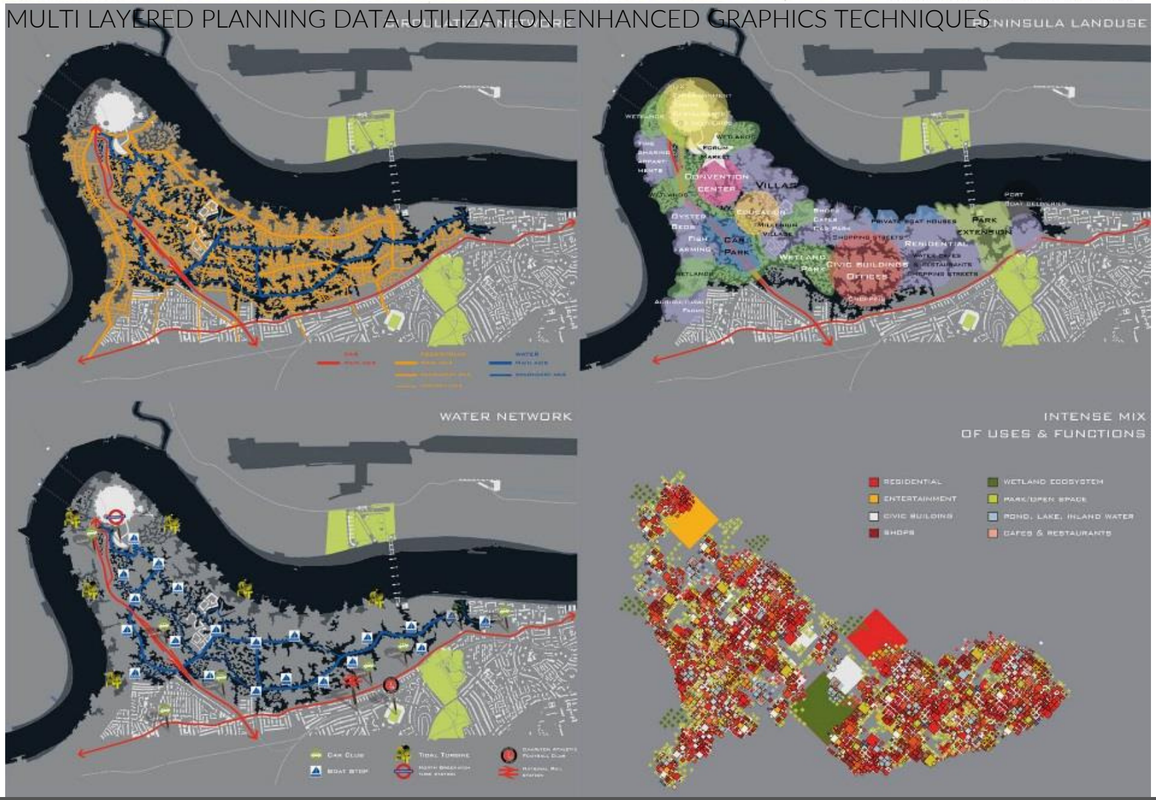
3D PLANNING ASSESSMENTS

FORM BASED ZONING GRAPHIC TECHNIQUES



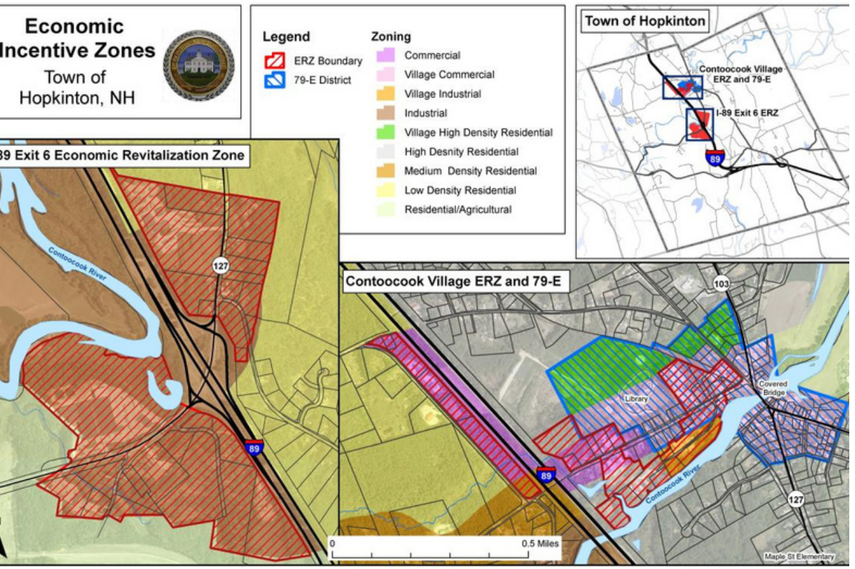


MULTI LAYERED PLANNING DATA UTILIZATION ENHANCED GRAPHICS TECHNIQUES

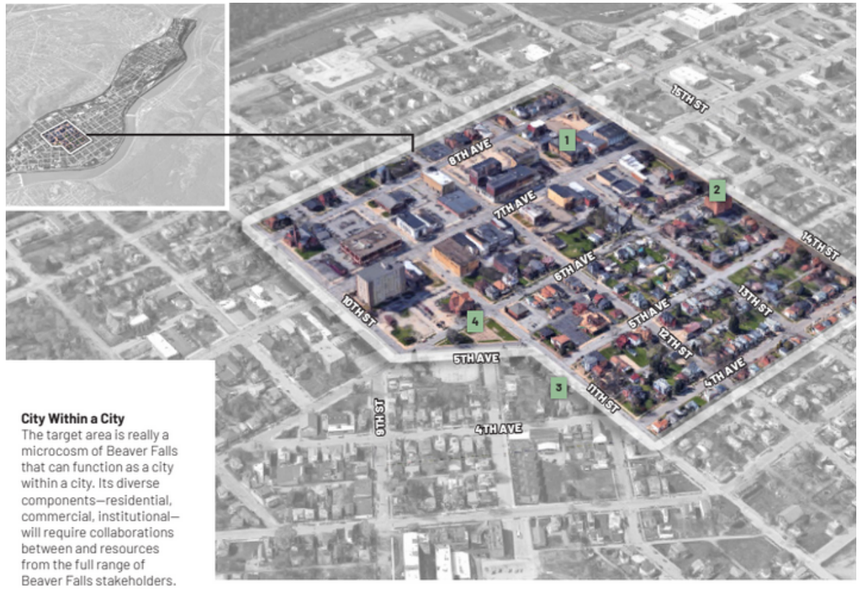


Base Information Enhancements
What are Land Use and Design Influencers?

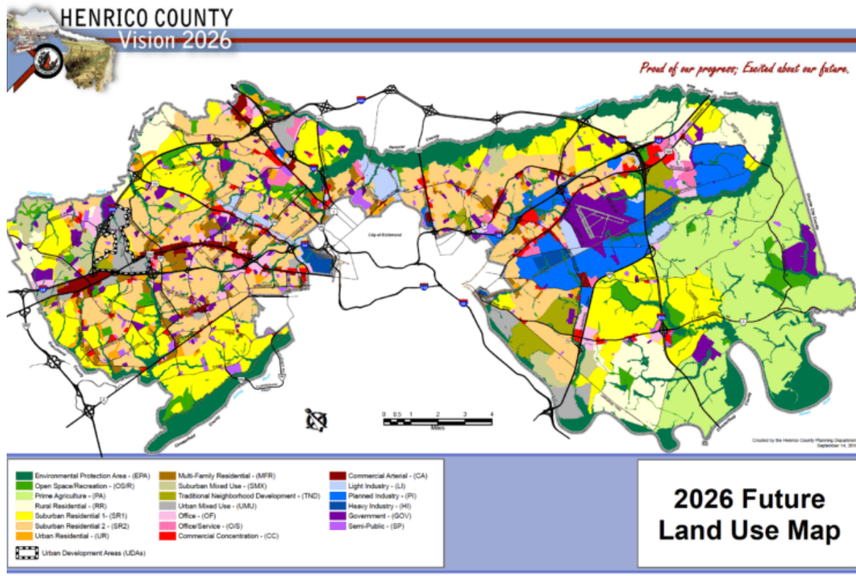
Beyond project specific review elements, Design and Visualization may include graphic depictions of Land Use analysis categories extracted from a community's Master or Comprehensive Plan documents.



Economic Incentive Zones Map



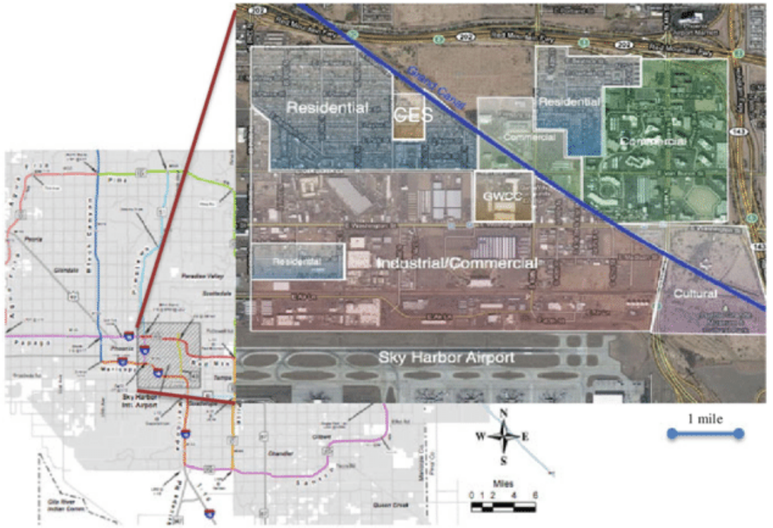
Targeted Neighborhood Revitalization Areas



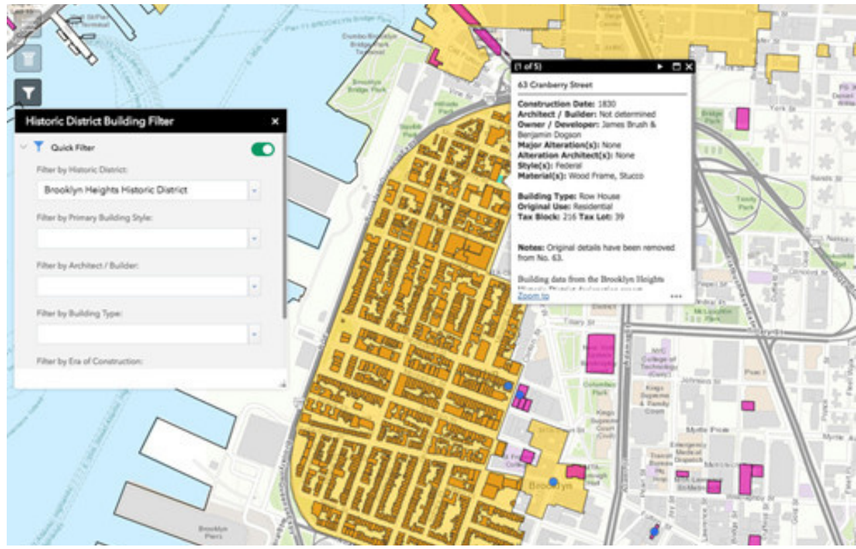
Urban Suburban Preservation Area Map

Base Information Enhancements
What are Land Use and Design Influencers?

Transit Oriented District



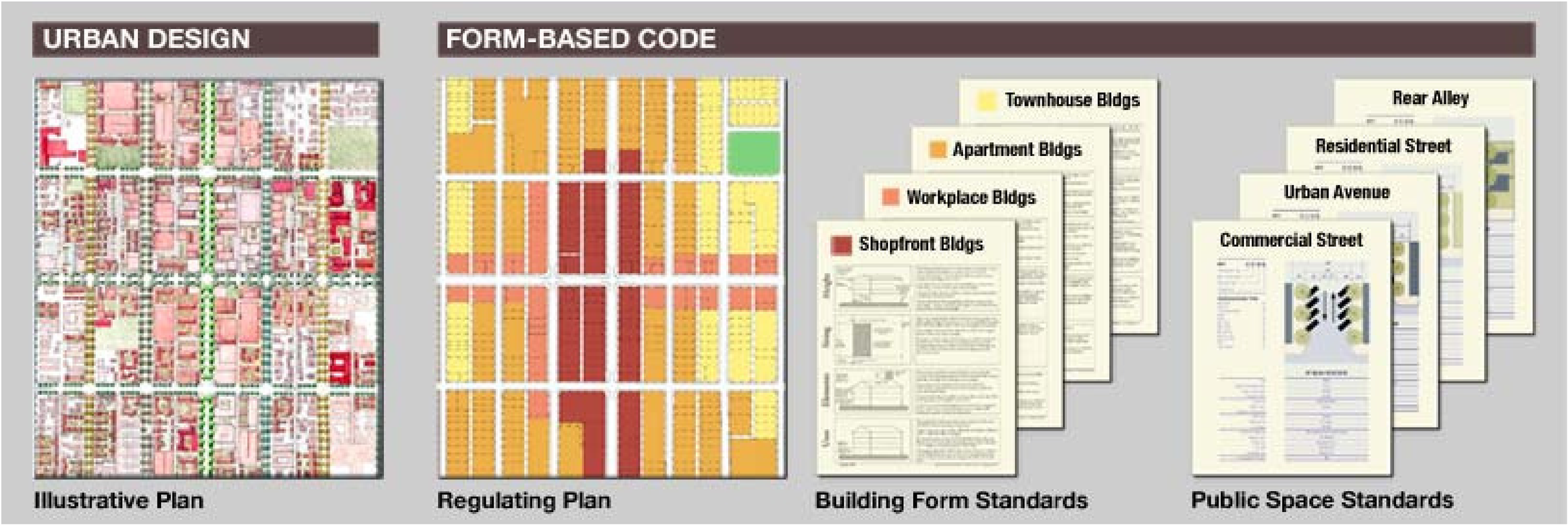
Gateway Community Transition



Interactive Historic District Maps

Base Information Enhancements

Evolving land use design strategies such as ‘Form Based’ land use design which establish volumetric built environment desired relationships via graphic examples compared to Euclidean Zoning ‘Use Based’ built environment constraints articulated by numerical ‘Bulk/Height/Set Back’ tables.

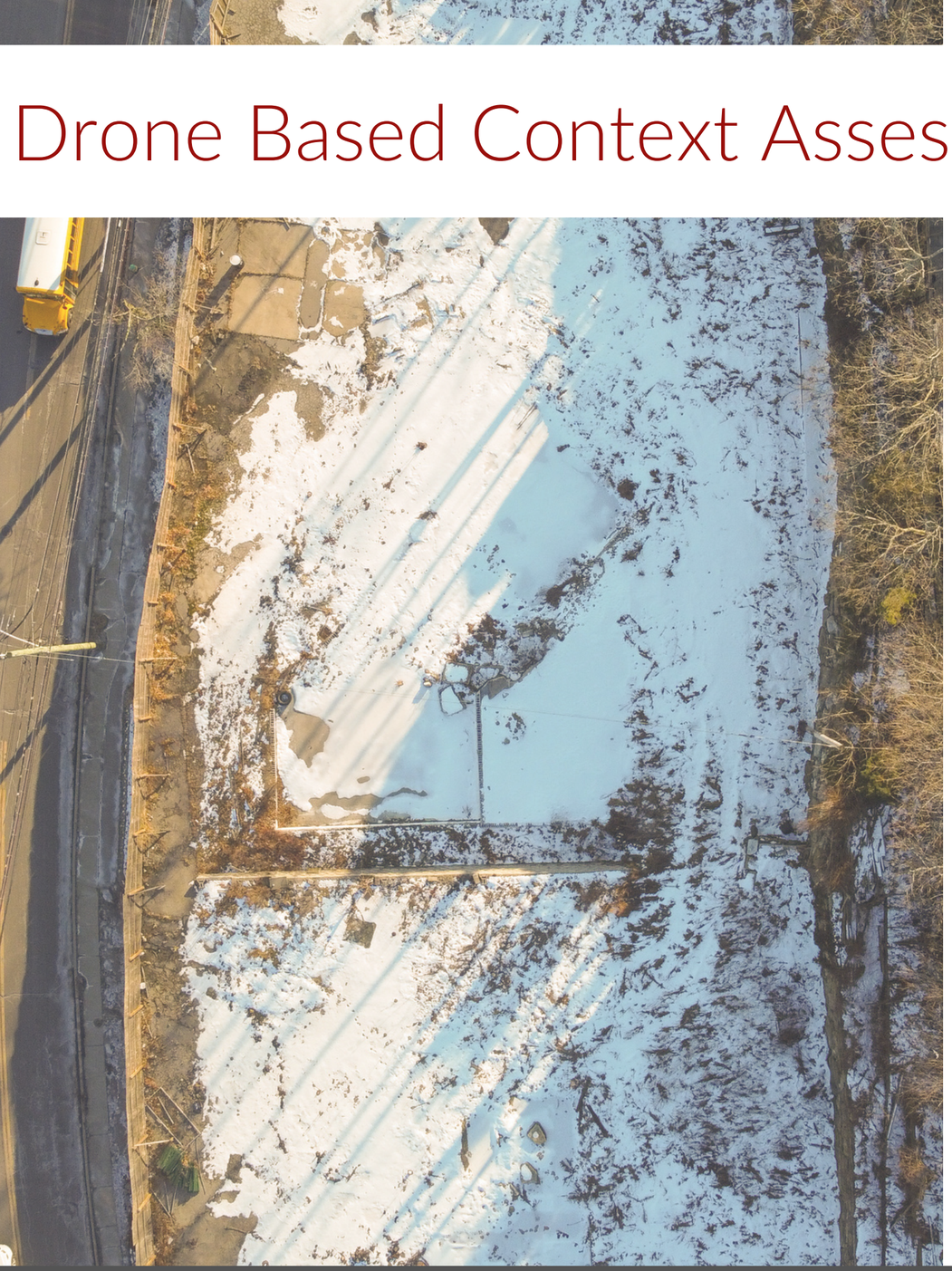


Evolving Drone Usage

Rapid technology and software advancements continue to enhance the ability to design and visualize proposed land use evolution.

- **Static Imagery**
- **Video Recorded/Real Time**
- **Mapping utilizing a range of image capture and analysis (LIDAR Photogrammetry).**

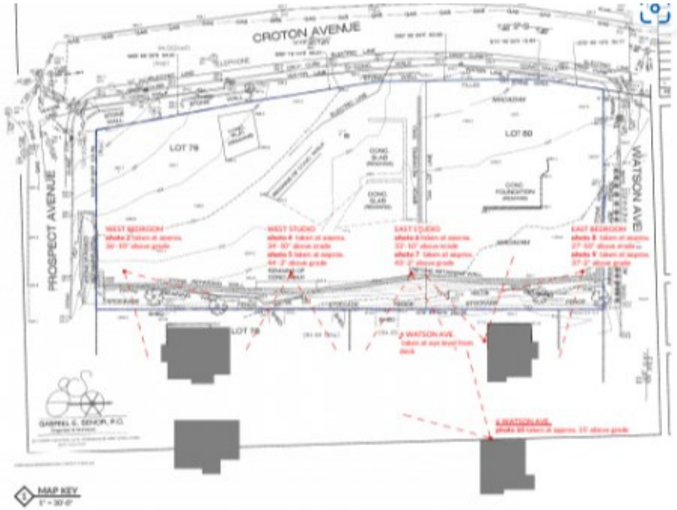
Drone Based Context Assessment



Drone Based Analysis

6 WATSON AVE.
taken at approx. 15' above grade

4 WATSON AVE.
taken at eye level from deck



WEST STUDIO
4th floor taken at approx. 44'-2" above grade

EAST STUDIO
4th floor taken at approx. 43'-2" above grade

EAST BEDROOM
4th floor taken at approx. 37'-2" above grade

WEST BEDROOM
3rd floor taken at approx. 36'-10" above grade

WEST STUDIO
3rd floor taken at approx. 34'-10" above grade

EAST STUDIO
3rd floor taken at approx. 33'-10" above grade

EAST BEDROOM
3rd floor taken at approx. 27'-10" above grade

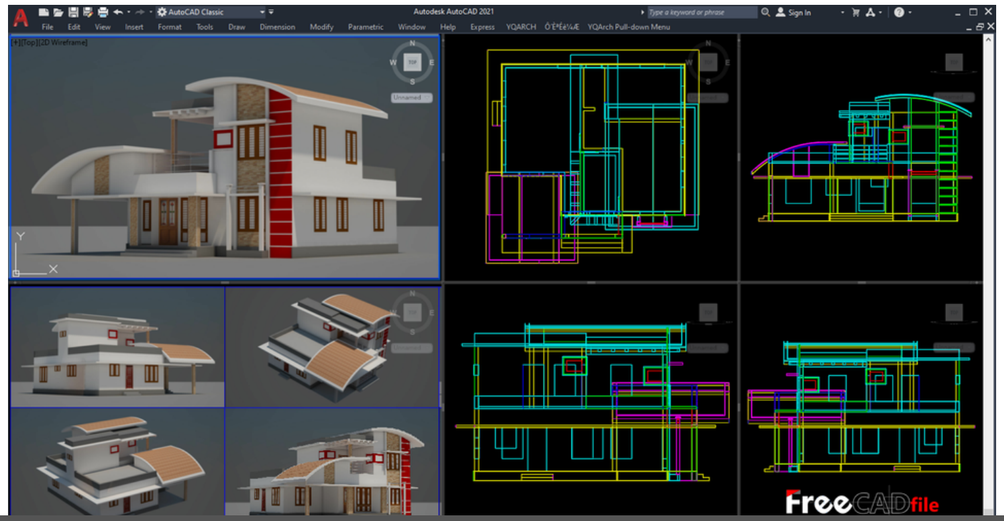
JMC STUDIES

Emerging Access

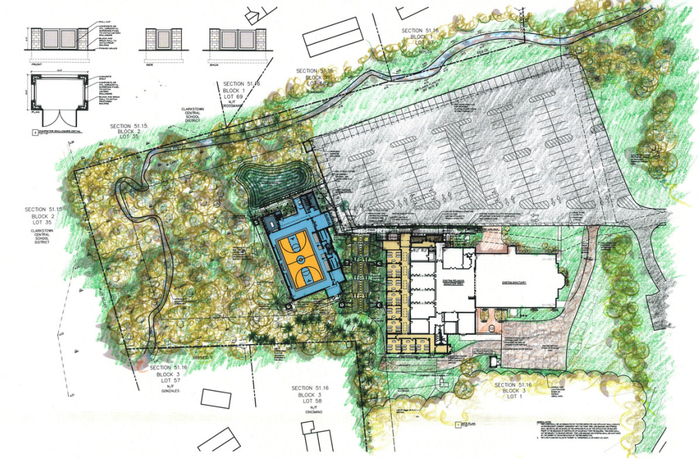
Cost manageable hardware and software resources available to applicants and review boards.

Evolving Software

AutoCAD, SketchUp, Rhino, etc gave way to numerous next gen programs including but not limited to Revit based modeling linked to numerous enhanced rendering software capable of multi-view station points and animation.



Example of Plateau Technology



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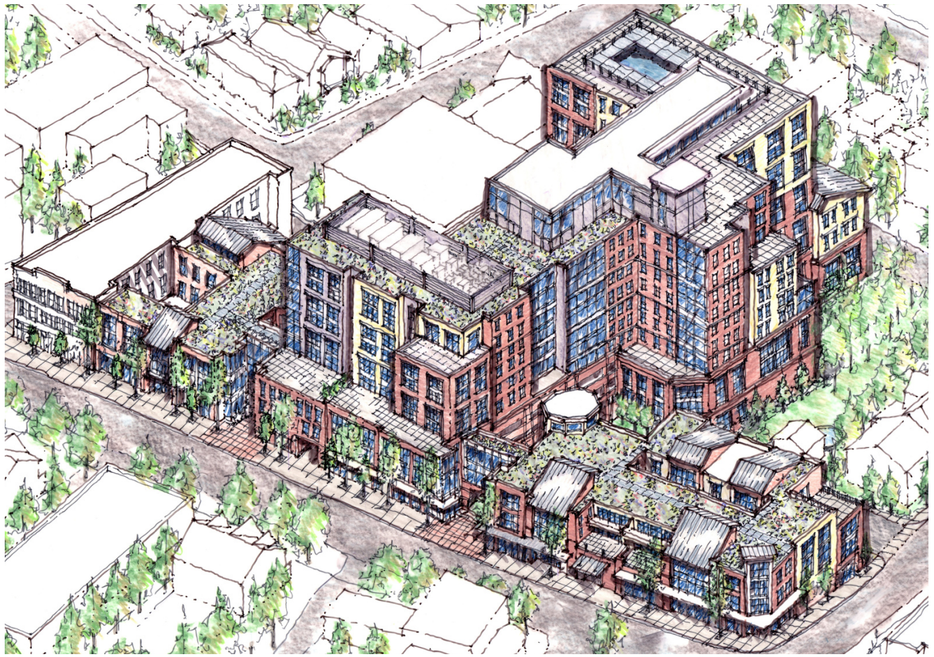
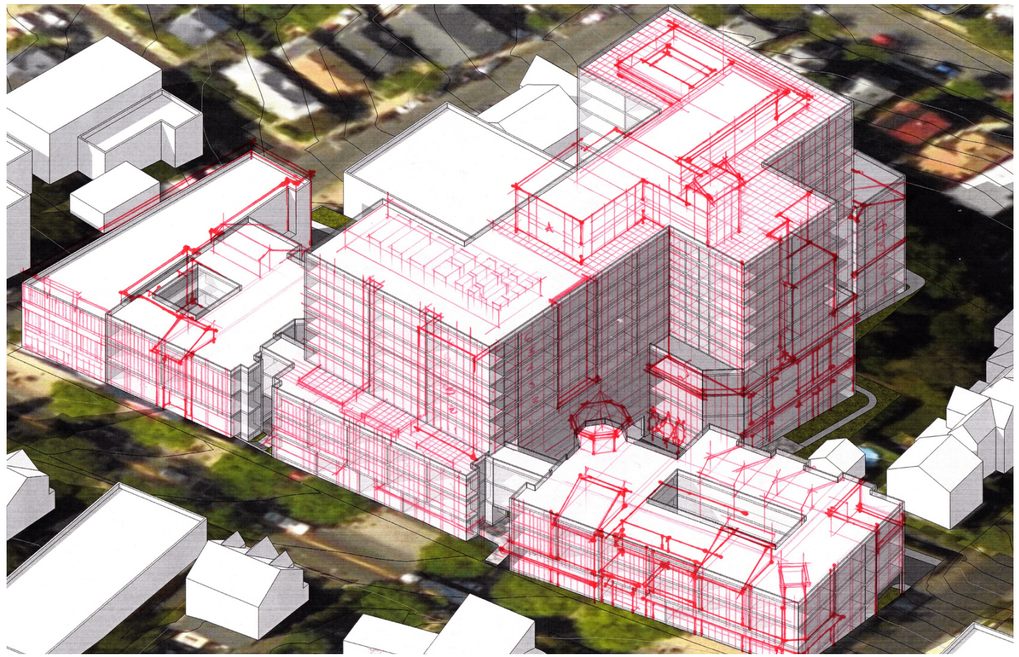
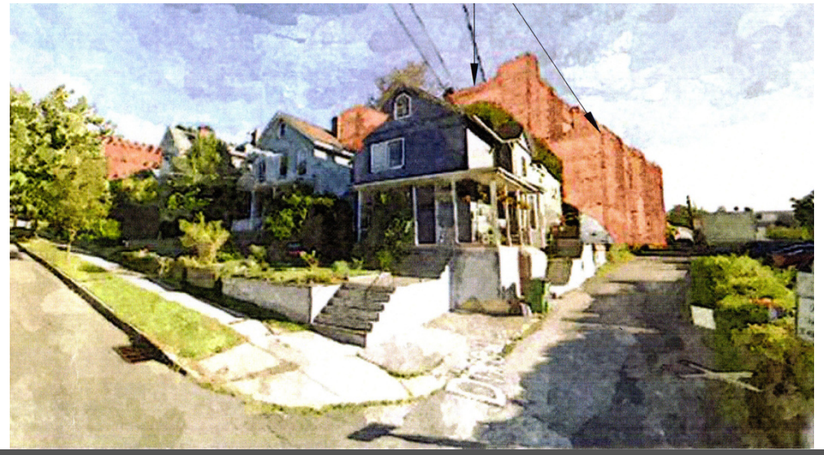




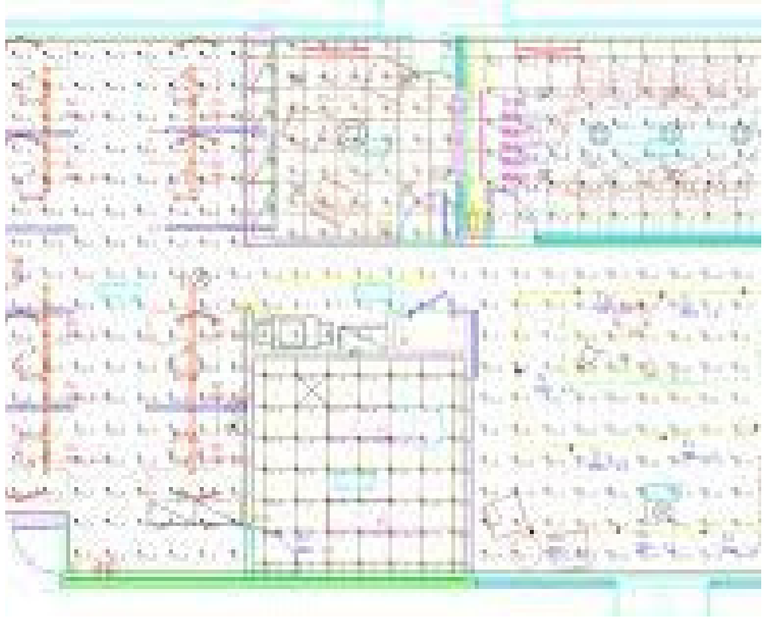


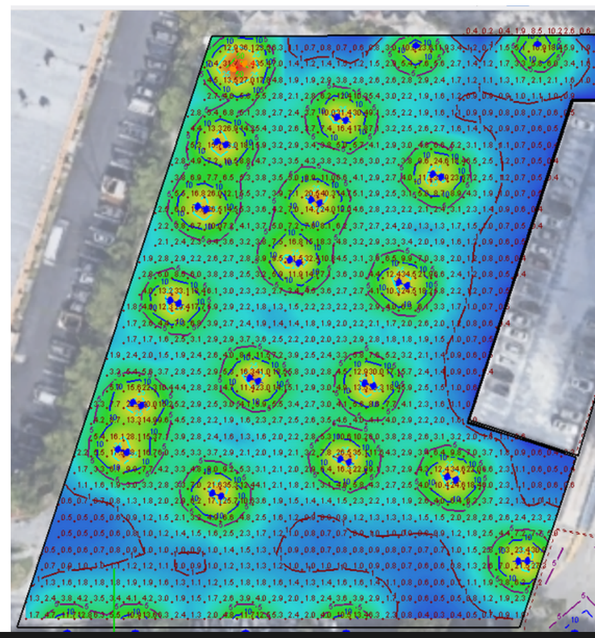
Revit Based Animations

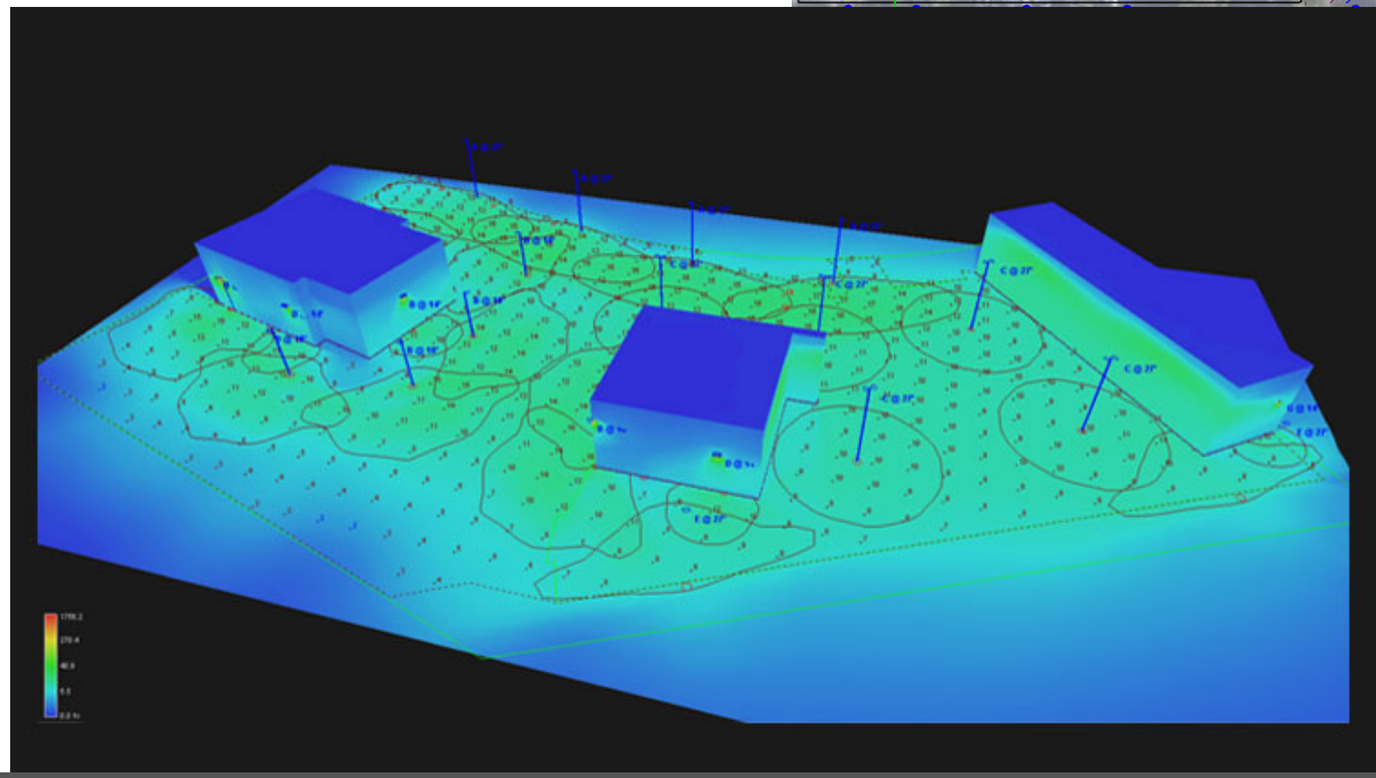
SOLAR STUDIES

STREETSCAPE ANIMATION

Photometric Analysis







JMC ANIMATION

THE FUTURE IS HERE…

...and it is happening right here.

A New Approach in New Roc City

New Rochelle, New York, launches a virtual reality platform to visualize planned downtown improvements

By Matt Hickman • September 16, 2020 • East, News, Technology, Urbanism

CASE STUDY


105.62'(CALC)
105.64'(DEED)
175.29'(DEED)
173.30'(CALC)
PROPOSED RETAINING WALL
S 48°11'54" E
S 35°32'20" W
88.29'
S 48°30'00" W
S 42°10'00" E
DEED DISTANCE 122.12
R27.82'
138.02'
160.27'
7 PARKING SPACES
8 PARKING SPACES
6 PARKING SPACES
6 PARKING SPACES
6 PARKING SPACES
13 PARKING SPACES
15' PARKING SPACES
REAR SETBACK
SIDE SETBACK
20.0'
10.0'
25'
18'
9'
CONCRETE WALK
DROP CURB
FISHKILL AVE.
N


REFINED


INITIAL

Agile refinements between informal 'sketch plan' review and formal submission

The ultimate design and visualization goal is to seamlessly integrate ‘contextual science’ i.e. topography, solar exposures, existing and surrounding built and natural environment elements via scanning technology with integrating proposed alterations or additions to the existing built environment via accurate, unified and uncontradictable ‘evidence’.

QUESTIONS + DISCUSSIONS

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