

Using New Technology

The Washington, DC Experience

Presentation

for

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Conference on Assessment Administration

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by

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The background of the slide features a faded image of the U.S. Capitol building in Washington, D.C., with its iconic dome and neoclassical architecture. In the lower right foreground, a white van is partially visible, parked on a grassy area. The overall image has a light, semi-transparent quality to allow the text to be clearly legible.

- **The Statistics**
 - 61 square miles
 - 176,000 parcels
 - \$105 billion market value
- **New CAMA System**
 - No sketches in system
 - Annual valuations
- **Double Digit Increases in Value**

Washington, DC's Problem

- **New CAMA System**
 - No sketches in system
 - Annual valuations
- **Data Inconsistencies**
 - No comprehensive review in 10 years
 - Large portion of properties could not be modeled because of data
- **Double Digit Increases in Value**

Washington, DC Goals and Objectives

- Review of All Taxable Properties (except condos and coops)
- 125,000 Residential and Commercial Properties
- Outsource Data Review
- Use the Latest Technology
- Complete Project in Less than 12 Months
- Spend Less than \$1,000,000



What Washington, DC Decided To Do

Issue an RFP

- Sketch Vectoring
 - Vision Appraisal System
- Data Verification
 - Manatron, Inc.
 - Mobile Video Services, Inc.
- Project Quality Control
 - TEAM Consulting

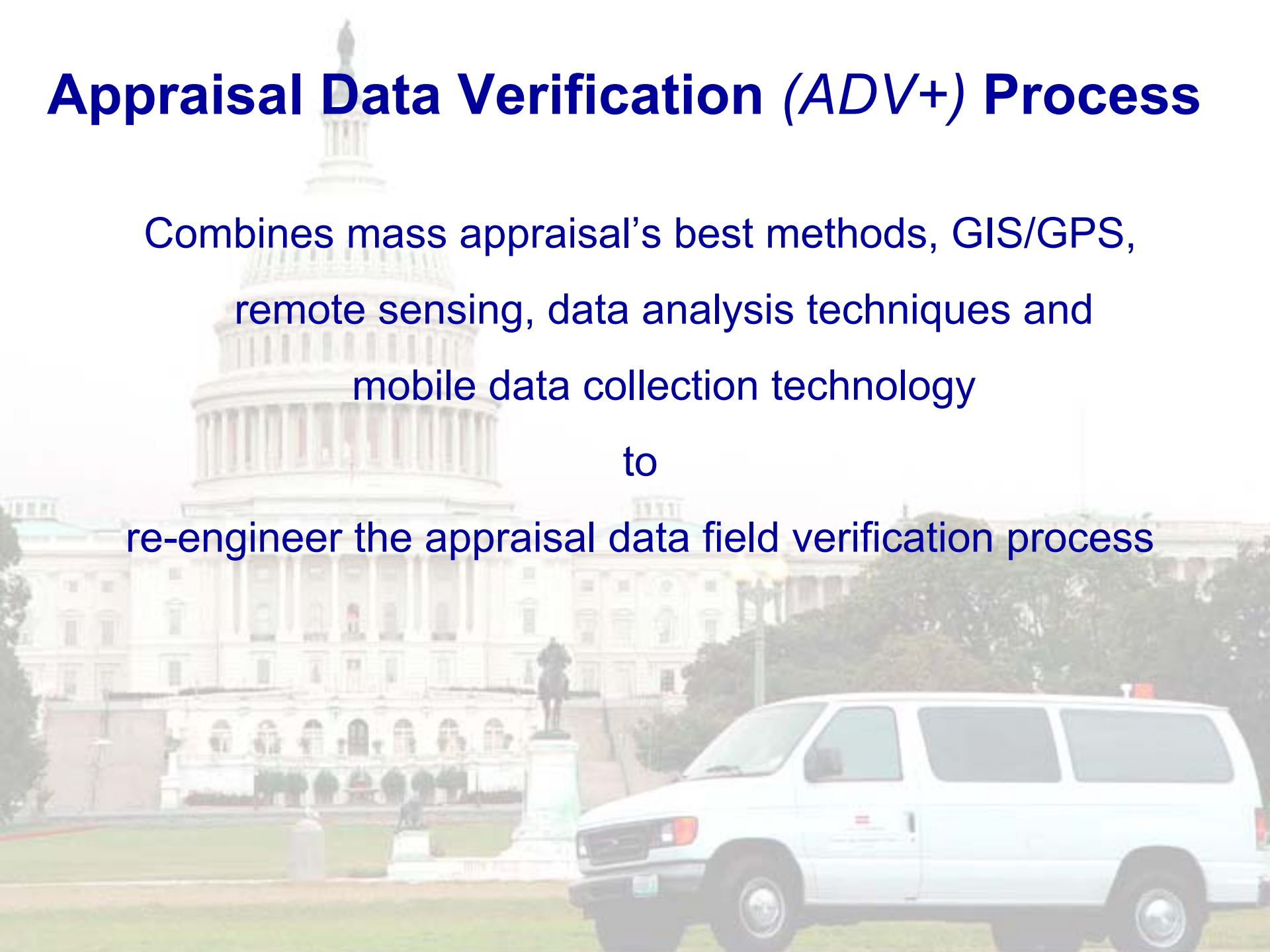


Appraisal Data Verification (ADV+)



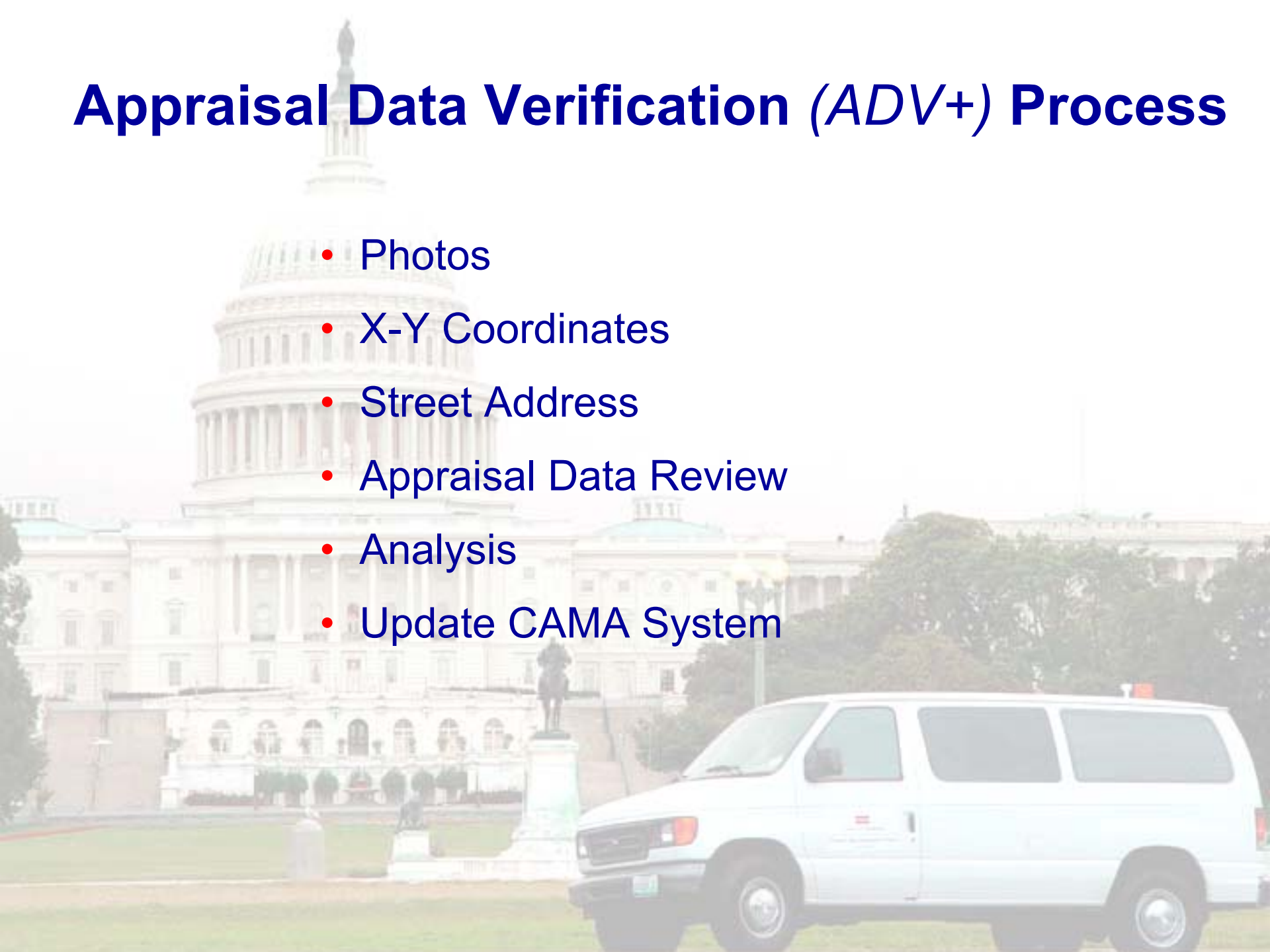
Appraisal Data Verification (*ADV+*) Process

Combines mass appraisal's best methods, GIS/GPS,
remote sensing, data analysis techniques and
mobile data collection technology
to
re-engineer the appraisal data field verification process



Appraisal Data Verification (ADV+) Process

- Photos
- X-Y Coordinates
- Street Address
- Appraisal Data Review
- Analysis
- Update CAMA System



Property Imaging

Reflects Overall Value & Minimal Obstructions



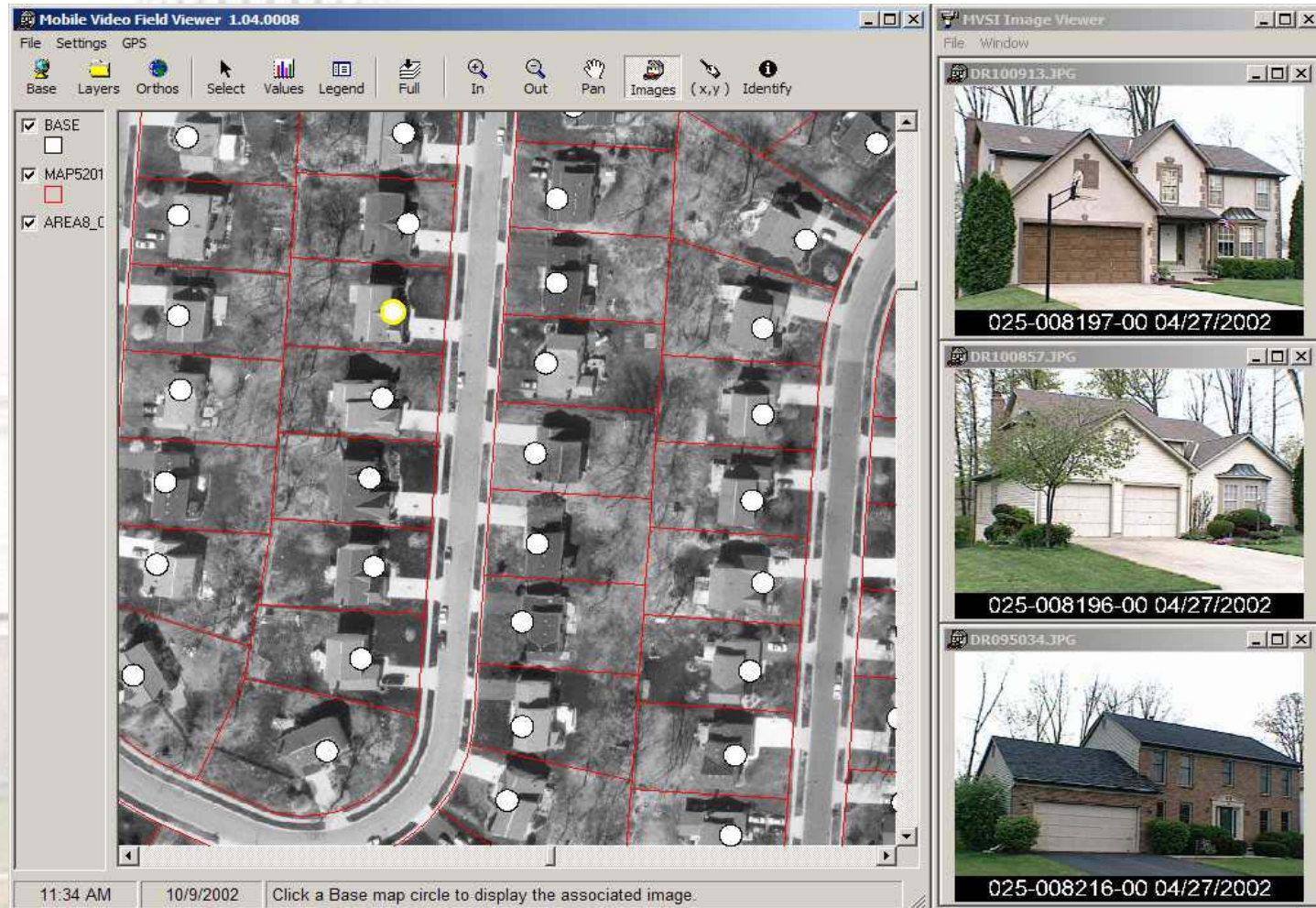
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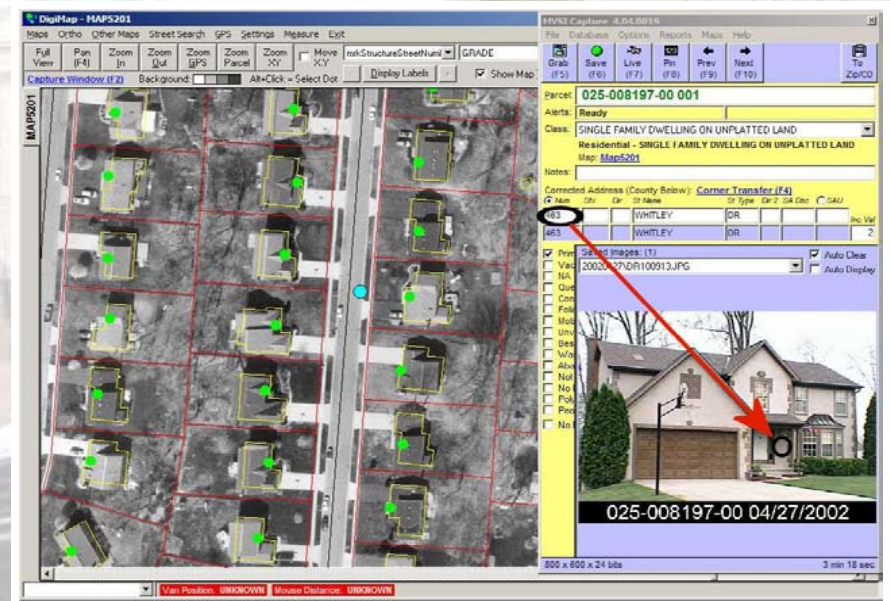
X-Y Coordinates

Intelligent points linking each structure's x-y coordinate to its parcel number, verified address, CAMA file and street-view photograph



Address Verification

- Site Address Verified to Address on Face of Structure
- Data Segments Collected in National Emergency Numbering Association (NENA) Format
- x,y Coordinate for each Primary Address
- Corrections Identified with Attributes
 - Corrected Street Name
 - Correct Number
 - Confirmed or Unverified
 - Multiple Address



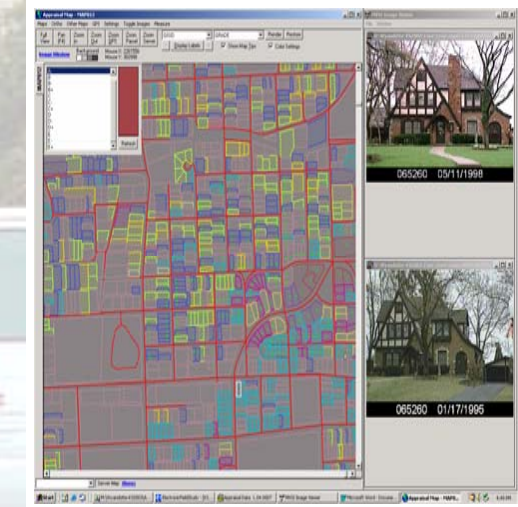
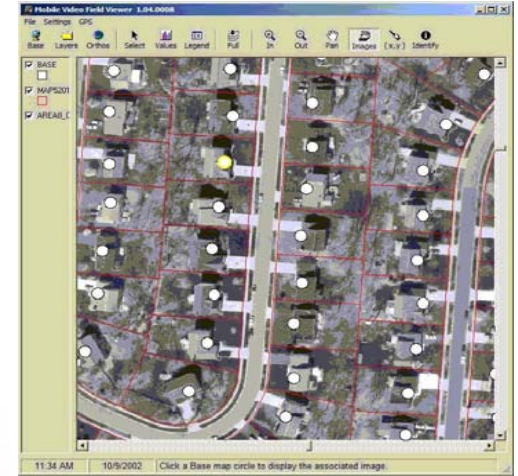
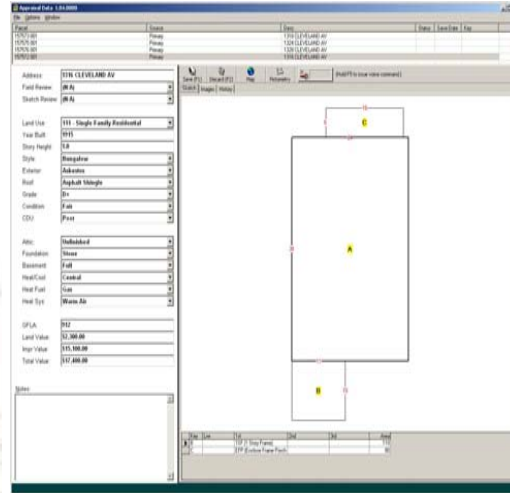
Verify Appraisal Data



Data for Field Verification

The Data that was taken into the field included the following:

- CAMA Data
- PRC JPEG
- Property Sketches
- GIS
- Orthophotographs
- Planimetric Footprints
- Oblique Imagery



Verify Appraisal Data

Objective Property Characteristics

Parcels requiring additional review identified with Field and Sketch Review Attributes

- Property Class-Use
- Style
- Effective Age
- Exterior Walls
- Story Height
- Roof Material
- Attic
- Basement
- Foundation
- Air Conditioning
- Out Buildings
- Parking

Jurisdiction specific factors

Appraisal Data 1.04.0000

File Options Window

Parcel	Source	Desc	Status	Save Date	Key
157573 001	Primary	1318 CLEVELAND AV			
157575 001	Primary	1324 CLEVELAND AV			
157576 001	Primary	1328 CLEVELAND AV			
157572 001	Primary	1316 CLEVELAND AV			

Address: 1316 CLEVELAND AV

Field Review: (N/A)

Sketch Review: (N/A)

Land Use: 111 - Single Family Residential

Year Built: 1915

Story Height: 1.0

Style: Bungalow

Exterior: Asbestos

Roof: Asphalt Shingle

Grade: D+

Condition: Fair

CDU: Poor

Attic: Unfinished

Foundation: Stone

Basement: Full

Heat/Cool: Central

Heat Fuel: Gas

Heat Sys: Warm Air

GFLA: 912

Land Value: \$2,300.00

Impr Value: \$15,100.00

Total Value: \$17,400.00

Notes:

Sketch Images History

Save (F1) Discard (F2) Map Pictometry (Hold F5 to issue voice command.)

Sketch dimensions: 16, 5, 24, 38, 11, 10

Labels: A, B, C

Key	Lvr	1st	2nd	3rd	Area
B		1SF (1 Story Frame)			110
C		EPF (Enclose Frame Porch)			80

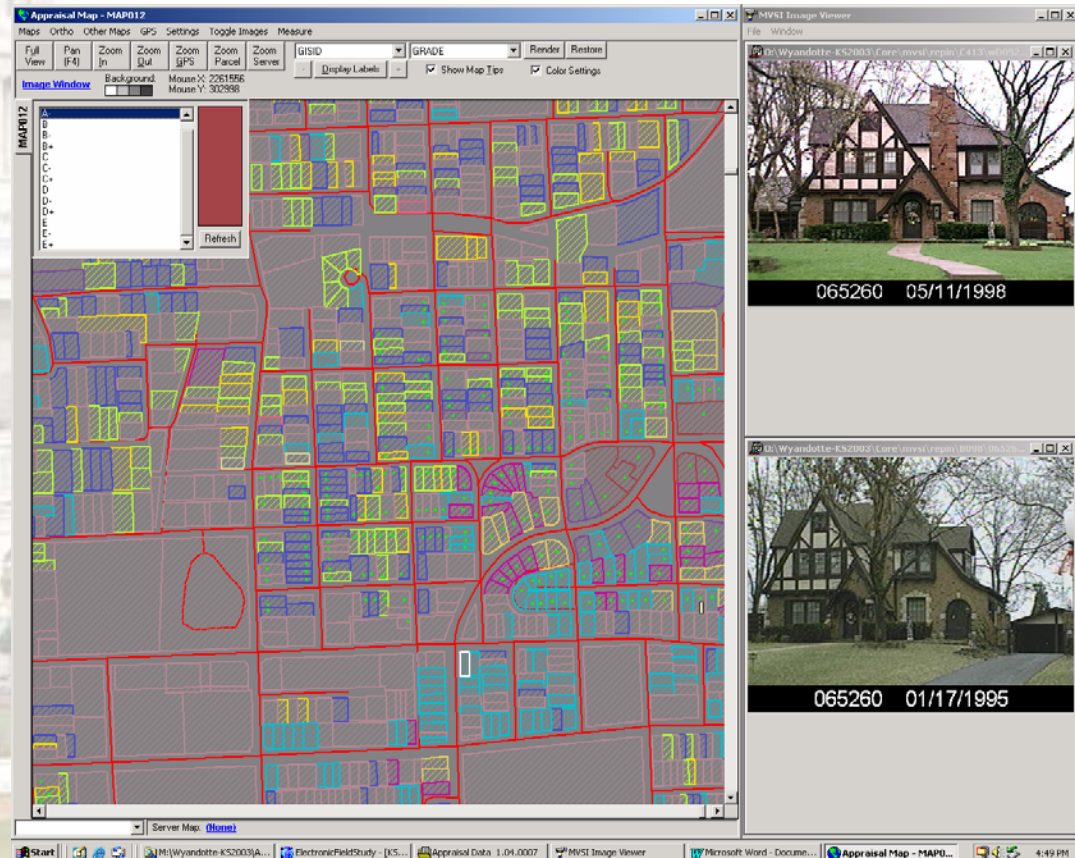
Verify Appraisal Data

Subjective Property Characteristics

Parcels requiring additional review identified with Field and Sketch Review Attributes

- Grade
- Condition
- Location Factors
- Jurisdiction specific factors

The integration of data with GIS, sketch and imaging provides for a high-quality review and enhanced productivity.





Verify Sketch

Old Sketch

Comparison to:

Structure

sections, levels

labels

Geometric

Print

perimeter

measurements

Photography

verify additions and

corrected view

In-Field Sketch Comparison to:

- **Structure**

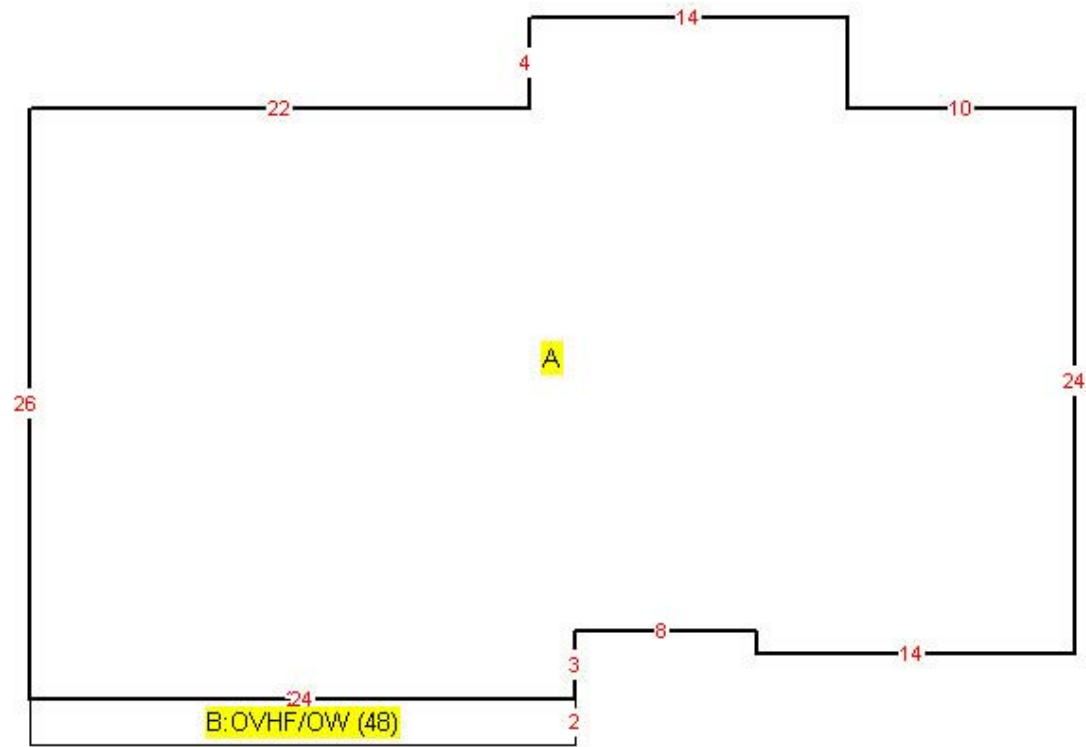
Verify sections, levels and labels

- **Planimetric Footprint**

Verify perimeter measurements

- **Orthophotography**

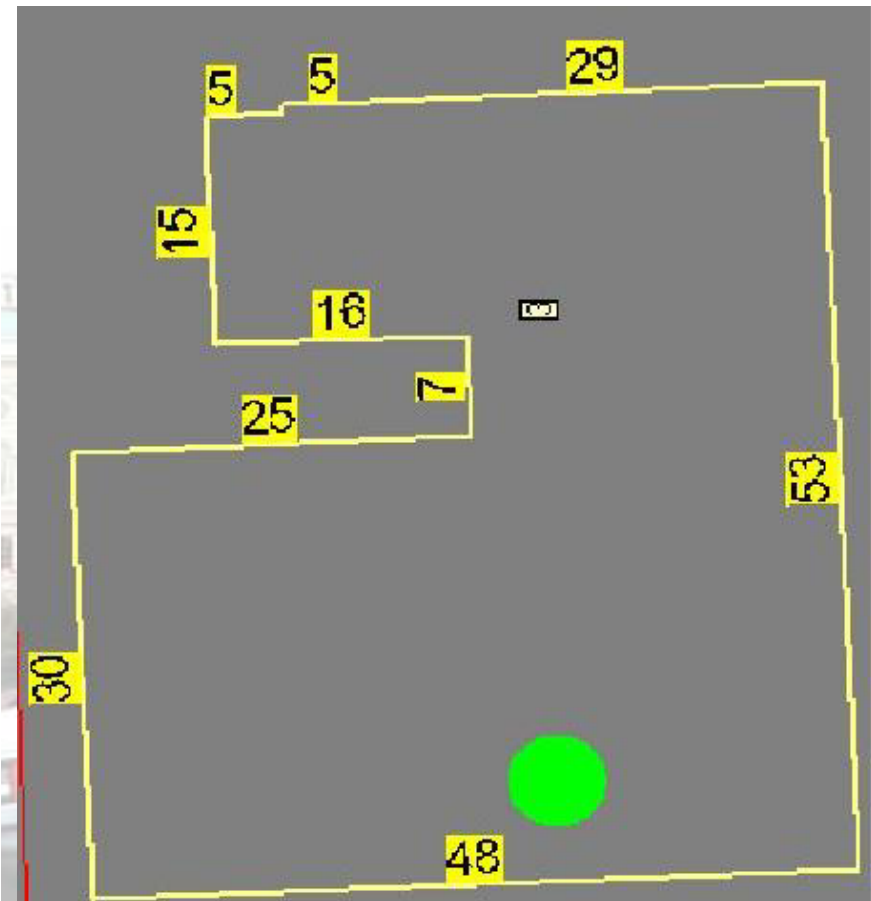
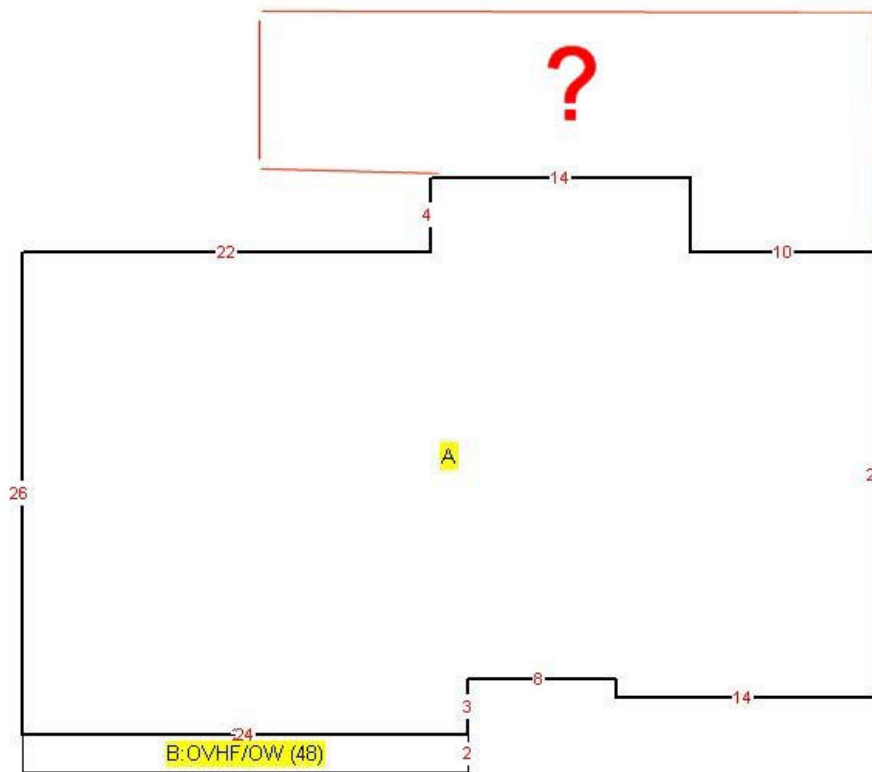
Identify additions and obstructed view



Verify Sketch and Measurements

Planimetric Footprint

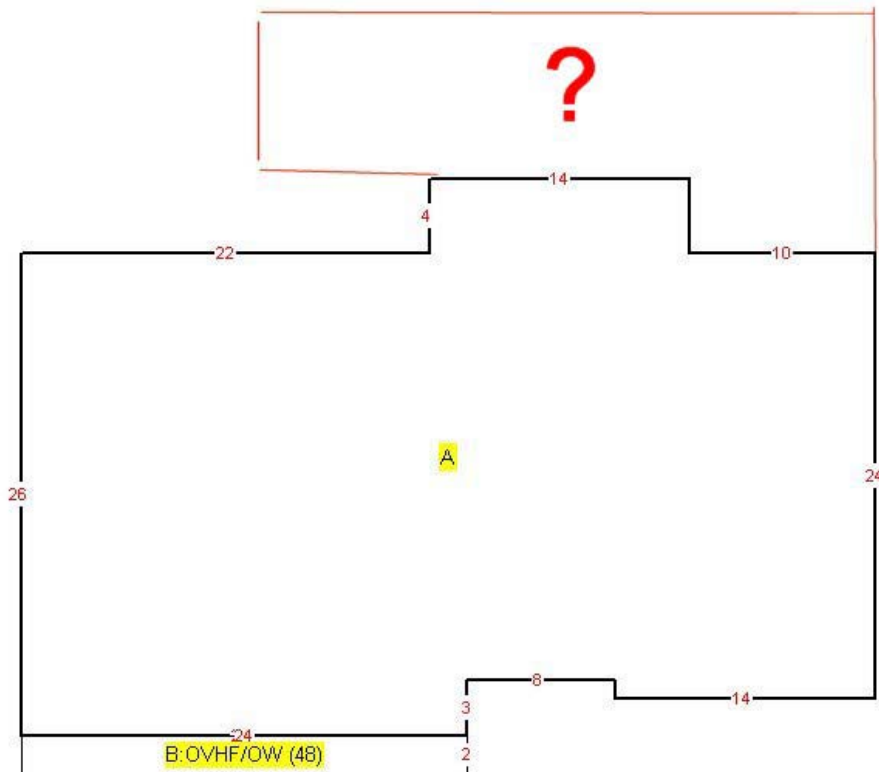
The mass appraiser in the field collection unit compares the dimensions on the planimetric footprint (minus the estimated roof overhang) with the same walls on the CAMA sketch to see if the two are within allowable tolerances.



Verify Sketch and Measurements

Oblique View

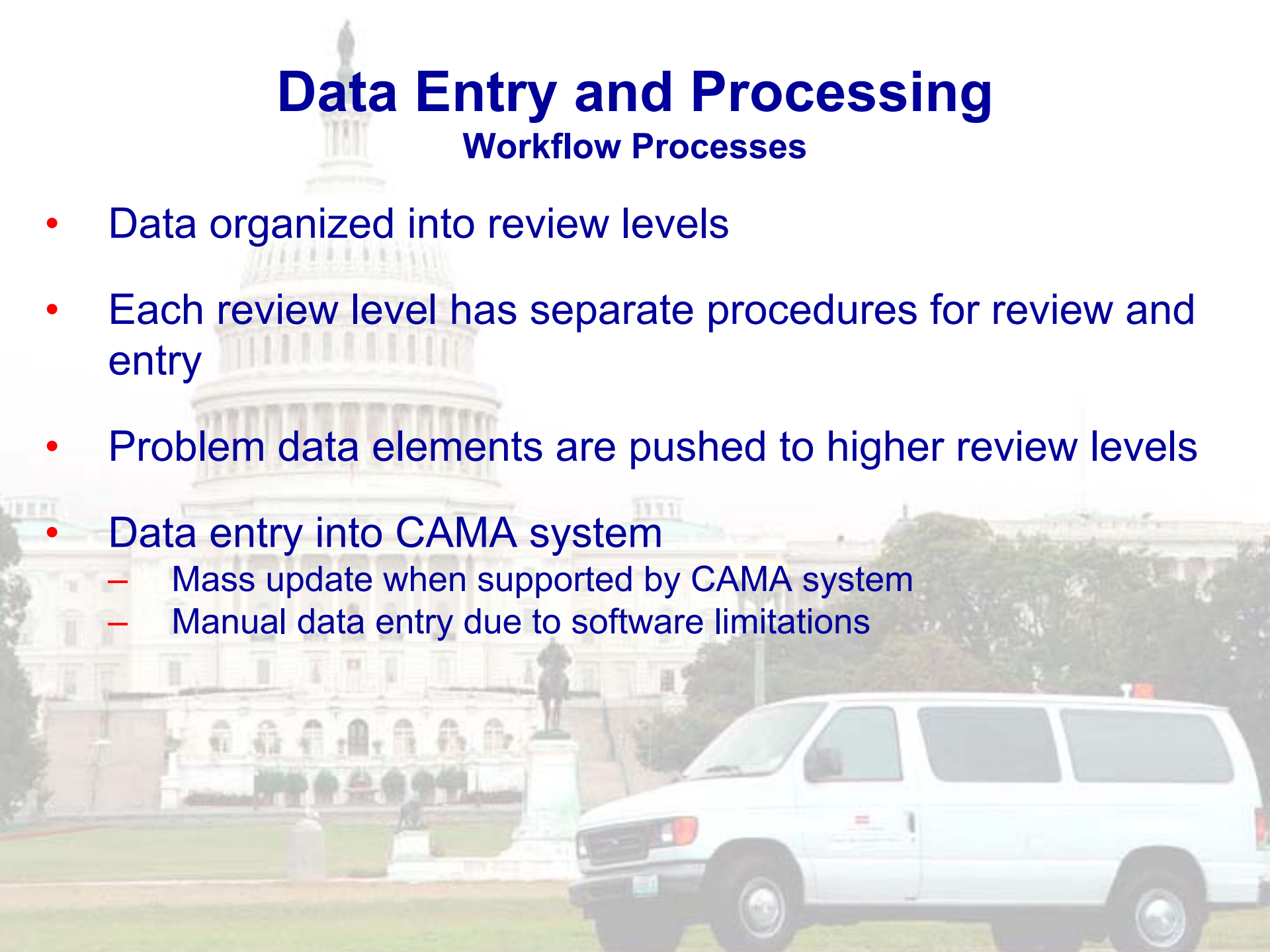
The use of Oblique Photography provides the mass appraiser with the ability to view the entire property to determine building orientation, outline, characteristics and context.



Data Entry and Processing

Workflow Processes

- Data organized into review levels
- Each review level has separate procedures for review and entry
- Problem data elements are pushed to higher review levels
- Data entry into CAMA system
 - Mass update when supported by CAMA system
 - Manual data entry due to software limitations



Data Entry and Processing

Image Management and Analysis Software

Focused Software Applications

- Analysis of data exceptions
- Virtual walk through neighborhood
- Linked to GIS and Pictometry
- Display and print comp report
- Maintain image warehouse
- Analyze sales and data

The screenshot displays the 'Mobile Video Parcel Viewer' interface. At the top, there's a menu bar with 'File', 'View', 'Image', and 'Windows'. Below it is a toolbar with navigation and search icons. A central table lists property data with columns: Parcel, Map, LAND VALUE, TOT IMP VA, QUALITY, EFFECTIVE, YEAR BUILT, BEDROOMS, GARAGE, NEIGHBORHOOD, and ValuePerSq. The table contains 15 rows of data for various parcels in the 'IVY MEADOWS' neighborhood. Below the table, there are two image windows. The left window shows a property labeled '19302343' with the owner name 'PASSAMUNTU JOHN KAWIBA'. The right window shows a property labeled '19302333' with the owner name 'SEYMOUR HAROLD E'. The status bar at the bottom indicates the time as 12:43 PM.

Parcel	Map	LAND VALUE	TOT IMP VA	QUALITY	EFFECTIVE	YEAR BUILT	BEDROOMS	GARAGE	NEIGHBORHOOD	ValuePerSq
19302333 001	193	24000	106300	2	1892	1999	3 Y		IVY MEADOWS	56
19302334 001	193	24000	83770	2	1408	1999	3 Y		IVY MEADOWS	59
19302335 001	193	24000	83290	2	1388	1998	3 Y		IVY MEADOWS	60
19302336 001	193	24000	73620	2	1199	2000	3 Y		IVY MEADOWS	61
19302337 001	193	24000	80470	2	1340	1998	3 Y		IVY MEADOWS	60
19302338 001	193	24000	82730	2	1404	1999	3 Y		IVY MEADOWS	59
19302339 001	193	24000	91280	2	1520	2000	3 Y		IVY MEADOWS	59
19302340 001	193	24000	80000	2	1404	2000	3 Y		IVY MEADOWS	59
19302341 001	193	24000	75300	2	1206	1998	3 Y		IVY MEADOWS	62
19302342 001	193	24000	82740	2	1405	1999	3 Y		IVY MEADOWS	59
19302343 001	193	24000	83290	2	1388	1998	3 Y		IVY MEADOWS	60
19302344 001	193	24000	72990	2	1227	1999	3 Y		IVY MEADOWS	59

The screenshot displays the 'Mobile Video Parcel Viewer' interface for a specific property. The top menu bar includes 'File', 'View', 'Image', and 'Windows'. The main window is divided into two panes. The left pane shows an aerial photograph of a white house with a porch and a basketball hoop, labeled '590-0211-0048 04/28/2003'. Below the image, there's a text box with property details: 'Applied: CROWN', 'FieldReviewDesc: MAJOR CONSTRUCTION', 'SketchReviewDesc: SKETCH FLIP', 'NoteDesc: M ch for addn', 'UseCode: 510 - ONE FAMILY DWELLING', 'ShapeType: 1', 'External FRAMES: NONE', 'Censable: NONE', 'YearBuilt: 1981', 'ERFV: 1981', 'Grade: C - AVERAGE', 'Condition: AVERAGE', 'Tempst', 'PavedDesc: Paved/Asp: 0', 'LandArea: 7800', 'Permit/Asp: 0', 'Permit/Asp: 0', 'Permit/Asp: 0'. The right pane shows a detailed parcel map with various lot numbers (22, 16, 32, 33, 8, 17, 24, 10, 20) and specific lot identifiers (PT1 352, 1 s Fr B 920, 1 c Fr G 200). The map also shows '15FRAC' and 'ST1'.

Data Entry and Processing

Data exceptions for 125,000 residential parcels

<u>Level</u>	<u>Count</u>	<u>Description</u>	
1	372,990	Property Characteristics	→ <u>Residential</u>
2	2,190	Review Characteristics	- Use Code 2,394
3	7,252	Office Action Required	- Old Style 4,768
4	12,569	Office Action Complete	- Roof Covering 25,768
5	3,172	No Sketch	- Building Type 1,400
6	2,947	Field Action Required	- Story Height 7,079
7	<u>2,817</u>	Field Action Complete	- Air Conditioning 1,235
			- Exterior Finish 7,599
			- New Style 103,198
			- Parking 104,433
			- Grade 44,409
			- Condition <u>29,011</u>
	403,937		331,294

Data Entry and Processing

Resolution of Field and Sketch Review Parcels

Appraisal staff can investigate and resolve data exceptions at the desktop with software applications. Data exceptions are linked to GIS or Pictometry through address x,y points.

Office Action

<u>Count</u>	<u>Description</u>
2,932	Building Razed
2,948	Minor Addition (deck/porch/garage)
1,064	Correct Sketch
	Measurements/Labels
<u>308</u>	Verify Use
7,252	

Field Action

<u>Count</u>	<u>Description</u>
664	Additional Sq. Ft. Not on Sketch
509	New Construction
<u>1,774</u>	Field Verify (significant variation)
2,947	



Appraisal Data Verification Process

What We Learned

- Appraisal staff was more productive due to data:
 - Consistency
 - Accuracy
 - Timeliness
- Appraisal staff was able to focus on valuation work – not data collection
- The use of the best available qualified mass appraisers yielded a higher level of confidence in resulting data and final values
- There was a substantial reduction in the amount of field work during final review

Appraisal Data Verification Process

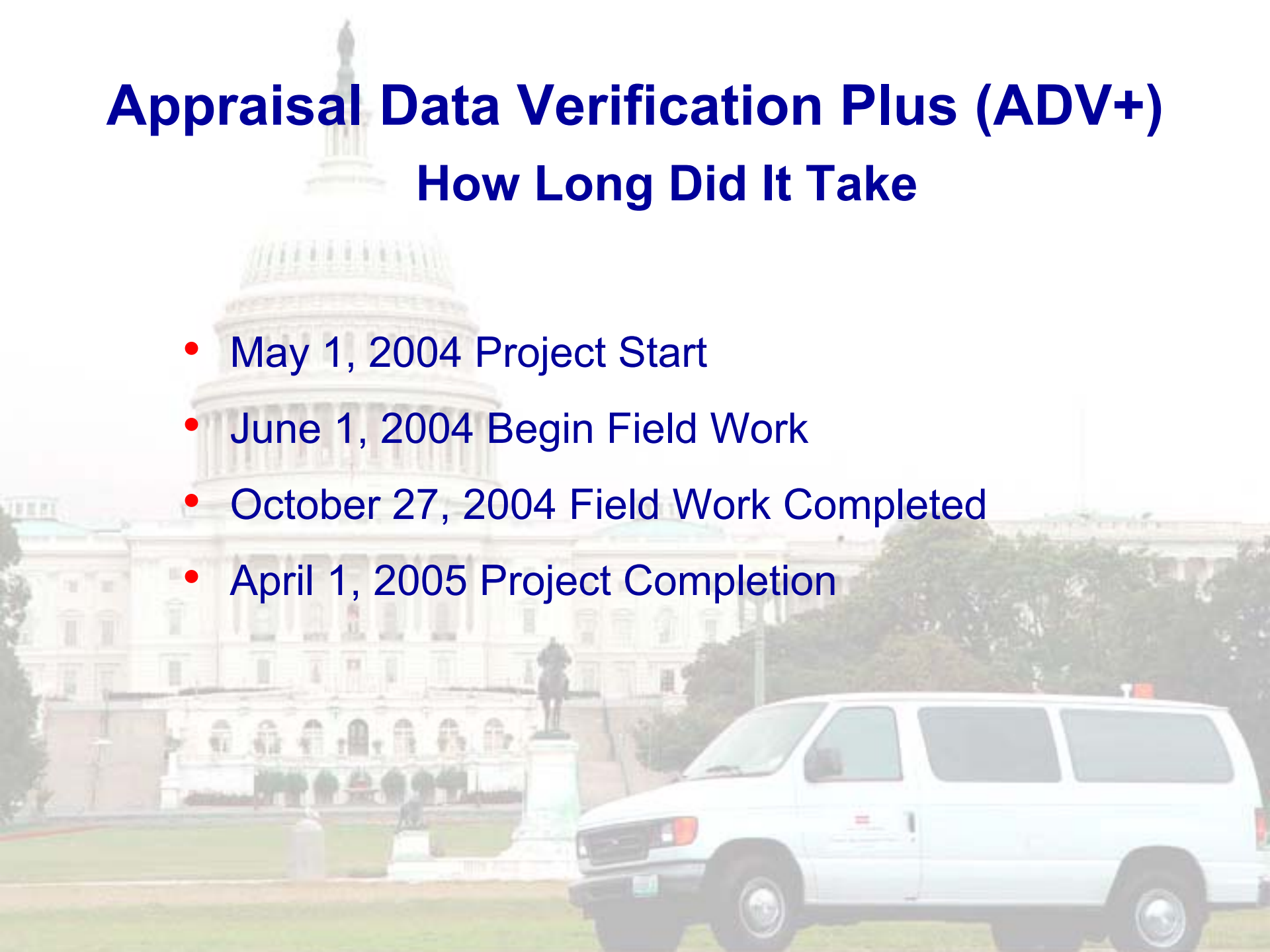
What We Learned

- Traditional data collection techniques are not necessary on *most* properties
- Dramatically reduces cost, while improving the quality and timeliness of property valuation data
- High tech alternative to “walk around” data collection methods used in past
- Win-Win for the Office of Tax and Revenue and taxpayers
 - Provides a quality data review at a reasonable cost

Appraisal Data Verification Plus (ADV+)

How Long Did It Take

- May 1, 2004 Project Start
- June 1, 2004 Begin Field Work
- October 27, 2004 Field Work Completed
- April 1, 2005 Project Completion



What Did It Cost?

- Approximately \$8.00 per parcel
 - Picture
 - X,Y Coordinate
 - Address Verification
 - Data Review
 - Appraisers
 - Software
 - Quality Assurance
- Cut Cost by Using Your Own Appraisers
- \$8 Vs. \$30 Using Traditional Methods

What Is the Payoff?

Return on Investment

	<u>DC</u>	<u>Other</u>
Total Parcels	125,000	40,000
Market Value Discovered	\$948M (1)	\$89M (2)
Effective Tax Rate	.91%	1.4%
Tax Revenue	\$8,729,900	\$1,372,635
Contract Amount	\$800,000	\$200,000
ROI (minimum)	11:1	7:1

NOTE:

- (1) From only three data elements (parking, grade and condition)
- (2) Figure does not include effective age changes

New Enhancements to the Process

- Predicting Results Ahead of Time with AEP Feedback
- Personal Property Identification
- HouseDiff (Change Detection)
- Properties in Correct Tax Districts
- Mobile Office

