

Los Angeles County Building Representation Project

Quality Control – Quality Assurance

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Presented by:

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Agenda



- Overview of QA/QC
- Methodology
- Acceptance Criteria
 - Accuracy
 - Data Quality
- LA County Review and Sanborn Correction Cycle
- Tracking Quality - Sanborn

Quality Control:

- To ensure specifications and expectations are met or exceeded

Quality Assurance

- To assure end-users that products are suitable for purpose

Sanborn is accountable for product quality.

Preparation

Before production and QA/QC begins:

- Method – how to check the products
- Criteria - specifics for quality and usability of products

Contract **Acceptance Criteria** is the guide for both

- Expectation: Review of 100% of data
 - 100% review achieves the highest confidence level
 - All data is reviewed – every building is inspected for non-conformities
- Technique
 - Visual review using the orthoimagery
 - Area of responsibility – review what is within your boundary
 - Be systematic – use visual aids (e.g., grid, roads) to ensure review of entire area of responsibility

Acceptance Criteria

Major categories to base acceptance/rejection:

- Spatial Accuracy (done)
- Projection (County)
- Format (County)
- Automated checks (County)
- **Content**
- **Quality**

Acceptance Criteria

Projection / Units	NAD 1983 State Plane – California Zone V / U.S. Survey Feet
Vertical / Horizontal Datum	NAVD88 / NAD83 reference datum
Spatial accuracy standards	ASPRS Accuracy Standards for Large Scale Maps Class 1 Maps 1”=100’ and 1”=200’ (national forest areas)
Feature	Features captured will represent Building Representations for permanent structures that meet the minimum size requirements. This excludes RV parks.
Feature Types	<p>Building - Polygon enclosing all erect buildings (not under construction or ruin) that serve primary business and residential functions (i.e., houses, apartments, commercial facilities). Includes attached covered porches, permanent overhangs, carport roofs, covered sidewalks, etc. as part of the building. Include secondary buildings (not attributed as such) such as garages, smokestacks, silos, bins, storage tanks, water towers, defined as:</p> <p><i>Smokestack</i> -A closed circle enclosing the base of a large cylindrical smokestack. Only collect smokestacks if they are free-standing. Place the spot height at the top of the smokestack. Do not collect smokestacks if they are within a structure that would be collected as a building.</p> <p><i>Silo/Bin</i> -Polygon enclosing a large cylindrical receptacle for farm product storage, or gravel storage.</p> <p><i>Tank</i> -Polygon enclosing commercial storage tank features (Oil, chemical and propane). Do not capture small private / residential propane tanks.</p> <p><i>Water tower</i> -Polygon enclosing water tower.</p> <p>Do not show common rooflines (e.g., between town homes, or interior sections/firewalls in commercial buildings). Do not capture temporary structures such as construction trailers or tool storage sheds.</p> <p>Courtyard or Atrium – Polygon created inside a primary building that is fully encompassing of an open area.</p>
Vector data	Features should be closed polygons that are snapped and joined to create continuous segments without overruns and gaps.

Acceptance Criteria



Buildings/townhouses and parcels	<p>Los Angeles County: Features will be cut by parcel lines (e.g.. Downtown core buildings) only at visible fire wall junctions. Townhouses and contiguous buildings crossing parcel lines will not be cut.</p> <p>City of Los Angeles: Features will be cut by APN parcel lines unless extending 2’ or less into the next parcel. In this case, the building will be adjusted to the parcel.</p>
Buildings connected by corridors, covers, and walkways	Each building portion shall be created or digitized as a separate polygon (when possible).
Building generalization	Building shapes can be “interpreted” (and attributed as such) when factors such as shadows or occlusions exist.
Vertical or “Z” value	Z-value will be gathered from the highest point of the roof. This excludes non-structural features such as chimneys, air conditioning units, antennas, and flag poles.
Minimum building size	Building shapes (polygons) should be created for all structures 20’ x 20’ (or 400 sq. ft.) or larger in size in Areas 1 & 2, or 8’ x 8’ (or 64 square feet) in Area 3.
Minimum segment length	1.5’ excluding awnings

American Society of Photogrammetry and Remote Sensing (ASPRS):

Map Scale

1"=100'

1"=200'

Horizontal Accuracy

RMSE x or y 1.0 feet

RMSE x or y 2.0 feet

RMSE is defined as the square root of the average of the squared discrepancies.

Features on the ground surface in the orthophotography will be within the above tolerances of the true position of the feature.

The only true measure of spatial accuracy is to validate ground features within the imagery against known locations (i.e., geodetic survey of photo-identifiable features).

Testing Accuracy

- Production relies on accuracy of source AT solution and the quality of the imagery.
 - AT meets required accuracy to support map scale accuracies
 - Imagery clear, sharp – supports collection of details not always visible in the orthoimagery
- Spatial accuracy tested during the ortho program – building data will meet the same horizontal accuracy as the orthos.
- Digitized building may not match orthoimagery spatially – radial lean of taller features in ortho may cause digitized building to appear inaccurate. Both ortho and building are accurate; stereocompiled building data will be more accurate *representation* of the building than if digitized from the orthoimagery.

Data Sample: Stereo Digitizing vs. Ortho Digitizing

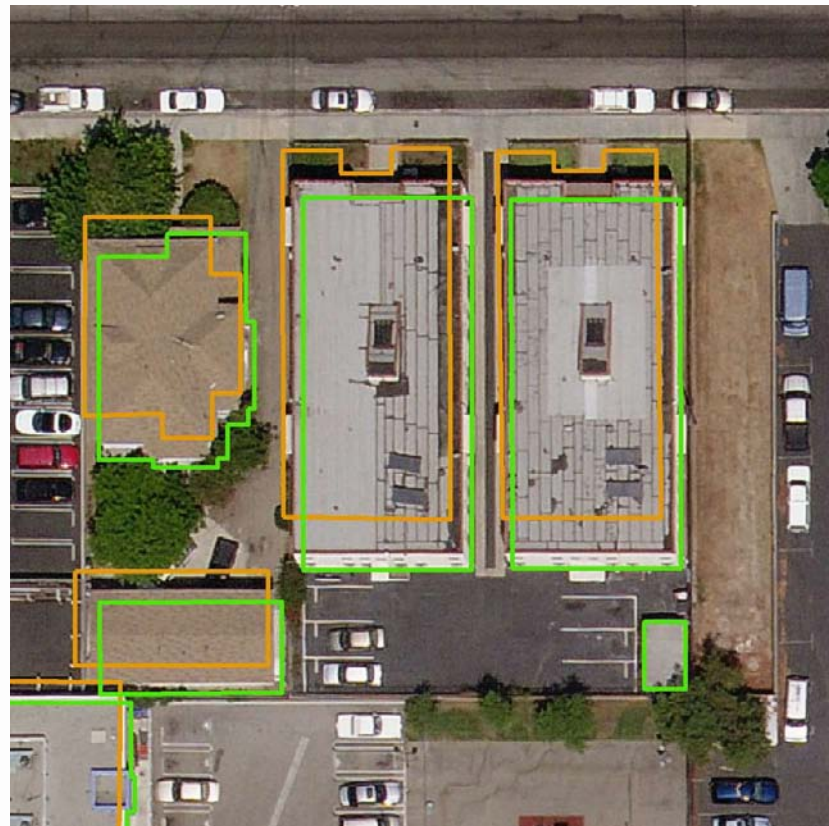


Orange: Building outline was digitized from 2006 ortho imagery

Green: Building outline was digitized from 2007 stereo imagery



2006 Ortho Imagery



2007 Ortho Imagery

Data Review



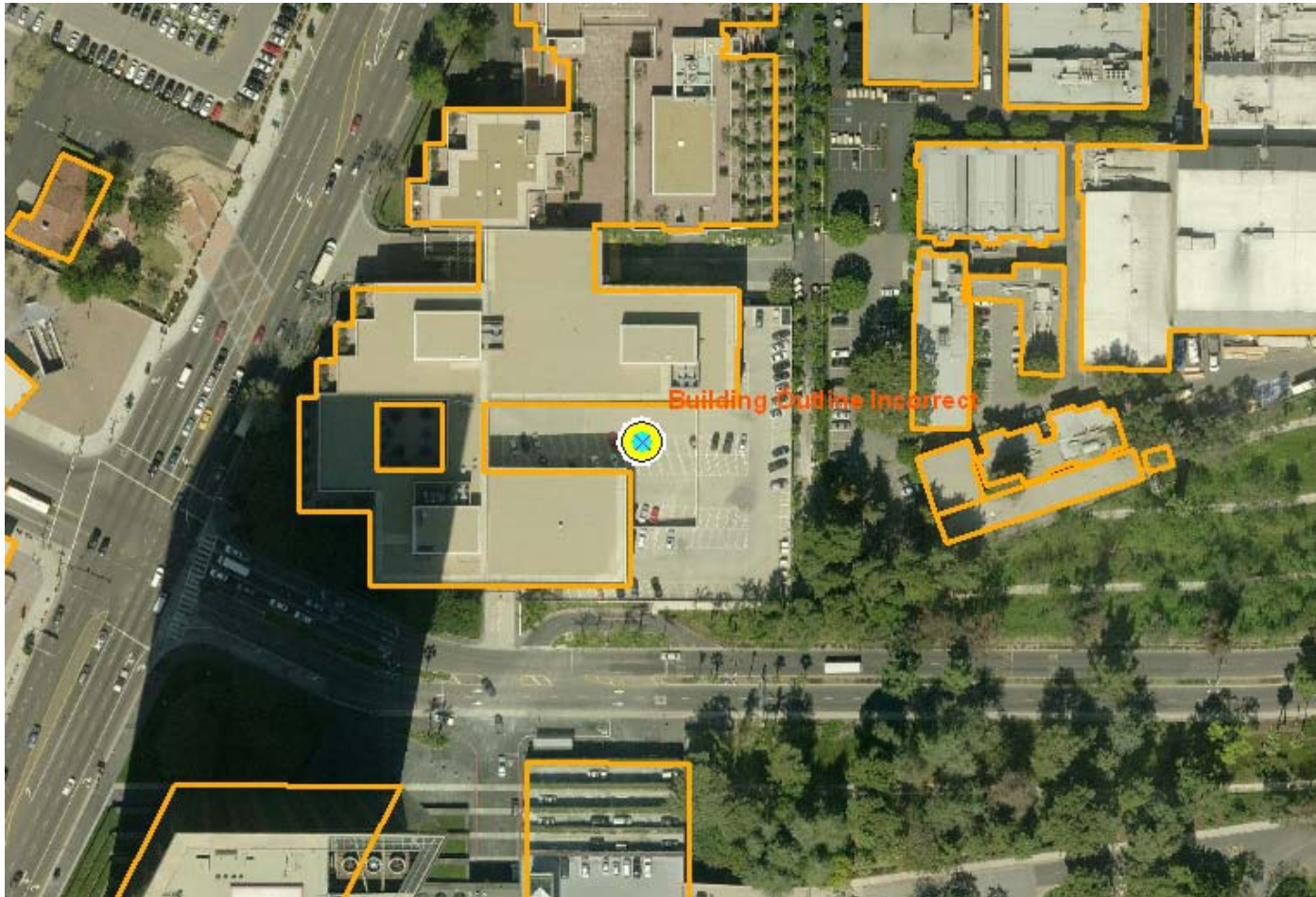
Visible structures not digitized



Data Review



Parking structure is considered part of building – outline should be at edge of parking structure



Data Review



This is probably not a courtyard



Data Review Example



This appears to be a shipping container



Data Review



Missing extension of building



Acceptance/Rejection

- Standard rejection statements based on acceptance criteria
- Review the products at the correct map scale
- Aim for a one-pass review
 - Identify all issues in your review – newly identified issues after correction of the first round extends the project schedule.
- Questions can lead to confusion – if you can't identify the problem, we can't fix it

Clear communication is essential to quick resolution!

Finalization

Confirm:

- The product review is complete
- The products are acceptable without further correction
- You are satisfied

Documentation: Acceptance Letter

Tracking Quality

Sanborn's Quality System tracks by:

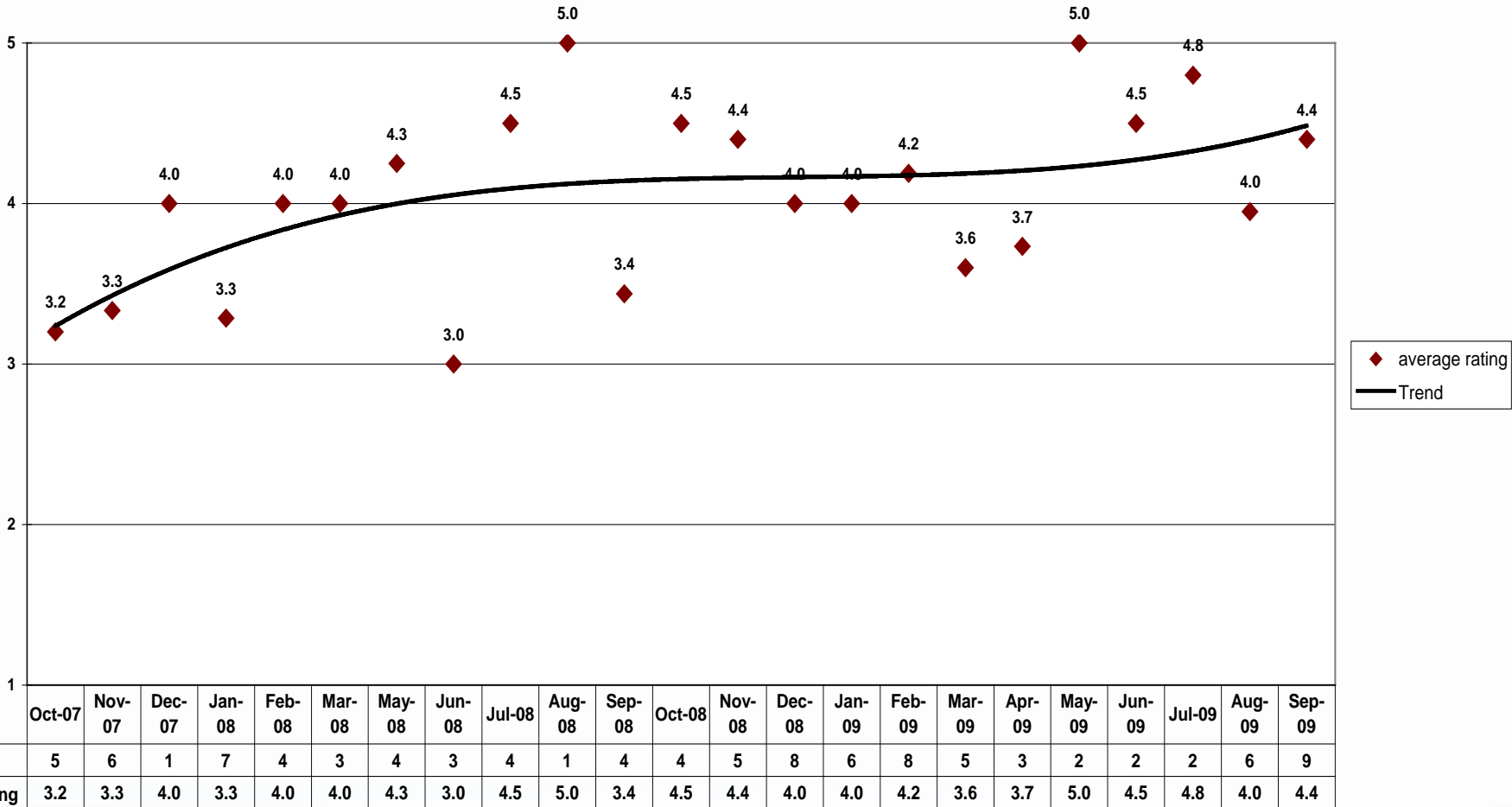
- Post Project Appraisals – Customer supplied rating after a project is completed. The ratings are 1 (completely unsatisfied) to 5 (completely satisfied) in 5 categories.
- First Time Acceptance – This is a percentage of data accepted from the client as production of the data is completed. It is calculated by the amount to data accepted by the total amount of data delivered.

Post Project Appraisals

Average Monthly Rating/Trend FY2009



Post Project Appraisals Sanborn
Average Monthly Rating
Since Oct 2007



First Time Acceptance Rate (97%)

by Month - calculation = # of units accepted/total # of units delivered



**Sanborn First Time Acceptance
FY2009 - Monthly Units**
(units accepted/total units)

