

# **California-Specific Professional Land Surveyor Examination Test Plan**

## **Effective January 2019**

### **General Definition of California Professional Land Surveying Practices:**

The practice of land surveying in the State of California consists of determining, establishing, reporting and mapping the positions, contours and/or geospatial configuration of points, physical features, property interests, boundary and/or property lines by applying the principles of surveying, mathematics, measurement and law to meet the distinctive requirements of the State of California to protect the health, safety and welfare of the public.

This area of practice is structured into six primary content areas:

- I. Business Practices and Project Management (12%)
- II. Research and Project Planning (20%)
- III. Field Operations and Investigations (15%)
- IV. Analysis and Evaluation (26%)
- V. Mapping and Document Preparation (18%)
- VI. Professional Consulting (9%)

## BPELSG Land Surveying Test Plan-2019

	Percentage of Questions on the Exam
<b>I. Business Practices and Project Management</b>  <u>Professional Activities:</u> 1. Communicate the practice of land surveying 2. Prepare proposals and contracts (e.g., scope, schedule, budget, client needs, regulatory requirements) 3. Offer or procure land surveying and incidental services 4. Direct personnel for office and field tasks 5. Coordinate projects with third parties (e.g., agencies, consultants, contractors) 6. Identify project standards (e.g., mapping, accuracy requirements, legal requirements, methodology, quality assurance, agency standards, project specifications) 7. Develop plan for project execution (e.g., mapping, accuracy requirements, methodology, quality assurance, client needs) 8. Preserve survey monuments in accordance with State law 9. Manage a land surveying business, organization or department 10. Apply the Subdivision Map Act and other related laws and regulations 11. Apply the Professional Land Surveyors Act 12. Identify and disclose potential conflicts of interest	12%
<b>Test questions on these professional activities may include one or more of the following:</b>	
A. Professional Land Surveyors' (PLS) Act	
B. Project requirements	
C. Impact of local ordinances	
D. Subdivision Map Act (SMA)	
E. Survey-relevant sections of state laws (e.g., Public Resources Code, Civil Code, Evidence Code)	
F. Impact of federal laws (e.g., FEMA, CoE, BLM)	
G. Laws and ordinances pertaining to setting of monuments (e.g., PLS Act § 8771-8772, SMA § 66495-66498, local ordinances)	
H. Right of entry laws	
I. Capabilities and limitations of equipment and technologies (e.g., GPS, laser scanning, levels, total stations, UAS)	
J. Interpretation of elements in construction plans and specifications pertaining to staking	
K. Elements required for an aerial flight plan (e.g., photogrammetric, LiDAR, UAS)	
L. Procedures for preparation for aerial mapping and contouring	
M. Procedures for preparation for terrestrial mapping and contouring (e.g., total station, GPS, LiDAR, cameras)	
N. National Standard for Spatial Data Accuracy (NSSDA)	
O. When records of survey are required	

P. When corner records are required	
Q. When parcel maps are required	
R. When final maps are required	
S. When tentative maps are required	
T. Map waivers (e.g., SMA § 66428)	
U. Exceptions to Subdivision Map Act (e.g., SMA § 66412)	
V. State and local agency requirements for maps and related documents (e.g., submittal, review, filing)	
W. Mapping requirements and criteria	
X. Contractual agreements (e.g., cost estimates, scope of services, limitations)	
Y. Appropriate communication methods (e.g., statutory, regulatory)	
<b>II. Research and Project Planning</b>	
<b>Professional Activities:</b>	
<b>1. Identify and determine proper control datums, realizations and epochs</b>	
<b>2. Analyze project data (e.g., recorded maps, deeds, title data, control data, land planning requirements)</b>	
<b>3. Identify conflicts within documents, maps and drawings</b>	
<b>4. Conduct project research</b>	
<b>5. Prepare construction layout and control files</b>	
<b>6. Perform surveying calculations (e.g., boundary, control, topographic)</b>	
<b>7. Plan control networks</b>	
	<b>20%</b>
<b>Test questions on these professional activities may include one or more of the following:</b>	
A. Interpretation of elements in construction plans and specifications pertaining to staking	
B. Elements required for an aerial flight plan and control (e.g., photogrammetric, LiDAR, UAS)	
C. Procedures and requirements for aerial mapping and contouring	
D. Procedures for preparation for terrestrial mapping and contouring (e.g., total station, GPS, LiDAR, photogrammetry)	
E. When records of survey are required	
F. When corner records are required	
G. Public Land Survey System (PLSS)	
H. Sequential conveyances (e.g., senior, junior rights)	
I. Simultaneous conveyances	
J. Water boundaries	
K. Relationship of land grants between private, state and federal (e.g., ranchos, town sites)	
L. Methods of establishing boundaries	
M. Types and components of title documents (e.g., title report, chain of title, lot and block report)	
N. Monument recovery procedures	
O. Easements, rights-of-way, leases and other encumbrances	
P. Methods and procedures for retracement and re-establishment of railroad rights-of-way	

Q. Controlling elements of legal descriptions	
R. Strengths and weaknesses of various legal description types	
S. Horizontal and vertical control	
T. Projections, datums and epoch dates	
U. Transformation between datums and projections	
V. Geoid, ellipsoid and orthometric heights	
W. Error sources (e.g., multipath, data input, instrument calibration)	
X. Methods and procedures to produce control networks within accuracy standards (e.g., Public Resources Code, Federal and State standards)	
Y. Sources of research data (e.g., public, quasi-public, private)	
Z. Source, type and accuracy of digital data (e.g., metadata, GIS)	
<b>III. Field Operations and Investigations</b>	<b>15%</b>
<b>Professional Activities:</b>	
<b>1. Perform topographic and/or as-built surveys</b>	
<b>2. Perform control surveys</b>	
<b>3. Perform boundary surveys</b>	
<b>4. Retrace PLSS surveys</b>	
<b>5. Perform monitoring surveys</b>	
<b>6. Perform construction staking</b>	
<b>7. Perform hydrographic surveys (e.g., bathymetric, tidal datum)</b>	
<b>8. Communicate with clients, contractors and general public while in the field</b>	
<b>Test questions on these professional activities may include one or more of the following:</b>	
A. Right of entry laws	
B. Capabilities and limitations of equipment and technologies (e.g., GPS, laser scanning, levels, total stations, UAS)	
C. Interpretation of elements in construction plans and specifications pertaining to staking	
D. Public Land Survey System (PLSS)	
E. Monument recovery	
F. Monument re-establishment procedures (e.g., PLS Act 8771 and 8773)	
G. Horizontal and vertical control	
H. Error sources (e.g., multipath, data input, instrument calibration)	
I. California Coordinate Systems	
J. Real-time-networks (e.g., processes, redundancy, accessibility, accuracy)	
K. Survey calculations (e.g., horizontal and vertical alignments, volumes, grade)	
L. Field notes and staking reports	
M. Basis of control values and their relation to maps and construction plans (e.g., basis of bearings, benchmark)	
N. Methods and requirements for performing topographic and/or as-built surveys	
O. Field practices and procedures for construction staking	
P. Geoid models, ellipsoid heights and orthometric heights	

<p><b>IV. Analysis and Evaluation</b></p> <p><b>Professional Activities:</b></p> <ol style="list-style-type: none"> <li>1. Analyze field evidence together with recorded and unrecorded documentation to retrace boundaries, easements, and possible encroachments (e.g., monuments, occupation, oaths/parol evidence)</li> <li>2. Identify conflicts between project drawings and existing field conditions</li> <li>3. Evaluate accuracies of historic documents and maps versus measured survey data</li> <li>4. Evaluate relevance and spatial relationships of maps and measured survey data (e.g., GIS data, field data, metadata)</li> <li>5. Identify and assess boundary conflicts</li> <li>6. Analyze results of survey adjustments (e.g., least squares, error analysis)</li> <li>7. Perform quality assurance and quality control</li> </ol>	26%
<p><b>Test questions on these professional activities may include one or more of the following:</b></p>	
A. When records of survey are required	
B. When corner records are required	
C. Public Land Survey System (PLSS)	
D. Water boundaries (e.g., tidal datums, navigable vs non-navigable)	
E. Hierarchy of evidence (e.g., Code of Civil Procedure 2077)	
F. Effects of unwritten rights	
G. Boundary resolution	
H. Evaluation of field evidence	
I. Methods of establishing boundaries	
J. Types of conveyances and their effects of ownership on property (e.g., fee vs. easement, grant deed, quitclaim deed)	
K. Effect of riparian and littoral rights on boundaries	
L. Cloud on title	
M. Error analysis	
N. Effect of ground movement and earthquakes on boundaries	
O. Easements, rights-of-way, leases and other encumbrances	
P. Criteria for acceptance or rejection of monuments	
Q. Physical evidence that may indicate unwritten rights (e.g., adverse possession, prescriptive rights)	
R. Controlling elements of legal descriptions	
S. Types of legal descriptions (e.g., strip, metes and bounds, lot and block, aliquot)	
T. Exceptions and reservations of legal descriptions	
U. Horizontal and vertical control	
V. Projections, datums, realizations and epoch dates	
W. Geoid, ellipsoid and orthometric heights	
X. Conversion between grid and ground distances	
Y. Quantifying and analyzing errors	

Z. Procedures for analysis, reduction, and adjustment of raw data to obtain coordinate values	
AA. Survey calculations (e.g., horizontal and vertical alignments, volumes, grade)	
BB. Digital terrain models	
CC. Applying relevant case law (e.g., boundary issues, liability)	
DD. Methods to obtain bearings or azimuths related to geodetic, magnetic, grid or astronomic north	
EE. Parol evidence	
FF. Significant figures for maps, plats or reports	
GG. Survey-relevant sections of state laws (e.g., Public Resources Code, Civil Code, Evidence Code)	
<b>V. Mapping and Document Preparation</b>	
<b>Professional Activities:</b>	
<b>1. Prepare legal descriptions (e.g., easements, lot line adjustments, other interests in real property)</b>	
<b>2. Ensure survey documents comply with State laws, local ordinances, and contractual obligations</b>	
<b>3. Create digital terrain models (DTM)</b>	
<b>4. Prepare topographic maps from various sources (e.g., photogrammetry, field survey, LiDAR, GIS, UAS, hydrographic)</b>	
<b>5. Prepare control maps or reports (e.g., local, geodetic, monitoring)</b>	
<b>6. Prepare maps, plats and exhibits (e.g., court, easement, ALTA/NSPS, boundary)</b>	
<b>7. Prepare maps, plats, exhibits and documents for filing and/or recordation (e.g., records of survey, corner records, lot line adjustments, subdivision maps, condominium plans)</b>	
<b>8. Prepare staking reports (e.g., cut-sheets, plots)</b>	
	<b>18%</b>
<b>Test questions on these professional activities may include one or more of the following:</b>	
A. Professional Land Surveyors' (PLS) Act	
B. Subdivision Map Act (SMA)	
C. National Standard for Spatial Data Accuracy (NSSDA) requirements	
D. Procedures, standards and requirements for ALTA/NSPS Land Title Survey	
E. Basis of control elements and their relation to maps (e.g., basis of bearings, benchmark)	
F. Types of legal descriptions (e.g., strip, metes and bounds, lot and block, aliquot)	
G. Exceptions and reservations in legal descriptions	
H. Projections, datums and epoch dates	
I. California Coordinate System	
J. Surveyor notes (e.g., boundary narrative)	
K. Surveyor reports (e.g., volume, staking)	
L. Digital terrain models	
M. Parol evidence (e.g., use, methods to document, and effects)	

N. Code of Regulations (Board Rules)	
O. Public Resource Code (PRC)	
P. Signing and sealing requirements	
Q. Components of a legal description (e.g., preamble, body)	
R. Methods and procedures for preparing topographic maps (e.g., photogrammetric, planimetric)	
S. Elements of corner records (legal content required)	
T. Elements of records of survey (legal content required)	
U. Elements of tentative maps (legal content required)	
V. Elements of parcel maps (legal content required)	
W. Elements of final maps (legal content required)	
X. Certificates of correction and amended maps	
Y. Depicting physical evidence that may indicate unwritten rights	
Z. Easements, rights-of-way, leases and other encumbrances	
<b>VI. Professional Consulting</b>	
<b>Professional Activities:</b>	
<b>1. Communicate accuracies of maps or survey data</b>	
<b>2. Provide expert witness testimony (e.g., depositions, arbitration, trials)</b>	
<b>3. Provide litigation support (e.g., land boundary matters, datums, design projects)</b>	
<b>4. Provide land planning services (e.g., tentative maps, Department of Real Estate exhibits)</b>	9%
<b>5. Provide recommendations in accordance with State Laws (e.g., Subdivision Map Act, Professional Land Surveyors Act, Public Resources Code)</b>	
<b>6. Conduct independent peer review</b>	
<b>Test questions on these professional activities may include one or more of the following:</b>	
A. Professional Land Surveyors' (PLS) Act	
B. Subdivision Map Act (SMA)	
C. Impact of local ordinances (e.g., zoning, setbacks)	
D. State and local agency processing requirements for maps and related documents (e.g., submittal, review, filing)	
E. Appropriate communication methods (e.g., verbal and written)	
F. Effects of unwritten rights on boundaries	
G. Effect of riparian and littoral rights on boundaries	
H. Cloud on title	
I. Effect of ground movement on boundaries (e.g., earthquakes, subsidence, slides)	
J. Impacts of encumbrances (e.g., deeds of trust, tax liens, easements, leases)	
K. Evidence that may indicate unwritten rights (e.g., adverse possession, prescriptive rights)	
L. Researching relevant case law (e.g., boundary issues, liability)	
M. Notice of potential encroachments	

N. Survey-relevant sections of state laws (e.g., Public Resources Code, Civil Code, Evidence Code)	
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