UTILITY SPECIFICATION BOOK - PG&E; SECTION 4.0

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SECTION 4.1: POLE INSTALLATION REQUIREMENTS

4.1.1 WOOD POLE SPECIFICATIONS

All wood poles must be treated with preservative per ANSI O5.1 standard.

Minimum class rating: Class 3 for distribution lines.

All poles must be inspected and tagged prior to installation.

4.1.2 POLE DEPTH REQUIREMENTS

Pole embedment depth must be 10% of pole length plus 2 feet.

Example: 40-foot pole requires 6 feet of embedment (40 x 0.10 + 2 = 6).

Soil conditions may require additional depth per engineering approval.

4.1.3 GUY WIRE SPECIFICATIONS

All guy wires must be high-strength galvanized steel.

Minimum breaking strength: 10,000 lbs for distribution poles.

Guy anchors must be rated for 125% of guy wire strength.

SECTION 4.2: CONDUCTOR INSTALLATION

4.2.1 CONDUCTOR TYPES

Primary conductors: Aluminum Conductor Steel Reinforced (ACSR) only.

Minimum size: 2/0 ACSR for overhead distribution.

All conductors must meet ASTM B-232 specifications.

4.2.2 CONDUCTOR CLEARANCES

Minimum ground clearance: 18 feet for roads, 15 feet for other areas.

Minimum separation from buildings: 10 feet horizontal, 8 feet vertical.

Communication cable separation: Minimum 40 inches below power conductors.

4.2.3 CONDUCTOR TENSION

Maximum tension: 60% of rated breaking strength under normal conditions.

Sag must be calculated for 120°F ambient temperature.

All spans must be verified with tension meters before energization.

SECTION 4.3: GROUNDING REQUIREMENTS

4.3.1 GROUND ROD SPECIFICATIONS

All ground rods must be copper-clad steel.

Minimum dimensions: 5/8 inch diameter x 8 feet length.

Ground resistance must not exceed 25 ohms per IEEE Std 142.

4.3.2 GROUNDING INSTALLATION

Ground rods must be driven full depth (within 2 inches of surface).

All connections must use compression connectors or exothermic welding.

Ground wire must be #6 AWG copper minimum, continuous to ground rod.

4.3.3 TESTING REQUIREMENTS

All grounds must be tested with calibrated ground resistance meter.

Test results must be documented on installation cards.

Failed grounds (>25 ohms) require additional rods or enhanced grounding.

SECTION 4.4: EQUIPMENT INSTALLATION

4.4.1 TRANSFORMER MOUNTING

Transformers must be mounted on cross-arms with through bolts.

All mounting hardware must be hot-dip galvanized.

Minimum bolt size: 5/8 inch diameter, grade 5 or better.

4.4.2 CUTOUT INSTALLATION

Cutouts must be installed on bracket with 3-bolt mounting.

Fuse size must match transformer protection requirements.

All cutout bases must be tested for proper operation before energization.

4.4.3 LIGHTNING ARRESTERS

Lightning arresters required on all transformers and capacitor banks.

Arresters must be polymer-housed, station-class rated.

Arrester ground lead must be direct connection to ground rod (no splices).

SECTION 4.5: SAFETY REQUIREMENTS

4.5.1 CLEARANCE VERIFICATION

All clearances must be verified before energization.

Minimum approach distance for 12kV: 2 feet 2 inches.

Work must stop if clearances cannot be maintained.

4.5.2 EQUIPMENT RATING

All equipment must be rated for system voltage or higher.

Equipment operating at reduced ratings must have engineering approval.

De-rated equipment must be clearly tagged with reduced rating.

4.5.3 WORK COMPLETION

All work must pass QA inspection before energization.

Installation cards must be complete and signed by qualified inspector.

Any deviations from spec book require engineering approval and documentation.