



CITY OF CHICO FIRE DEPARTMENT

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Emergency Responder Communications Enhancement Systems (ERCES) Standard

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1. Purpose and Scope

This standard establishes the City of Chico requirements for evaluating, designing, permitting, installing, testing, operating, maintaining, and modifying Emergency Responder Communications Enhancement Systems (ERCES). The purpose is to provide reliable two-way public-safety radio communications inside buildings while preventing harmful interference with the City of Chico and regional public-safety radio systems.

This standard supplements California Fire Code Section 510. If any provision of this standard conflicts with an adopted code, applicable federal law or regulation, or a written requirement issued by the Fire Code Official or the applicable Frequency License Holder, the conflicting code, law, regulation, or written requirement shall supersede and control over this standard.

2. Authority and Referenced Standards

This standard is based on the following, as adopted or applicable:

- 2025 California Fire Code, as adopted by Chico Municipal Code Chapter 16R.42, including Sections 105, 510, 1203, and applicable provisions of Chapter 11.
- NFPA 1225, Standard for Emergency Services Communications, edition referenced by the adopted CFC.
- NFPA 72, National Fire Alarm and Signaling Code, edition referenced by the adopted California codes.
- California Electrical Code / NFPA 70, as adopted.
- UL 2524, In-Building 2-Way Emergency Radio Communication Enhancement Systems.
- 47 CFR Part 90, including 47 CFR § 90.219, and other applicable FCC requirements.
- Manufacturer installation instructions and listings.

3. Definitions

Term	Definition
BDA	Bi-directional amplifier or signal booster used as part of an ERCES.
Critical Area	An area designated by the Fire Code Official requiring 99 percent compliant coverage. Critical Areas include, at minimum, interior exit stairs, exit passageways, elevator lobbies, elevator cars, fire command centers, fire pump rooms, fire sprinkler riser and control-valve locations, emergency and standby power rooms, areas of refuge, and hazardous materials areas.
Donor Antenna	The exterior antenna used to communicate with an approved public-safety radio site.
ERCES	An approved in-building emergency responder communications enhancement system, including active RF equipment, distributed antenna system components, cabling, power supplies, monitoring, annunciation, and related equipment.
Fire Code Official / Fire Marshal	The Fire Chief or the Fire Chief's authorized designee, including the Fire Marshal. References in this standard to the Fire Marshal include the Fire Code Official.
Frequency License Holder	The entity holding the FCC authorization for a frequency retransmitted by the ERCES.
General Area	All testable building areas other than separately identified Critical Areas.
Material Modification	A change that can affect RF performance, equipment listing, power, monitoring, frequencies, donor site, antenna location or orientation, cable routing, or system gain.
Communications Division	City of Chico Administrative Services Department, Communications Division, or its authorized successor.

4. Applicability and When Testing Is Required

4.1 New Buildings Requiring Initial Coverage Testing

For purposes of administering CFC Section 510.1 and its exceptions, initial in-building radio coverage testing shall be required for a new building when the building meets one or more of the following criteria:

- Three or more stories above grade plane.
- More than 20,000 square feet of total building area.
- A basement or other below-grade area exceeding 2,500 square feet.
- Any other building or portion of a building designated in writing by the Fire Marshal based on construction features, occupancy or use, underground areas, anticipated radio attenuation, fire and life-safety risks, responder operations, or other documented operational considerations.

A new building that does not meet any criterion above is not required to submit an initial coverage test unless specifically directed by the Fire Marshal. This determination is an administrative application of the Fire Code Official's authority under CFC Section 510.1 and does not limit the Fire Marshal's authority to require testing or an ERCES when field conditions or operational needs warrant.

4.2 Test Outcome

Where required testing demonstrates compliant coverage, an ERCES is not required. Where the building fails to provide the required coverage, the owner shall obtain permits and install an approved ERCES before final occupancy, unless an alternative is specifically approved by the Fire Code Official and Building Official.

Required coverage testing shall occur after the building is complete in accordance with Section 11.2.

Preconstruction surveys, predictive modeling, temporary tests, or tests performed before completion of walls, windows, doors, ceilings, and other radio-attenuating construction may be used for design purposes only and shall not satisfy the City's final proof-of-coverage requirement.

4.3 Existing Buildings

Existing buildings shall comply where required by the adopted CFC, Chapter 11, a change of occupancy or use, removal of an existing fire-department communication system, a condition of approval, or a written determination by the Fire Marshal based on demonstrated ineffective emergency communications.

4.4 Construction Coordination

Every new building in which an ERCES is required, or for which the Fire Marshal determines from a preconstruction survey or predictive modeling that an ERCES is likely to be required, shall be provided with approved vertical pathways for ERCES installation, whether or not an ERCES is initially shown on the construction documents. The pathways shall extend from an approved BDA/equipment location to each floor and to an approved roof or donor-antenna access point.

Vertical pathways shall consist of dedicated conduit, rated shaft space, cable tray within an approved protected enclosure, or another method approved by the Fire Marshal. Pathway size, quantity, routing, pull boxes, fire-resistance rating, grounding, physical protection, and accessibility shall be shown on the building plans and coordinated with the Chico Fire Department, Building Division, and Communications Division. Pathways shall be installed before concealment and shall remain reserved and accessible for ERCES use.

At a minimum, the design shall provide a continuous vertical route capable of serving every floor, the proposed BDA head-end location, and the roof donor-antenna location. The Fire Marshal may require additional or redundant pathways based on building height, area, construction, fire-resistance features, or anticipated system topology.

5. Performance Requirements

5.1 Coverage

Each floor shall provide compliant two-way communications in:

- At least 95 percent of General Areas.
- At least 99 percent of all designated Critical Areas.

5.2 Minimum Signal and Quality

Unless the Fire Marshal issues different project-specific criteria, the minimum inbound signal level shall be -95 dBm throughout the required coverage area. Uplink and downlink performance shall provide usable voice communications.

For approval, the minimum delivered audio quality shall be DAQ 3.0, consistent with California Fire Code Section 510.4.1.1. Testing may include instrument-derived SINR, BER/FBER, or other objective measurements accepted by the City Communications Division; however, those measurements shall be used to document performance equivalent to DAQ 3.0 and shall not establish a more restrictive default approval threshold. The Fire Marshal or Communications Division may require a higher project-specific performance level only upon a written determination of documented operational necessity.

For purposes of this standard, performance equivalent to DAQ 3.0 shall be demonstrated by measured SINR of at least 18 dB and BER/FBER not exceeding 2.5 percent for P25 CQPSK signals, as shown in Table 5.2-1. Where a higher project-specific performance level is required under this section, the corresponding SINR and BER/FBER values in Table 5.2-1 shall apply.

Table 5.2-1 - DAQ Equivalence Reference (P25 CQPSK, Rayleigh Fading Channel)

DAQ Level	Equivalent SINR	Equivalent BER/FBER	Voice Quality (TIA TSB-88.1 Description)
2.0	~12 dB	~10%	Understandable with considerable effort; frequent repetition due to noise and distortion. Below code minimum.
3.0	≥ 18 dB	≤ 2.5%	Speech understandable with slight effort; occasional repetition required. CFC 510.4.1.1 code minimum; approval threshold under this standard.
3.4	≥ 20 dB	≤ 2.0%	Speech easily understood; repetition rarely required. NFPA 1225 Annex A.18.9.1 recommended design level.
4.0	≥ 22 dB	≤ 1.0%	Speech easily understood; occasional noise or distortion.
4.5	≥ 25 dB	≤ 0.5%	Speech easily understood; infrequent noise or distortion.
5.0	≥ 30 dB	≤ 0.1%	Speech easily understood.

Source: TIA TSB-88.1; DAQ scale definitions per TIA TSB-88.1 and NTIA Report 99-358 (Nov. 1998). The DAQ 3.0 equivalence values (18 dB SINR; 2.5 percent BER) are consistent with NFPA 1225 Annex A.18.9.1. Values reflect typical in-building Rayleigh fading channel conditions for P25 CQPSK signals; the DAQ 2.0 row is approximate. Equivalence values verified by the Communications Division against the City's P25 link budget.

5.3 Grid Method

Each floor shall be divided into 20 approximately equal test grids. Critical Areas shall be tested as separate discrete locations and shall not be counted toward the 20-grid minimum. The adjacent area allowance may be used only where permitted by the adopted code and shall not be applied to Critical Areas.

5.4 System Capacity and Delay

- The system shall support at least two portable radios transmitting simultaneously on different talk paths or channels.
- Maximum propagation delay through the ERCES, measured from the donor antenna port to the most distant service antenna, shall not exceed 15 microseconds unless a different limit is approved in writing by the Fire Marshal in coordination with the Communications Division. Propagation delay shall also comply with NFPA 1225.
- System gain, noise, and dynamic range shall be engineered to minimize near-far effects and avoid degradation of the public-safety radio network.

6. System Design Requirements

6.1 Listings and Equipment

- All required active equipment and system components shall be listed and labeled in accordance with UL 2524.
- Only FCC-compliant Class A, channelized signal boosters are permitted unless the Communications Division provides written approval for another configuration.
- Signal boosters shall amplify only frequencies specifically authorized in writing by the applicable Frequency License Holder.
- All RF-emitting devices shall be suitable for public-safety use and shall have required FCC equipment authorization before installation.
- A current system diagram shall be conspicuously posted at the BDA head-end and kept up to date to reflect as-built conditions and all approved modifications. A copy of the current diagram shall be provided to the Communications Division at acceptance and after each revision.

6.2 Enclosures and Location

- Signal-booster components shall be installed in a NEMA Type 4 cabinet.
- Battery systems shall be installed in a NEMA 3R or higher-rated cabinet.
- The BDA and associated active equipment shall be located in a secure, environmentally suitable, readily accessible location approved by the Fire Marshal.
- Equipment rooms and pathways shall be protected in accordance with CFC Section 510, NFPA 1225, and the adopted building and electrical codes.

6.3 Power Supply

A permanent standby generator is not required solely by this standard. Generator power shall be provided only where required by the California Fire Code or another applicable adopted code, or where voluntarily included in the approved system design.

- A dedicated branch circuit shall supply the primary power source.

- The disconnecting means shall be permanently identified as 'EMERGENCY RESPONDER COMMUNICATIONS ENHANCEMENT SYSTEM' and provided with an approved breaker lock.
- Standby power shall comply with the duration and capacity required by the California Fire Code and the referenced NFPA standard. Where a generator is required by the California Fire Code or another applicable adopted code, or is voluntarily incorporated into the ERCES design, the battery capacity, automatic connection, loading, and operating duration shall comply with the adopted code and the approved design.
- Battery calculations shall include all active system components, monitoring, annunciation, and applicable derating.

6.4 Isolation, Oscillation, Gain, and Noise

- Isolation between the donor antenna and all indoor antennas shall be at least 20 dB greater than system gain under all operating conditions.
- Active devices shall include built-in oscillation detection and control. Oscillation shall produce a supervisory signal; uncorrectable oscillation may cause automatic shutdown.
- Uplink gain shall be set to the minimum necessary for compliance and shall not exceed limits established by the Communications Division.
- Uplink noise, out-of-band emissions, leakage, and donor-site impact shall comply with FCC requirements and written Communications Division criteria.
- The donor antenna make and model, and its placement, mounting height, and orientation/azimuth, shall be selected in coordination with, and approved in writing by, the Communications Division before installation, consistent with Section 8.
- Omnidirectional antennas shall not be permitted for use as donor antennas. Donor antennas shall be directional and oriented toward the approved donor site.

6.5 Monitoring and Annunciation

The ERCES shall be monitored by a listed fire alarm control unit, or by another approved method at a constantly attended location. A dedicated annunciator shall be provided at a location approved by the Fire Marshal. The following conditions shall be monitored and annunciated:

- Loss of normal AC power.
- Battery charger failure.
- Low battery at the code-required threshold.
- Signal source or donor antenna malfunction.
- Failure of any active RF-emitting device.
- Failure of critical system components.
- Failure of the communications link between the fire alarm system and ERCES.
- Oscillation, amplifier overload, or other condition requiring gain reduction or shutdown.

The ERCES shall be provided with secure remote access, by a method approved by the Communications Division, that allows authorized Communications Division personnel to remotely monitor system status, retrieve diagnostic information for troubleshooting, and remotely disable (shut down) the signal booster. Remote disablement shall not impair required supervision, and any remote shutdown shall annunciate as an off-normal condition.

6.6 Cabling, Pathways, and Protection

- Cabling shall be listed for the environment and installed in accordance with NFPA 1225 and the California Electrical Code.
- Backbone and survivability pathways shall be protected as required by the adopted code and the approved design.
- Penetrations of rated assemblies shall be protected with approved firestop systems.
- Cables subject to physical damage shall be protected by approved metallic raceway or other approved means.
- Donor antenna coaxial cables shall be protected by listed surge protection and grounded in accordance with the California Electrical Code.

7. BDA Shutdown, Access, and Emergency Documentation

7.1 Required BDA Shutoff

Each ERCES shall be provided with a clearly labeled, readily accessible emergency shutoff capable of de-energizing the BDA and disconnecting both normal and standby power to active RF-emitting equipment. The shutoff shall:

- Be located immediately adjacent to the BDA head-end, unless another location is approved.
- Be protected against accidental operation while remaining immediately operable by authorized personnel.
- Be labeled in permanent red lettering: “ERCES / BDA EMERGENCY SHUTOFF - AUTHORIZED PERSONNEL ONLY.”
- Be accessible to Chico Fire Department and Communications Division personnel 24 hours per day, seven days per week.
- Not disable unrelated fire alarm, life-safety, or building systems.
- Be capable of remote operation by authorized Communications Division personnel through the remote access capability required by Section 6.5, in addition to local manual operation.

7.2 Facility Shutdown and Access Plan

A PDF-format plan of the facility shall be submitted with the permit documents and maintained on site. The plan shall clearly show the BDA head-end, emergency shutoff, normal-power disconnect, standby-power source, annunciator, access route from the primary fire department entrance, doors and keys or Knox access needed, and any special access instructions.

The PDF shall be a single, legible 8.5 x 11-inch or 11 x 17-inch document titled “ERCES / BDA SHUTDOWN AND ACCESS PLAN.” A printed copy of the current plan shall be posted at the BDA head-end where it is immediately obvious and accessible to Chico Fire Department and Communications Division personnel immediately upon entry to the BDA head-end location.

7.3 Emergency Response Information

The following information shall be provided:

- System shutdown procedure.
- 24-hour contacts for building management and the maintenance contractor.

- City Fire Department and Communications Division contact information.
- Brief system description and block diagram.
- Response steps for power loss, donor signal loss, oscillation, amplifier overload, and harmful interference.
- Current executed Licensee Consent to Operate a Signal Booster (Appendix D), documenting the express consent of the frequency licensee required by 47 CFR § 90.219(b)(1)(i).

8. Donor Antenna Coordination and Approval

The donor radio site, donor antenna location, mounting height, orientation/azimuth, downtilt, gain, polarization, cable type, and pointing shall be coordinated with and approved in writing by the City Communications Division before installation.

- The design submittal shall include roof plans, exterior elevations, antenna details, latitude/longitude, proposed donor site, horizontal and vertical signal path profiles, and calculated isolation.
- No donor antenna shall be installed, moved, reoriented, replaced, or modified without prior written Communications Division approval.
- The donor antenna shall be permanently affixed and provided with a durable sign stating: 'MOVEMENT OR REPOSITIONING OF THIS ANTENNA IS PROHIBITED WITHOUT CITY APPROVAL.'
- The Communications Division may require field verification before permanent mounting or may require a different donor site or antenna configuration.
- Written approval of donor antenna location and pointing is a condition of permit issuance or deferred-submittal approval and is required before system energization.

9. Permits and Plan Submittal Requirements

9.1 Permits

A fire construction permit is required to install or materially modify an ERCES. An operational permit shall be required by the Fire Marshal. Operation of an ERCES additionally requires the written consent of the frequency licensee in the form of a current executed Licensee Consent to Operate a Signal Booster (Appendix D), as described in Section 7.3. No ERCES shall be operated without that executed consent.

9.2 Submittal Format

- Electronic PDF plan set, minimum 24 x 36 inches unless otherwise approved.
- Separate PDF product-data booklet, 8.5 x 11 inches, with cover sheet and complete materials list.
- All sheets shall use consistent size, scale, north arrow, legend, sheet number, revision block, and unique component identifiers.

9.3 Required Content

- Project information, including the project address, owner, design professional, system designer, installer, testing entity, and 24-hour contacts.
- Building information, including occupancy, construction type, stories above/below grade, total area, basement area, and sprinkler status.
- Code and standard compliance statement.

- Designer and lead installer qualifications.
- Equipment and materials schedule, including manufacturer, model, FCC ID, listing, quantity, and enclosure rating.
- Site plan and roof plan showing donor antenna and proposed donor site.
- Written Communications Division approval of donor antenna make, model, location and pointing, or a clearly identified deferred approval item.
- Floor plans for every level, including levels not served by active equipment, showing antennas, cable routes, BDA, batteries, annunciator, shutoff, electrical disconnects, and rated enclosures.
- Vertical pathway plans and details showing the dedicated route from the BDA/equipment location to every floor and the roof, including conduit or shaft size, construction, fire rating, pull points, access panels, grounding provisions, and reserved capacity.
- System riser/block diagram with unique identifiers for all active and passive components and major cable segments.
- Link-budget calculations for uplink and downlink at each antenna and donor site.
- Calculated system gain, donor/service antenna isolation, propagation delay, noise, leakage, and near-far analysis.
- Battery sizing calculations.
- Monitoring and fire alarm interface details.
- Mounting, grounding, surge protection, firestopping, pathway, and survivability details.
- Predicted heat maps for every floor using the same 20-grid identifiers that will be used for acceptance and annual testing.
- Draft ERCES / BDA Shutdown and Access Plan in PDF format.
- Draft Licensee Consent to Operate a Signal Booster (Appendix D). A fully executed consent is not required at the time of submittal, but the consent shall be executed before final approval in accordance with Section 11.4.

9.4 Pre-Energization Approval

The system shall not be energized for testing or operation until all of the following have occurred: the Communications Division has approved the applicable frequencies, donor site, and donor antenna location and pointing; the Licensee Consent to Operate a Signal Booster (Appendix D) has been executed; and written authorization to energize has been issued.

Required vertical pathways shall be inspected and approved before concealment. The permit holder shall provide access for inspection of conduit, shafts, pull boxes, firestopping, supports, grounding provisions, and pathway terminations.

10. Personnel Qualifications

The system designer and lead installer shall possess:

- A valid FCC General Radiotelephone Operator License (GROL).
- Documented in-building system training from a nationally recognized organization, approved school, equipment manufacturer, or an approved equivalent.

- Demonstrated training and experience with P25 public-safety systems and the specific equipment installed.

All coverage testing and ERCES/BDA testing shall be performed by a third-party testing company appearing on the current City Communications Division list of authorized testing companies in Appendix E. The testing company shall be hired and paid by the contractor installing the BDA or, where no BDA has yet been selected, by the project contractor or owner responsible for the required coverage test. The BDA installation company and testing company shall be separate and independent and shall not be the same legal entity, affiliate, subsidiary, parent, commonly controlled company, or joint venture. The Fire Marshal and Communications Division may reject any testing arrangement that creates an actual or apparent conflict of interest.

11. Acceptance Testing and Final Approval

11.1 Independent Testing

A City-authorized independent third-party testing company shall perform every required radio coverage test, including: (1) the initial test of a new building to determine whether an ERCES/BDA is required; (2) acceptance testing after installation or material modification of an ERCES/BDA; and (3) annual or other periodic testing required by this standard. The company shall be selected from the current list maintained by the City Communications Division and included in Appendix E. The testing company shall not be the same company as the BDA installation contractor and shall have no disqualifying ownership, management, employment, or financial relationship with the installer.

11.1.1 Selection, Contracting, and Payment

The building owner, general contractor, or BDA installation contractor shall contract directly with and pay the City-authorized third-party testing company for required pre-installation coverage testing and post-installation acceptance testing. Payment by the installation contractor does not authorize the installer to direct, alter, suppress, or condition the test results.

The testing company shall submit its final signed report directly to the Chico Fire Department, with a copy to the City Communications Division. Reports routed only through the installation contractor will not be accepted. Retesting required because of a failed test, incomplete report, deficient installation, or uncalibrated equipment shall be performed by a company on the current authorized list. The City may require a different authorized testing company to verify disputed results or protect the integrity of the process.

11.2 Test Conditions

- The building shall be fully enclosed and construction affecting radio propagation shall be complete before testing. All exterior and interior walls, windows, doors, ceilings, glazing, shafts, major partitions, and other building-envelope or interior-finish components that can affect radio performance shall be installed in their final configuration. Testing performed before these conditions are met will not be accepted unless specifically authorized in writing by the Fire Marshal and Communications Division.
- Fire doors shall be closed, and normal building operating conditions shall be established.
- All test instruments calibrated within the preceding 12 months; six months is preferred. Portable radios used for testing shall be verified or calibrated within six months.

- The test instrument shall decode the applicable P25 bitstream and report RSSI, SINR/SNR, and BER/FBER.
- City personnel may take simultaneous reference readings. Variance greater than 3 dB from City equipment may require recalibration and retesting.

11.3 Required Tests

- 20-grid-per-floor downlink measurements.
- Uplink and downlink SINR and BER/FBER at each grid and Critical Area.
- Separate testing of each Critical Area, including elevator cars at representative positions.
- Uplink performance at the donor site or by an approved method.
- Propagation delay.
- Donor-to-service antenna isolation.
- RF leakage around the building perimeter.
- Uplink noise and out-of-band emissions.
- Two-radio simultaneous transmission.
- Operation on standby power.
- All supervisory signals and fire alarm interfaces.
- Operation of the BDA emergency shutoff.
- Verification of access route, labels, posted shutdown plan, and 24-hour access provisions.

11.4 Acceptance Documents

- Final independent acceptance test report in PDF format.
- Record (as-built) plan set in PDF format.
- Final ERCES / BDA Shutdown and Access Plan in PDF format.
- Executed Licensee Consent to Operate a Signal Booster (Appendix D).
- FCC registration, where required, or other evidence required by federal law.
- Equipment manuals, maintenance instructions, and warranty information.
- Completed inspection and operational test witnessed by the Chico Fire Department and, when required, the Communications Division.
- Final approval and certificate-of-occupancy release shall not occur until all deficiencies are corrected and required documents are accepted.

12. Annual Testing, Maintenance, and Modifications

12.1 Annual Testing

The owner shall have the ERCES inspected and tested at least annually, not later than 13 calendar months after the previous successful test, and whenever building or system changes may materially affect performance. Reports shall be submitted to the Chico Fire Department within 30 days. Annual test reports shall be submitted through the City's third-party compliance company, The Compliance Engine, at <https://www.thecomplianceengine.com>, consistent with Chico Municipal Code Section 16R.42.025.

For annual testing after acceptance, the building owner is responsible for arranging and paying for an authorized third-party tester unless a written contract assigns that responsibility to another party.

- Annual tests shall use the approved grid plan and include all Critical Areas.
- Annual testing shall be performed by a company on the current City Communications Division authorized third-party testing list.
- All deficiencies shall be corrected promptly. A system that causes or is suspected of causing harmful interference shall be shut down immediately upon City direction.
- The owner shall maintain a service contract or other means for qualified response to system faults.

12.2 Modifications

Material modifications require a permit, Communications Division coordination, and an amended Licensee Consent to Operate a Signal Booster (Appendix D) before implementation. The owner shall provide at least 30 days' advance written notice when practicable.

12.3 Frequency and Technology Changes

The owner is responsible, at the owner's expense, for modifications or replacement needed because of FCC requirements, changes to City or regional radio frequencies, radio sites, modulation, system architecture, or additional frequencies required by the Fire Code Official or Frequency License Holder.

13. Interference, Enforcement, and City Access

- Authorized Chico Fire Department and Communications Division personnel may enter the property at reasonable times to inspect, test, or investigate the ERCES.
- The owner shall provide 24/7 access by approved Knox key box.
- The City may order immediate shutdown where harmful interference exists or is reasonably suspected and may remotely disable the system using the remote access and control capability required by Sections 6.5 and 7.1.
- Failure to provide access or comply with a shutdown order may result in emergency action to disable the system, subject to applicable law and City procedures.
- Non-public-safety amplification systems that interfere with the ERCES or public-safety radio system shall be corrected, reconfigured, or removed.
- The Fire Marshal may suspend or revoke approvals or permits for noncompliance.

14. Owner Responsibilities and Recordkeeping

The building owner shall:

- Maintain the ERCES in operable condition at all times.
- Maintain current 24-hour emergency contacts.
- Keep the BDA room, shutoff, electrical disconnects, and access path unobstructed.
- Maintain the approved plans, acceptance report, most recent annual report, the current executed Licensee Consent to Operate a Signal Booster (Appendix D), manuals, and maintenance log at the BDA head-end.

- Notify the Chico Fire Department and Communications Division of system impairment, harmful interference, ownership transfer, or material modification.
- Apply to the Communications Division for a new Licensee Consent to Operate a Signal Booster (Appendix D) upon transfer of ownership.
- Bear all costs of design, permitting, installation, testing, maintenance, repair, modification, shutdown, and removal.

Appendix A - ERCES Design Submittal Checklist

Submit this checklist with the permit application. Mark N/A only with written justification.

Check	Required Item
☐	Permit application and fee
☐	PDF plan set (minimum 24 x 36 inches unless approved otherwise)
☐	Project and building information
☐	Owner and 24-hour contacts
☐	Designer / installer credentials
☐	Code compliance statement
☐	Equipment and materials schedule
☐	UL 2524 and FCC documentation
☐	Site plan, roof plan, and exterior elevations
☐	Donor site and antenna path profiles
☐	Communications Division approval of donor antenna make, model, location and pointing
☐	All floor plans with 20-grid overlay
☐	Critical Areas identified
☐	BDA, battery, annunciator, shutoff, and disconnect locations
☐	Access path from fire department entrance to shutoff/BDA
☐	System riser and block diagram
☐	Uplink/downlink link budget
☐	Gain, isolation, delay, noise, leakage, and near-far calculations
☐	Battery calculations
☐	Monitoring and fire alarm interface
☐	Electrical, grounding, surge, and breaker-lock details
☐	Fire-rated pathway / survivability details
☐	Firestopping details
☐	Predicted heat maps
☐	Draft BDA Shutdown and Access Plan PDF
☐	Draft Licensee Consent to Operate a Signal Booster (Appendix D)
☐	Product-data booklet
☐	Vertical pathway plans and details for every building in which pathways are required by Section 4.4

Appendix B - Acceptance and Annual Test Report Requirements

B.1. Cover Page

- Building name and address
- Owner and 24-hour contact
- Testing company and tester
- Test dates
- Permit number and authorization number

B.2. Qualifications

- FCC GROL
- In-building system certification
- Independent-testing declaration for acceptance test

B.3. Instruments

- Manufacturer, model, serial number
- Calibration date and certificate
- Radio firmware / test configuration

B.4. Methodology

- Applicable code and standard
- 20-grid method
- Critical Area method
- Doors and building conditions
- Frequencies and donor site

B.5. Summary

- Pass/fail by floor
- Pass/fail for every Critical Area
- Overall system determination
- Deficiencies and corrective actions

B.6. Detailed Results

- Grid map for every floor
- Per-point RSSI, SINR/SNR, BER/FBER
- DAQ equivalence determination for each grid point and Critical Area per Table 5.2-1
- Uplink and downlink results
- Propagation delay
- Isolation
- RF leakage
- Noise / out-of-band emissions
- Standby-power test
- Supervisory-signal test
- Emergency-shutoff test

B.7. Certification

- Tester signature and date
- Statement that results are true and equipment was calibrated
- Owner acknowledgment
- Attachments and photographs

Recommended result table:

Floor/Grid	Area Type	Frequency	RSSI	SINR	BER/FBER	Uplink	Downlink	Pass/Fail

Appendix C - ERCES / BDA Shutdown and Access Plan

The permit applicant shall prepare a one- or two-page PDF plan using this appendix as the minimum content standard.

Building / Address	
Primary Fire Department Entrance	
BDA Head-End Location	
Emergency Shutoff Location	
Normal-Power Disconnect	
Standby-Power / Battery Location	
Annunciator Location	
Knox Box / Key / Access Method	
24-Hour Building Contact	
24-Hour Maintenance Contractor	

Required Graphic Information

- Simple facility floor plan with north arrow and 'YOU ARE HERE' marker at the primary responder entrance.
- Highlighted route from the entrance to the BDA room and emergency shutoff.
- All locked doors, gates, elevators, stairs, roof hatches, and keys or access credentials required.
- Location of the emergency shutoff, BDA, batteries, normal-power disconnect, annunciator, and fire alarm control unit.
- Roof access route and donor antenna location.
- Photographs of the shutoff, BDA room door, and access-control device.
- Step-by-step shutdown and restart instructions approved by the equipment manufacturer and Communications Division.

Required label at shutoff: ERCES / BDA EMERGENCY SHUTOFF - AUTHORIZED PERSONNEL ONLY

Appendix D - Licensee Consent to Operate a Signal Booster

CITY OF CHICO ADMINISTRATIVE SERVICES DEPARTMENT - COMMUNICATIONS DIVISION LICENSEE CONSENT TO OPERATE A SIGNAL BOOSTER

(Pursuant to 47 CFR § 90.219 and California Fire Code § 510)

Authorization No.	CHI-ERCES-[YYYY]-[###]
Issue Date / Expiration	____ / ____
Status	☐ Provisional ☐ Permanent ☐ Annual Renewal
Building / Address	_____

D.1. Licensee and Authorized Frequencies

The City of Chico, acting through the Communications Division (Licensee), consents to retransmission only of the frequencies listed below and only at the building identified above. Frequencies licensed to other agencies require separate written consent.

Channel / Use	Frequency (MHz)	FCC Call Sign	System / NAC	Maximum ERP

D.2. Signal Booster System

BDA Manufacturer / Model: _____

FCC ID: _____

Class (Class A required): _____

UL 2524 Listing: _____

Donor Antenna Make / Model: _____

Donor Antenna Coordinates: _____

Approved Donor Site: _____

Approved Antenna Azimuth / Pointing: _____

Installing Contractor: _____

Maintenance Contractor: _____

D.3. Grant and Conditions of Consent

- The Licensee consents under 47 CFR § 90.219(b)(1) to operation of the identified ERCES solely for emergency responder communications at the identified building.
- This consent takes effect on the issue date shown above and, unless earlier revoked or superseded by an amended consent, remains in effect until the expiration date shown above, if any. A consent issued with Provisional status authorizes energization for acceptance testing only.
- This consent is limited to the listed frequencies, equipment, antenna configuration, and location. Any material change requires prior written approval and amended consent.
- The system shall not be energized until the Fire Department permit is issued, donor antenna location and pointing are approved by the Communications Division, this form is executed, and authorization to energize is issued.
- Only Class A channelized equipment shall be used unless otherwise approved in writing.
- The system shall comply with FCC rules, CFC Section 510, the City's ERCES Standard, UL 2524 listing requirements, and manufacturer instructions.

- Authorized City personnel shall have 24/7 access to the BDA and emergency shutoff. The Owner shall provide access within 60 minutes of a request when immediate key-box access is not provided.
- The Owner shall immediately shut down the system upon request if harmful interference exists or is reasonably suspected.
- The emergency shutoff and the approved Shutdown and Access Plan shall be permanently posted and maintained.
- The Owner shall notify the Communications Division at least 30 days before any material modification when practicable.
- The Owner shall, at its sole expense, modify or replace the system when required by frequency, technology, radio-site, or regulatory changes.
- This consent is nontransferable. A new owner shall apply for new consent within 30 days after the transfer, and this consent remains in effect for the new owner while that application is pending unless revoked.
- Annual testing shall be completed within 13 months of the previous successful test and submitted as required by the City.
- The City may revoke this consent for interference, unauthorized operation, failure to test, failure to provide access, misrepresentation, or material noncompliance.
- The Owner, as operator of the ERCES, shall defend, indemnify, and hold harmless the City of Chico and its officers, employees, and agents from and against any claim, liability, loss, or expense, including attorney fees, arising from the installation, operation, malfunction, or shutdown of the ERCES, including any claim of harmful interference with another radio system. The City's consent, approval, inspection, or testing of the ERCES is not a warranty or representation that the ERCES will perform as intended, and the City is not liable for any failure of the ERCES to provide radio coverage or for any shutdown of the ERCES by the City under this consent or the City's ERCES Standard.

D.4. Owner Contacts

Owner / Responsible Party: _____

Primary Technical Contact: _____

Secondary Technical Contact: _____

24/7 Emergency Contact: _____

24/7 Maintenance Dispatch: _____

D.5. Signatures

FOR THE LICENSEE - City of Chico (City Manager or authorized designee)	OWNER / AUTHORIZED REPRESENTATIVE
Signature: _____	Signature: _____
Name / Title: _____	Name / Title: _____
Date: _____	Date: _____

D.6. Required Attachments

- Approved frequency list and technical coordination memorandum.
- Approved donor antenna location and pointing plan.
- Final ERCES / BDA Shutdown and Access Plan.
- Final acceptance test report or annual test report, as applicable.
- Fire Department permit and, for a Permanent consent, final approval.

Appendix E - City-Authorized Third-Party Testing Companies

The City of Chico Administrative Services Department, Communications Division shall establish, maintain, and publish the current list of qualified third-party companies authorized to perform ERCES radio coverage and system testing within the City of Chico. Only a company appearing on the current list may perform testing used to demonstrate compliance with this standard.

E.1 Scope of Authorization

Initial radio coverage testing of new buildings to determine whether an ERCES/BDA is required.

Acceptance testing of a newly installed or materially modified ERCES/BDA.

Annual and periodic testing of existing ERCES/BDA systems.

Diagnostic or verification testing required by the Fire Marshal or Communications Division.

E.2 Minimum Company Qualifications

Employ qualified personnel meeting the tester requirements of this standard.

Maintain required FCC licenses, certifications, training, insurance, and calibrated test equipment.

Demonstrate experience with P25 public-safety radio systems, in-building coverage testing, SINR, BER/FBER, RF leakage, isolation, propagation delay, and uplink-noise measurements.

Submit complete, unaltered reports directly to the Chico Fire Department and City Communications Division.

Maintain independence from the BDA installation contractor and disclose ownership, affiliate, subcontractor, referral-fee, or other financial relationships.

Comply with City report formats, testing protocols, data-retention requirements, and audit requests.

E.3 Authorization, Suspension, and Removal

The Communications Division may add, suspend, or remove a company from the authorized list based on qualifications, quality of work, inaccurate or incomplete reports, conflicts of interest, failure to maintain calibration or credentials, interference concerns, noncompliance with City procedures, or other documented cause. Inclusion on the list does not create a right to City work, endorsement, or guarantee of future authorization.

E.4 Current Authorized Testing Companies

Company	Primary Contact	Phone / Email	Approval Date	Status / Expiration
Valley Communications Inc	Casey Knofler	(916) 749-5554	10/20/2026	Current
Curated Network Solutions	Ken Barnard	(650) 460-7555	10/20/2026	Current
HETNET	Matt Brown	(510) 828-0955	10/20/2026	Current