

ARCHITECT AND MEP ENGINEERING NOTICE REPORT

FRPS MINI-SPLIT CASSETTE / FAN COIL UNIT (FCU)

Fire-Rated Penetration Coordination and CSI 3-Part Specification

Project Use	Related Work	Primary Concern
Ceiling-recessed mini-split cassette units and fan coil units installed in rated or non-rated floor/ceiling and roof/ceiling assemblies.	Division 07 Firestopping; Division 09 Gypsum Assemblies; Division 23 HVAC; Division 26 Electrical coordination; Fire protection and life-safety coordination.	Recessed HVAC equipment can breach the fire-resistance membrane and introduce refrigerant piping, condensate drains, electrical feeds, and controls through rated assemblies.

Specifier Note: Edit this document to match project-specific assemblies, equipment selections, FRPS listing details, AHJ requirements, and manufacturer instructions. This document is intended for specification and coordination use and is not a substitute for project-specific code review.

Recessed Mini-Split Cassette / Fan Coil Unit (FCU)

This notice identifies coordination requirements, design clarifications, and action items required between Architectural and MEP disciplines for ceiling-recessed mini-split cassette units and FCUs. These installations introduce HVAC, electrical, plumbing/condensate, structural, fire protection, and life-safety considerations within fire-rated and non-rated ceiling assemblies.

The intent is to support constructability, code compliance, and conflict-free installation during both design and construction. Special attention is required where recessed equipment penetrates a listed fire-resistance-rated floor/ceiling or roof/ceiling assembly.

Architectural Impacts

- Verify ceiling heights and plenum depths to accommodate cassettes, ducts, refrigerant piping, condensate drains, conduits, supports, and access panels.
- Maintain required fire ratings at wall and ceiling assemblies; recessed equipment in rated assemblies may require Fire Rated Product Specialties Corp (FRPS) enclosure and other listed protection.
- Coordinate access panel locations, sizes, and finishes to provide required service access.
- Align cassette locations with reflected ceiling plans, ceiling grids, diffusers, lighting, sprinklers, detectors, sensors, and architectural ceiling patterns.
- Review room layout changes affecting airflow, return paths, service clearances, and equipment accessibility.

Mechanical (HVAC) Coordination

- Finalize cassette and FCU selection, capacities, clearances, service requirements, and installation limitations.
- Confirm refrigerant piping routing avoids structural elements and conflicting MEP systems.
- Ensure ventilation, heating, cooling, and thermal loads meet applicable ASHRAE and IMC requirements.
- Provide updated mechanical schedules reflecting MCA/MOP, airflow, heating and cooling capacities, static pressure impacts, and controls.
- Determine whether condensate removal can be gravity drained or requires a pump.

Electrical Coordination

- Provide dedicated circuits for cassette units and condensate pumps in accordance with NEC Article 440 and manufacturer requirements.
- Coordinate conduit routing with refrigerant lines, condensate drains, supports, access panels, and structural constraints.
- Update panel schedules to reflect new HVAC loads.
- Coordinate thermostat, control wiring, and BAS integration locations as required.
- Confirm compliance with ADA mounting-height requirements for controls where applicable.

Plumbing / Condensate Coordination

- Coordinate condensate drain routing with required slope, cleanouts, access, insulation, and approved receptor locations.
- Provide access for condensate pumps, float switches, and serviceable components where used.
- Protect pipe penetrations through fire-rated assemblies using listed firestop systems or FRPS-type solutions as applicable.
- Coordinate with mechanical and electrical routing in congested ceiling spaces.

Fire Protection and Life Safety Coordination

- Maintain required fire ratings for openings and penetrations created by refrigerant piping, drains, electrical feeds, controls, and cassette or FCU recesses.
- Confirm sprinkler spacing and obstruction requirements remain compliant when locating cassettes and access panels.
- Coordinate with NFPA 72 smoke detector spacing and avoid air discharge patterns that may affect detection performance.
- Ensure fire/smoke dampers, smoke control zones, and rated assemblies are not compromised by new HVAC penetrations.

Required Deliverables

Discipline	Required Deliverables
Architectural	Updated reflected ceiling plans identifying cassette locations, lighting, sprinklers, detectors, access panels, wall and ceiling fire rating matrix, access panel schedule, finish details, and room layout changes affecting airflow.
Mechanical / HVAC	Updated HVAC equipment schedules, refrigerant piping routing drawings, installation clearances, condensate removal approach, service access requirements, and coordination drawings.
Electrical	Power and control wiring diagrams, circuiting, disconnect locations, panel schedule updates, thermostat/control locations, and BAS integration requirements.
Plumbing / Condensate	Condensate drain routing, slope, cleanouts, pumps, receptor locations, access points, and overflow protection.
Firestopping / Life Safety	Listed firestop systems, FRPS enclosure details where applicable, smoke detector and sprinkler coordination, and inspection requirements.
BIM / Coordination	3D coordination drawings for congested ceiling zones where BIM coordination is required.

Fire-Resistance Requirements for Recessed Mini-Split / FCU Installations

Any time a recessed HVAC unit is installed into a listed fire-rated floor/ceiling or roof/ceiling assembly, the fire-resistance membrane is penetrated. The opening must be protected by a tested and listed rated solution that maintains the hourly fire-resistance rating of the assembly.

- Option A: Tested fire-rated recessed enclosure, such as an FRPS enclosure approved for the condition.
- Option B: Listed through-penetration firestop system sized and approved for the device, service penetrations, and assembly.
- Option C: Specific UL-tested assembly for HVAC cassettes or FCUs, where available; most equipment manufacturers do not provide such assemblies.

Mini-split cassettes and FCUs are not, by themselves, tested to ASTM E119 / UL 263 as replacement fire-resistance membranes. The cassette housing alone shall not be used as a substitute for the gypsum or other membrane that provides the hourly rating.

Code and Standards References for Coordination

Reference	Coordination Requirement
IBC Chapter 7, Sections 714-716	Membrane penetrations, through-penetrations, and opening protectives in fire-resistance-rated construction require tested protection systems.
IBC 714.2	Through-penetrations through fire-resistance-rated assemblies require approved firestop systems tested to ASTM E814 / UL 1479.
IBC 714.3	Membrane penetrations and recessed fixtures penetrating rated membranes must preserve the required fire rating.

UL 263 / ASTM E119	Fire-rated assemblies are tested as complete systems; modifying the rated membrane requires tested protection to maintain the rating.
NFPA 13	Cassette and FCU placement must not interfere with sprinkler spacing, coverage, or obstruction limitations.
NFPA 72	Air discharge from cassettes and FCUs shall be coordinated to avoid adverse effects on smoke detector performance.
NFPA 70 / NEC Article 440	Electrical equipment, branch circuits, disconnects, and HVAC equipment loads shall be coordinated with electrical requirements.

Common Misconception

Incorrect statement: Mini-split cassettes or FCUs do not generate enough heat to require fire protection.

Correction: The primary issue is not heat. The issue is the breach of the fire-rated membrane and the associated penetrations for refrigerant lines, condensate drains, electrical feeds, and controls. These openings must be protected by tested and listed systems where they occur in rated assemblies.

Typical Project Requirements

- Provide a fire-rated recessed enclosure, such as an FRPS enclosure, to restore the 1-hour or 2-hour assembly at the cassette or FCU location where permitted by listing.
- Provide firestopping for each pipe, conduit, drain, wire, or line-set penetration through the rated assembly using UL-listed systems matched to the penetrating items and assembly type.
- Coordinate cassette air movement with sprinkler locations and smoke detectors to avoid obstruction, cold-draft, or false-alarm conditions.
- Document the rated assembly, enclosure or firestop system, installation photographs, and AHJ or third-party inspection sign-off before concealment.

Conclusion: All recessed mini-split cassette or FCU units placed in fire-rated floor/ceiling or roof/ceiling assemblies require additional fire-resistant membrane penetration protection. Timely interdisciplinary coordination is required to avoid contractor conflicts, inspection failures, redesigns, and schedule impacts.

SCROLL DOWN TO VIEW CSI DIVISION 23 DOCUMENTATION

SECTION 23 81 26.13

MINI-SPLIT CASSETTE AND FCU FIRE-RATED PENETRATION COORDINATION

CSI 3-Part Specification Format | Division 23 HVAC with Division 07, Division 09, Division 26, and Fire Protection Coordination

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes requirements for furnishing, installation, coordination, and fire-resistance compliance of ceiling-mounted mini-split cassette HVAC systems and fan coil units.
- B.** Work includes indoor units, refrigerant piping, condensate drainage, electrical power, controls, access panels, structural supports, firestop systems, and fire-rated penetration protection.
- C.** This Section supplements architectural and MEP coordination requirements for installations in non-rated and 1-hour or 2-hour fire-rated floor/ceiling and roof/ceiling assemblies.
- D.** Where cassette recesses, FCU openings, piping, conduits, controls, or condensate drains penetrate fire-rated assemblies, provide FRPS fire-rated recessed enclosures or rated firestop systems as required to maintain the hourly rating of the assembly.

1.2 RELATED SECTIONS

- 01 31 26 - Coordination.
- 01 83 00 - Fire-Rated Assembly Coordination.
- 07 84 00 - Firestopping.
- 09 21 16 - Gypsum Board Assemblies.
- 09 51 00 - Acoustical Ceilings.
- 21 13 00 - Fire-Suppression Sprinkler Systems.
- 23 05 00 - Common Work Results for HVAC.
- 23 05 48 - Vibration and Seismic Controls for HVAC.
- 23 81 26 - Split-System Air-Conditioners.
- 26 05 33 - Raceways and Boxes for Electrical Systems.
- 28 31 00 - Fire Detection and Alarm.

1.3 REFERENCES

- International Mechanical Code (IMC).
- International Building Code (IBC), Chapter 7 - Fire and Smoke Protection Features.
- NFPA 70 - National Electrical Code, including Article 440.
- NFPA 72 - National Fire Alarm and Signaling Code.
- NFPA 13 - Installation of Sprinkler Systems.
- ASHRAE 15 and ASHRAE 34 - Refrigerant Safety Standards.
- ASTM E119 / UL 263 - Fire Tests of Building Construction and Materials.
- ASTM E814 / UL 1479 - Fire Tests of Penetration Firestop Systems.

1.4 SUBMITTALS

A. Product Data:

1. Indoor cassette units or FCUs, capacities, dimensions, weights, installation requirements, clearances, and service access requirements.
2. Outdoor condensing units, line-set limits, refrigerant charge limits, and installation requirements.

3. Condensate pump data, overflow protection, and float switch data where applicable.
4. Control wiring, thermostat, and BAS integration requirements.
5. FRPS fire-rated recessed enclosure data or listed firestop system data where rated assemblies are penetrated.

B. Shop Drawings:

6. Fully coordinated reflected ceiling plan showing cassette/FCU locations, lights, sprinklers, smoke detectors, diffusers, sensors, and access panels.
7. Refrigerant piping routing with insulation, slopes, supports, fire-rated penetrations, and service clearances.
8. Condensate drain routing, slopes, traps, cleanouts, pumps, overflow devices, and receptor locations.
9. Fire-rated recessed enclosure details, including FRPS enclosure location, size, assembly rating, and associated penetrations.
10. Structural support details for ceiling-mounted cassette units and FCUs.
11. Electrical power, disconnect, junction box, and control wiring coordination drawings.

C. Closeout Submittals:

12. Operation and maintenance manuals.
13. As-built drawings showing cassette/FCU locations and all protected penetrations through rated assemblies.
14. Installation photographs of FRPS enclosures or listed firestop systems before concealment.
15. AHJ or third-party inspection sign-off where required.
16. Warranty documentation and manufacturer installation checklists.

1.5 QUALITY ASSURANCE

- Installers shall be qualified and manufacturer-approved where required for warranty eligibility.
- Firestop installers shall be trained and qualified to install the applicable UL/ASTM firestop systems.
- FRPS enclosures shall be installed in accordance with manufacturer instructions and applicable listing requirements.
- Do not conceal rated assembly penetrations until inspection, photographic documentation, and required approvals have been completed.

1.6 COORDINATION

- Coordinate cassette and FCU locations with the Architect to maintain alignment with ceiling grid, lights, sprinklers, detectors, sensors, access panels, and room layouts.
- Coordinate with structural drawings and engineer requirements to ensure adequate support for suspended units; do not support units from ceiling grid.
- Coordinate routing of refrigerant piping, condensate drains, electrical conduit, controls, and access requirements to avoid interferences in congested ceiling cavities.
- Where cassette or FCU units or associated piping penetrate a fire-rated assembly, provide fire-rated protection equal to the hourly rating of the assembly using FRPS recessed enclosures or rated firestop systems approved for the condition.
- Report conflicts involving fire-rated assemblies, ceiling depth, access, sprinkler spacing, smoke detection, structural supports, or MEP routing before proceeding.

PART 2 - PRODUCTS

2.1 MINI-SPLIT CASSETTE UNITS AND FAN COIL UNITS

- Ceiling-recessed cassette units or FCUs with capacities, airflow, heating/cooling performance, and controls as indicated on drawings and schedules.
- Units shall include multi-directional airflow, EC fan motors where specified, washable filters, service access provisions, condensate lift pump or field-installed pump where required, and integrated condensate safety float where applicable.
- Units installed in fire-rated assemblies shall not be relied upon as replacement fire-resistance membranes unless specifically tested and listed as part of the rated assembly.

2.2 REFRIGERANT PIPING SYSTEM

- Copper refrigerant tubing sized and installed in accordance with manufacturer requirements and applicable mechanical code.
- Continuous vapor-barrier insulation with thickness in accordance with energy code and manufacturer requirements.
- Piping supports and hangers in accordance with IMC and manufacturer requirements.
- Fire-rated penetrations protected in accordance with ASTM E814 / UL 1479 or by FRPS fire-rated assemblies where applicable.

2.3 CONDENSATE DRAIN SYSTEM

- Schedule 40 PVC, CPVC, copper, or other approved condensate drain piping as permitted by code and project documents.
- Gravity drainage where feasible; provide condensate pump where gravity drainage cannot be achieved.
- Auxiliary pan sensors, float switches, overflow shutoff switches, and access provisions where risk of overflow exists.
- Fire-rated penetrations protected where condensate piping penetrates rated assemblies.

2.4 ELECTRICAL COMPONENTS

- Dedicated circuits sized in accordance with NEC Article 440, manufacturer MCA/MOP, and project electrical documents.
- Disconnect switches, accessible junction boxes, and raceways coordinated with service access and ceiling conditions.
- Low-voltage control wiring, thermostat wiring, and BAS interface components in accordance with manufacturer sequence of operation.

2.5 FIRE-RATED PENETRATION PROTECTION

A. FRPS Fire-Rated Recessed Enclosures:

17. Factory-manufactured fire-resistance-rated enclosures for use in 1-hour or 2-hour floor/ceiling and roof/ceiling assemblies where permitted by the applicable listing.
18. Provide enclosure size and configuration coordinated with cassette or FCU dimensions, access needs, refrigerant line bundle, condensate drain, electrical feed, controls, and service clearances.
19. Install without modifying the UL-classified or Intertek-classified assembly beyond tested conditions.

B. Listed Firestop Systems where FRPS enclosures are not used:

20. UL-listed through-penetration systems matched to the assembly construction, penetrating item size, penetrating item material, annular space, and required rating.
21. Systems shall provide F and T ratings equal to the assembly where required by code, project documents, or AHJ.
22. Do not use unlisted sealant-only, mineral wool-only, or ad hoc field-built methods as substitutes for tested systems.

PART 3 - EXECUTION

3.1 EXAMINATION

- Verify ceiling assembly type, fire-resistance rating, plenum depth, structural supports, ceiling grid, access, and MEP routing before installation.
- Confirm proper clearances between cassette/FCU housing, FRPS enclosure or firestop system, refrigerant piping, condensate drain, electrical components, and service access.
- Do not proceed where conditions prevent installation in accordance with manufacturer instructions, FRPS listing requirements, firestop system requirements, or AHJ approvals.

3.2 INSTALLATION - GENERAL

- Install cassette or FCU level and fully supported from structure; support from ceiling grid is prohibited unless expressly engineered and approved.

- Maintain manufacturer-required service clearances, including access to filters, pumps, electrical compartments, valves, controls, and serviceable components.
- Provide coordinated access panels at all serviceable components, condensate pumps, control junctions, and fire-rated enclosure inspection locations where required.
- Install equipment, piping, wiring, and controls in accordance with manufacturer instructions and approved shop drawings.

3.3 REFRIGERANT PIPING INSTALLATION

- Install piping concealed within ceiling cavities unless otherwise indicated.
- Maintain required pitch and avoid traps unless required for oil return by manufacturer instructions.
- Comply with maximum allowable line lengths, vertical height differences, refrigerant charge limits, and oil trap requirements.
- Where refrigerant piping penetrates fire-rated assemblies, provide UL-listed firestop systems or FRPS fire-rated assemblies as approved for the condition.
- Seal openings in rated assemblies in accordance with ASTM E814 / UL 1479 tested systems and approved listing documentation.

3.4 CONDENSATE DRAIN INSTALLATION

- Provide minimum slope of 1/8 inch per foot unless a pump is used or project documents require a greater slope.
- Install cleanouts, traps, overflow safety devices, and accessible condensate pumps where required.
- Terminate drains at approved plumbing-code-compliant locations.
- Protect condensate drain penetrations through fire-rated assemblies with listed firestop systems or approved FRPS-rated protection.

3.5 ELECTRICAL AND CONTROLS INSTALLATION

- Install power wiring, disconnects, raceways, junction boxes, and control wiring in accordance with NEC and manufacturer requirements.
- Coordinate thermostat and controller placement with architectural layout, ADA requirements, furniture, casework, and occupant use.
- Provide system control wiring per manufacturer sequence of operation and coordinate BAS integration where required.
- Protect electrical penetrations through fire-rated assemblies with listed firestop systems.

3.6 FIRE-RATED COORDINATION

- Recessed cassette and FCU openings in fire-rated floor/ceiling or roof/ceiling assemblies shall receive fire-rated protection equivalent to the hourly rating of the assembly.
- The cassette or FCU housing alone shall not be used as a substitute for the fire-rated membrane.
- Acceptable fire-rated solutions include FRPS fire-rated recessed enclosures or rated firestop systems specifically approved for recessed devices and service penetrations in the applicable assembly.
- Coordinate with sprinkler and smoke detector spacing in accordance with NFPA 13 and NFPA 72 to avoid cold-draft, obstruction, or detector performance issues.
- Do not conceal protected penetrations until required inspections, photographs, and documentation are complete.

3.7 FIELD QUALITY CONTROL

- Pressure test refrigerant piping in accordance with manufacturer requirements and applicable codes.
- Evacuate system to required micron level before charging refrigerant, as specified by manufacturer and project documents.
- Provide as-built documentation of all penetrations and fire-rated protection systems.
- Notify AHJ and third-party firestop inspector, where required, before concealment.
- Remove and replace nonconforming firestop, enclosure, or equipment installations.

3.8 CLEANING AND CLOSEOUT

- Remove debris and excess materials from ceiling cavities and service areas.
- Label controls, wiring, access panels, shutoff devices, and service locations.
- Provide O&M manuals including manufacturer instructions, fire-rated penetration details, cassette maintenance requirements, refrigerant piping documentation, and closeout photographs.
- Provide final FRPS enclosure or firestop system documentation for the fire-rated assembly closeout package.

END OF SECTION 23 81 26.13

APPENDIX A - DIVISION 07 FIRESTOPPING COORDINATION LANGUAGE

Specifier Note: Use the following language in Section 07 84 00 or related firestopping sections to coordinate the mini-split cassette / FCU scope with rated assembly requirements.

A.1 GENERAL

- Provide listed firestop approved FRPS fire-rated recessed enclosure systems for mini-split cassette units, FCUs, refrigerant piping, condensate drains, electrical feeds, control wiring, and related penetrations in fire-resistance-rated floor/ceiling or roof/ceiling assemblies.
- Maintain the required hourly fire-resistance rating of each assembly penetrated by recessed HVAC equipment or related services.
- Coordinate rated assembly details with Division 23 HVAC, Division 26 Electrical, architectural reflected ceiling plans, sprinkler drawings, and fire alarm drawings.

A.2 UNACCEPTABLE METHODS

- Unlisted sealant-only, mineral wool-only, gypsum patching, foam, or jobsite-fabricated protection methods are not acceptable for recessed HVAC equipment openings in rated assemblies.
- Do not rely on the cassette or FCU housing as a replacement for the fire-resistance-rated membrane unless specifically tested and listed as part of the assembly.
- Do not conceal fire-rated penetrations before inspection and documentation.

APPENDIX B - ARCHITECT / MEP FIELD NOTICE CHECKLIST

Observed / Required Coordination Item	Status	Required Action
Cassette or FCU recessed into fire-rated floor/ceiling or roof/ceiling assembly.	☐ Observed	Provide FRPS fire-rated enclosure or listed rated system equal to assembly rating.
Refrigerant lines penetrate rated assembly.	☐ Observed	Submit and install UL-listed firestop system or approved FRPS protection.
Condensate drain penetrates rated assembly.	☐ Observed	Provide listed firestop detail and maintain access to pump/cleanouts.
Electrical feed or control wiring penetrates rated assembly.	☐ Observed	Coordinate with Division 26 and provide listed firestop system.
Cassette conflicts with sprinkler spacing or coverage.	☐ Observed	Revise layout and coordinate with fire protection designer.
Cassette air discharge may affect smoke detector operation.	☐ Observed	Coordinate location with NFPA 72 requirements and fire alarm designer.
Ceiling plenum depth or access is insufficient.	☐ Observed	Revise equipment selection, ceiling layout, access panel layout, or routing.
Unlisted field modification to rated assembly proposed.	☐ Observed	Reject and replace with tested/listed system approved by AHJ.

APPENDIX C - SHORT-FORM DRAWING / SPECIFICATION NOTE

Add the following note to reflected ceiling plans, mechanical plans, fire-rated assembly schedules, and relevant specification sections:

Recessed mini-split cassette units, fan coil units, refrigerant piping, condensate drains, electrical feeds, controls, and related penetrations installed in fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall be protected

with listed fire-rated systems equal to the hourly rating of the assembly. Provide FRPS fire-rated recessed enclosures firestop systems approved for the specific assembly and penetration condition. Cassette or FCU housings shall not be used as substitutes for the rated membrane. Coordinate sprinkler spacing, smoke detector locations, access panels, and MEP routing before installation.

APPENDIX D - DISTRIBUTION

- ☐ Architect of Record
- ☐ MEP Engineer of Record
- ☐ Mechanical Contractor
- ☐ Electrical Contractor
- ☐ Plumbing / Condensate Contractor
- ☐ Fire Protection Contractor
- ☐ Fire Alarm Contractor
- ☐ Firestopping Contractor
- ☐ General Contractor
- ☐ Owner / Facilities Team
- ☐ AHJ / Third-Party Firestop Inspector where required