



Mayor's Office of Housing and Community Development
City and County of San Francisco

London N. Breed
Mayor

Eric D. Shaw
Director

Communications Systems Standards

Background:

The San Francisco MOHCD oversees multi-family housing projects to provide affordable housing for residents of San Francisco. Internet access has become an increasingly important part of everyday living and it is important to make sure that adequate service is provided to project residents. Through the Fiber to Housing Program (FtH), the Department of Technology (DT) now makes Internet service available at little or no cost where the infrastructure in a building is built to receive this service. To ensure that MOHCD projects are properly prepared; MOHCD has developed the **Communications Systems Standards (CSS)**.

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Summary:

The Project shall provide open cabling infrastructure from the MPoE and Telecommunications Room (TR) to the residential units that can be used by more than one Carrier/ISP. This shared use is to be achieved by terminating each end of the distribution cables at a patch panel both within the MPoE, TR, and residential unit's central wiring enclosure. An example is Cat6 cable routed from a residential unit's central wiring enclosure to a neutral location within the TR and terminated at a patch panel with an RJ45 jack. This allows the service to be physically switched from one provider to another, via a patch cable, depending which services are selected/contracted by the end user at any time.

The Project typically provides pathways for backbones between the MPoE and TR for each carrier/ISP and 4 cables from the TR to each unit on the floor complete with termination or punch-down. Where a Carrier/ISP wants exclusive use of any part of the distribution system, the carrier/ISP is to provide that element or fund its construction. Any exclusive distribution cabling used shall be provided in addition to the above requirements, not as a substitution.



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Process:

1. Feasibility Phase:

The Project Team should coordinate with MOHCD during the Feasibility Phase. Coordination should occur through MOHCD's single point of contact for the Fiber to Housing (FtH) project:

Rey Lachaux
Digital Equity Manager
Desk: 415-701-5567
sfmohcd.org/digital-equity
reymon.lachaux@sfgov.org

Sponsors should :

- Submit an application for individual buildings and multi-block projects to the FtH Program:
 - Provide project information to MOHCD/DT Internet Service Team:
 - Street Address,
 - Identify if New Construction or Renovation of an existing building,
 - Number of Units (including any resident staff),
 - Income range of expected tenants (%AMI) and nature of tenants (family, seniors, etc.)
 - Nature and extent of service desired for Offices, Operations, and Community Spaces.
 - Approximate date of Start of Construction,
 - Approximate date of Start of Occupancy,
 - Provide a brief description of how the Project will achieve MOHCD goals if it does not directly follow MOHCD's Communications Systems Standards

2. Design, Construction and Pre-occupancy Phases:

The Project Team should coordinate with DT during Schematic Design, Construction Design, Construction and Pre-Occupancy Phases. This coordination should include the joint trench, building entrance, minimum point of entry (MPoE), telecom room, internal cabling, network electronics and Internet service. For all phases and coordination should occur through DT's single point of contact for the Fiber to Housing (FtH) project:

Randy T. Casañas
Fiber to Housing Project Lead
Public Safety | Dept. of Technology
randy.casanas@sfgov.org
[415-793-1603 Mobile](tel:415-793-1603)
[628-652-5424 Desk](tel:628-652-5424)

Schematic Design Phase

- The Project Team should work with DT to coordinate conduit and fiber planning for the joint trench and connection into the MPoE (Minimum Point of Entry) of new and/or existing buildings. The project is responsible for providing conduits and utility boxes in the Public Right of Way and service entrances to the MPoE.



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- The project team should coordinate with DT to design cabling from MPoE to all units. MPoE and Telco rooms shall be sized to support the additional ISP partner and furnished with backboard, power outlets, grounding busbar, and dedicated riser conduit.

Construction Drawing Phase

- Provide schedule for when incorporating communications systems infrastructure will be included on the drawings.
- Provide 50% CD or earlier CD set showing complete Communications systems to DT for review.

Construction Phase

- Provide an on-site construction contact for the installation of fiber, riser cables, equipment, and patch cables by DT.
- Confirm the expected site conditions and expected site readiness for the installation.
- Develop a schedule for DT's inspection of all work related to the pathway for DT's fiber and for DT's installation of fiber to the MPoE.
- Provide Project Sponsor contact for ongoing maintenance agreement with the Partner ISP.
- Provide USPS (US Postal Service) or Utility POC (Point of connection) list to facilitate connection management.

Pre-Occupancy Phase

- Provide Project Sponsor contact for marketing program for inclusion of marketing and/or technical information in tenant on-boarding packages.
- Develop a schedule for tenant occupancy and distribution of on-boarding information package with Digital Equity Manager.

Practices

1. Exclusive Service Agreements or Charges to Carriers/ISPs:

In Projects using Public Funds, Sponsors, Managers, or Developers, are not to engage in exclusive agreements with Carriers/ISPs for *services or marketing*. And they are not to charge fees or rent to Carriers/ISPs for their participation in the project or for space used in the facility. (National Cable & Telecommunications Association v. Federal Communications Commission, 2009 WL 1444094 (D.C. Cir. 2009), upheld a rule and order of the Federal Communications Commission, 22 F.C.C.R. 20,235 (2007), that banned exclusivity provisions in contracts between cable companies and owners of apartment buildings.

2. Service Entrances - Joint Trench:

Service from the right-of-way shall be in conduits underground where feasible. A Meet-Me box and building owned conduits to the MPoE can be utilized to facilitate additional Carriers/ISPs in the future. The box should be located in the sidewalk as close as possible to the MPoE. Provide one conduit for each Carrier/ISP and one common use spare conduit from the box to the MPoE. Unless



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the carrier wants to pay for the additional conduit, no Carrier/ISP should have exclusive access to more than one conduit at any given time except to utilize the common use spare as they upgrade their service and then relinquish their original conduit when the upgrade is complete. Where a Carrier/ISP wants exclusive use of facilities in addition to those listed, they should provide the funds for the project to furnish and install those facilities.

The minimum specifications are as follows:

- Min. 2" conduit (4" preferred) from the Public Right of Way to MPoE, MPoE to TR(s) and other buildings on the site.
- Max. run between pull-boxes = 250 ft. and long sweep elbows used for changes in direction. There shall not be more than the equivalent of three quarter bends (270 degrees total) between pull-boxes.
- Provide sidewalk junction box and conduit for future use by service entrances where underground services are not yet available at the site. The box should be minimum 48" long 24" deep with width determined by the bank of conduits to the MPoE.
- Provide pull-ropes in all conduits.

3. Service Entrances - Rooftop Internet Radio and Satellite TV service:

- Designs should provide for co-located antennas for satellite, local broadcast Radio/TV reception, and radio data links (also possibly including EMS DAS and Cellphone DAS) on the roof.
- Roof space and minimum of two 2" conduits with weatherheads with conduits to the nearest TR room should be provided for antennas of participating Carriers/ISPs with 25% capacity for future use. Provide pull-ropes in all conduits.
- Safe access and working conditions for system maintenance and durable roof membranes shall be provided.

4. MPoE and TR rooms:

- MPoE and TR(s) must be secured, weatherproof and temperature controlled.
- MPoE and TR facilities should not share space with water lines or line-voltage electrical lines or equipment. Where unavoidable, provide shielding and pans with piping to drains
- If the project is in an area subject to high or fluctuating water tables or sea-level rise, the floor of the MPoE and TR should be above the expected water level.
- MPoE and TR rooms and closets should contain only communications systems and should be accessed only by Carrier/ISP personnel. If so, ADA requirements will probably be applied only to the door, the light switch and signage. While other building systems such as security or building management may be physical compatible with Communications systems, any system accessed by Building Operations Personnel, may trigger additional ADA requirements.
- TR rooms, and if possible MPoE rooms, should be arranged in a vertical stack with as few offsets as possible. Connect TRs with one 4" diameter conduit or sleeve per Carrier/ISP



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and a minimum of two spares. Provide pull-ropes in all conduits. TRs can serve more than one floor.

- For renovations, NEMA boxes may be used in lieu of dedicated MPoE and TR rooms.
- At TR rooms provide ¾" painted plywood backboards (fire-treated as where required by code) in TR rooms. At each TR anticipate allocating a 2' x 4' vertically oriented space for each Carrier/ISP (6' x 8' minimum) and allow for a 24" projection from the face of the backer-boards. Provide one dedicated duplex outlet per Carrier/ISP and 25% spare outlets.
- The requirements for space and power in MPoE rooms will be larger and should be confirmed with the Carrier/ISPs. Provide ¾" painted plywood backboards (fire-treated as where required by code) in MPoE rooms. At each MPoE anticipate allocating a 4' x 8' vertically oriented space for many Carrier/ISPs. Allocate a 2' x 4' vertically oriented space for FtH. Allow for a 24" projection from the face of the backer-boards. Provide one dedicated duplex outlet per 8 SqFt of backer board and 25% spare outlets.

5. Landline Telephones:

Landline Telephone Network service (POTS) is no longer required by MOHCD for communications systems. Code required systems including elevator and fire alarm monitoring, Emergency Responder Radio Systems (ERRCS), San Francisco Building Code 1005A.1 door entry communications, and California Building Code 11B-230 Two-way communications systems are not covered by these standards and complying with these standards does not eliminate the need for separate systems to comply with code.

- Where a relocated or existing tenant wants to continue the use of their landline service and existing handset the Project should provide equipment (ATA - Analog Telephone Adaptors) to allow those tenants to connect their existing handsets to the Carrier/ISP of their choice among those carrier/ISPs serving the building. Alternately the project can provide new VOIP handsets or support to help those tenants purchase new equipment.

6. Service Distribution Cables:

- Cabling Infrastructure shall be designed to receive inputs from multiple vendors using non-proprietary connectors and patch cables to facilitating individual tenant choice of provider and future changing between providers. At a minimum provide:
 - 1) Carrier neutral Ethernet cabling shall support 1 Gigabit per second (Gbps) minimum. Consequently, ethernet cabling should not exceed 100 meters. Considering the expected life of the projects, CAT6 UTP cable is recommended.
 - 2) Carrier neutral quad shielded RG6/RG11 coaxial cabling shall be sweep tested to a minimum of 3Gigahertz (GHz).
- Provide complete cable structures from MPoE to each unit including racks, terminations, enclosures, ventilation, grounding busbars, and 110v outlets to power equipment shall be provided within project scope of work. Cabling shall terminate in panels within MPoE and TR rooms and be tested and labeled identifying the unit served.



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- If used, optical fiber should be Singlemode 2 (OS2).with connectorized termination and punchdown supporting 1Gbps minimum. A network of fused optical fiber cable does not replace the Carrier neutral Ethernet cabling

7. Service Distribution within the Dwelling Unit:

- All Cabling systems shall be terminated at the unit in a Structured Media Enclosures (SME).
- SME should be sufficient size to house battery back-ups were required for landlines 42" high is recommended.
- SME should be located in an interior wall close to the center of the unit and not adjacent the kitchen or other microwave sources.
- SME in accessible or adaptable units with user or Building Management accessed components must be located in ADA Accessible locations (reach range, height, and clear floor space, all per ADA).
- Where SME are located in closets, be sure to coordinate the location with any shelves or closet rod, especially in Mobility Units where those features are mounted at lower heights.
- Provide one complete set of patch cables to the one of the outlets.
- An electrical outlet should be provided within the SME.

8. Service Distribution Management:

To facilitate the management and labeling of cables from units, provide the US Postal Service list of addresses or the list of Utility Meter Connections (no resident names) to each Carrier/ISP and post the list in the TRs.

- Identify a contact person with Building Operations for the management of Carrier/ISP activities such as service marketing or maintenance agreements and access.
- Sponsor shall either ensure that firewalls are incorporated into system(s), and/or communicate in writing to residents how to protect their privacy and security with specific instruction.
- End user equipment may be incorporated through User Agreements with Service Providers, provided by Sponsor, or provided by tenants.
- Carrier/ISPs (Internet Service Providers) are to provide other equipment and patch cables.

9. Matrix of Responsibilities: This matrix is to define responsibilities for elements of the Communications Systems Infrastructure.

Definitions:

Closed Infrastructure: A cabling infrastructure where the distribution cabling is dedicated to the use of a single Carrier/ISP.

Open Infrastructure: A cabling infrastructure where the distribution cabling can be shifted from one Carrier/ISP to another whenever the tenant selects which Carrier/ISP with whom to contract for service.



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| <u>Matrix of Responsibilities:</u> | | Project | Carrier/ISP | Additional elements for Carrier/ISP requiring Exclusive use |
|--|---|---------|-------------|---|
| Element: | Provider: | | | |
| <p>Legend:</p> <ul style="list-style-type: none"> ■ = Provide (furnish Install and Maintain) F = Furnish I = Install & Maintain ❖ = Provided and used by each specific Carrier/ISP | | | | |
| Infrastructure/Joint Trench/Service entrances: | | | | |
| 1 | Utility Conduits in the Public Right of Way (as required for each Carrier/ISP) | ■ | | ❖ |
| 2 | Meet-me box and conduits from there to the MPoE | ■ | | ❖ |
| 3 | Weatherheads for roof service entrance (Roof Antenna) | ■ | | ❖ |
| 4 | Cable in #1, #2, & #3 above with Termination, Testing, and Labeling | | ❖ | ❖ |
| 5 | Backboards and power outlets at MPoE (as required for each Carrier/ISP) | ■ | | |
| 6 | Network equipment (if needed) | | ❖ | ❖ |
| Cabling and Infrastructure – from MPoE to TRs: | | | | |
| 7 | Risers / raceways / conduit stubs (quantity & size as required by Carriers/ISPs) | ■ | | |
| 8 | Network Backbone Cable in #7 above with Termination, Testing, and Labeling by Carrier/ISP. | I | F | F |
| 9 | Backboards and power outlets at TR(s) | ■ | | |
| Cabling and Infrastructure – from TR to and within Units: <i>(Raceways may be omitted where the Project Design Team determines. If so Carrier/ISP provided cable must not require raceways.)</i> | | | | |
| 10 | Open Infrastructure Distribution Raceways, Cable, Termination, Testing and Labeling. Provide one minimum for each type of service (active Ethernet and co-axial) | ■ | | |
| 11 | Closed Infrastructure Distribution Raceways and Cable. Project may install cable, materials provided by the Carrier/ISP. Termination and testing provided by Carrier/ISP. | I | | F |
| 12 | Structured Media Enclosures and power outlets in the unit (where occurs) | ■ | | |

-- End --