



Townhouses

- ✓ Electrical Services
- ✓ Sprinklers
- ✓ Rated walls

By John England CBO, MCP

This question comes up many times in class and I have received many emails asking for clarification of placement of electrical services and meters on townhouses. While it seems a simple question, the code (NEC) is clear about “one service per building”. Where the code is silent is defining a building (ownership), which leads to the confusion for the local Building Official and utility company.

I. Code References

(2018 IRC) R101.2 Scope “The provisions of this code shall apply to the Construction..... detached one- and two-family dwellings and *townhouses* not more than three stories above *grade plane* in height with a separate means of egress.....” (IBC 101.2 states the same)

IRC Chapter 2 definitions

Dwelling unit: Any building that contains one or two *dwelling units* used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.

NOTE: No mention of sold , separate property, the intent is one landowner.

TOWNHOUSE. A single-family *dwelling unit* constructed in a group of three or more attached units in which each unit extends from foundation to roof and with a *yard* or public way on not less than two sides.

2017 NEC & 2018 IRC

IRC Electrical Definition: SERVICE CONDUCTORS. The conductors from the service point to the service disconnecting means.

NOTE: *Conductors from the power company through the meter and to the dwelling's main breaker.*

E3601.2 Number of services. One- and two-family dwellings shall be supplied by only one service (**NEC 230.2**)

E3601.3 One building or other structure not to be supplied through another. Service conductors supplying a building or other structure shall not pass through the interior of another building or structure. (**NEC 230.3**)

NOTE; *Once they hit the main breaker they no longer are service conductors they are feeders.*

Water and Gas Note: While this paper does not mention plumbing or gas mains or meters the same problems exist, and understanding the electrical will help solve those problems also.



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II. Legal Property Terms

Before understanding how the code is applied there are some legal property terms that need to be addressed. While they may vary from state to state there is a common terminology that exists here. To keep it simple I have put together the following terms that will be referenced throughout. The owner / developer and their designer of record need to determine which term they use.

- **Single Family House** = one dwelling unit on its own property (land)
- **Duplex** = A duplex is a multi-family home that has two units in one building — regardless of how those homes are arranged. Units can be side-by-side or stacked on top of each other. Duplex buildings also have two separate entrances for each unit. This means each tenant has their own entrance.
- **Townhouse** = (3 or more) Single family home that shares one or more walls with other independently-owned units. An attached single-family house with 0 (zero) lot lines open on two or more sides.
- **Condo (condominium)** = condo owners own the area they live in and not the larger building or the land on which it's built. The condo association (all condo owners) own the building as a whole and the land it sits on.
- **Apartment (multifamily) building (complex)** = The land is owned by the corporation and individual dwelling units are leased out to tenants.

III. Sprinkler terms

What do sprinklers have to do with electrical services? From a designer point of view a lot. So here are some sprinkler basics. NFPA 13D and 13R are limited to 4 stories

- NFPA 13D sprinkler systems are required by the IRC for all one and two family and townhouse dwellings. A 13D system allows the potable water of the dwelling to be used for sprinkler protection from one water supply. The system is plastic piping and in some jurisdictions the plumber can install it.

IMPORTANT NOTE: Many states have removed this provision from the IRC -- not the IBC

- NFPA 13R sprinkler systems have separate water supplies but still utilize plastic sprinkler piping.
- NFPA 13 is metal sprinkler piping and separate water supplies (above 4 stories, commercial and industrial)

IV. Fire separations

303.2 Townhouses :

302.2.2 – 303.2.6 Separations = 2 – 1hour walls or a common 2-hour wall foundation to roof or 18” above the roof line

303.2.6 Structural independent= each unit shall be structurally independent

R302.3 Two-family dwellings. *Dwelling units* in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where tested in accordance with ASTM E119, UL 263 or Section 703.3 of the *International Building Code*.

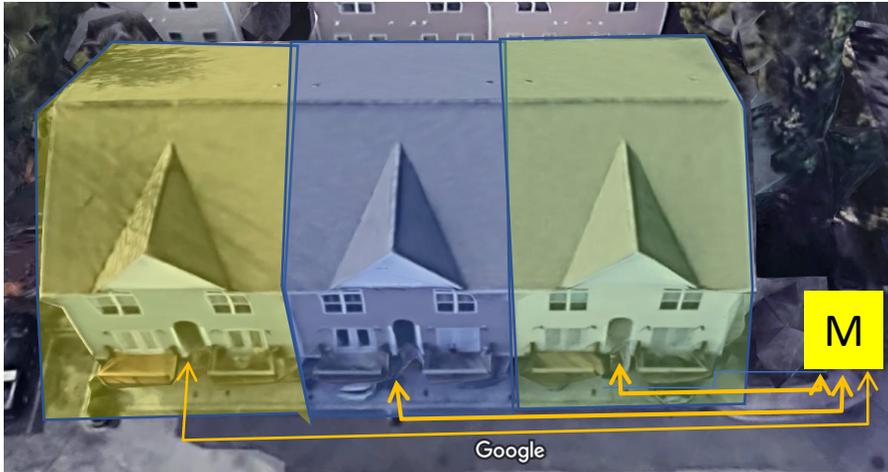
Exception A: fire-resistance rating of 1/2 hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13. (ICC Errata 13D)



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V Townhouses/Condo/ Apartment

The following scenarios will help you decided on which is applicable in your situation. We are going to use the same diagram for all the examples.



Townhouse

(3 or more single family units attached with 0 lot lines)

- ✓ Each dwelling on its own individual deeded lot (land) as shown
- NOTE: there could be some common area here such as streets, parks etc. owned jointly by the Homeowners Association (HOA).
- ✓ It is built to the IRC and is not sprinkled (most states)
- ✓ 2 hour rated walls between units minimum
- ✓ Electrical meters need to be on each individual unit or on a pedestal in a common area with a utility easement to each unit. (not under or thru the other units)

NOTE: The power company could hit this building with 2 service drops. See duplex explanation

Note: Pedestal needs to be durable to handle the environment. Concrete, block, etc.

Metered mains are strongly recommended for all units



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Condo

- ✓ Condo owners do not own the shell of the building or the land it sits on. The condo association owns the structure and the land
- ✓ Built to the IBC not the IRC and sprinkled to NFPA13R not 13D
- ✓ 1 hour rated wall between units
- ✓ Gang meters can be on an end unit
- ✓ Apartment complex could have some units that look like those in the picture. The only difference between the apartment and condo is who owns the land --
- ✓ Apartment building owner owns the land
- ✓ Condo owners own the land as part of the association
- ✓ NOTE if a building is changed from an apartment building R2 to a condo, the classification remains R2 and nothing changes, electrical or sprinklers.



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Duplex (2 family)

- ✓ One lot –one owner
- ✓ Built to the IRC
- ✓ 1 hour rated partition wall
- ✓ No sprinklers
- ✓ Electrical meters ganged anywhere

- ✓ Two lots –two owners
- ✓ Built to the IRC
- ✓ Treat it like a townhouse with a 2-hour rated partition wall
- ✓ Electrical meters ganged on common party wall and fed into each individual dwelling unit.

NOTE: If in doubt assume two owners

Apartment / Condo Complex

If the owner of the apartment complex has single family or duplexes in a common complex treat them as such and use the IRC.

Designer choice as to where the electrical meters are placed.



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V. Duplex & Renovations

The following is some additional information on duplexes and should help Building Officials in determining which code and more over the utility / sprinkler concerns



Homeowner converts a single family (R3) house into a duplex and decides to rent out the other side. Owner wants to add an electrical (water, gas) meter

The IRC still applies as long as they do not try to subdivide the property

Renovate the house and make it 3 or more apartments . This will change the classification of the house from R3 to R2 and kick it out of the IRC into the IBC where it now will be required to be sprinkled to NFPA 13R

NOTE (opinion) : In renovations if you touch it bring it up to code. There is a 50% rule in flood codes, but no such requirement for whole house renovations.

Duplex (stacked)

There are moves in some cities to stack duplexes (new) or convert old row houses to duplexes. There are several things to consider here.

Hard to have two owner here unless you consider this a condo with an association (of 2) . If this is the case:

- ✓ Use the IBC
- ✓ Sprinkle the building 13R
- ✓ Electrical meters at grade level and feeder going up the exterior structural wall.

NOTE: Picture shows 4 story, therefore it must be built to the IBC and sprinkled. Ownership will determine NFPA13D (single owner) or 13R (condo owners)



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Summary -- this is an example of how a department policy could be written

XYZ Jurisdiction policy on Townhouse construction – sprinkler, fire separations, utilities Date 1/1/2020

As an example to clarify for the designers and developers the construction of townhouse like buildings the following policy has been put together.

If you want to build the building using the IRC and calling them R3 (attached single family housing) then the following applies

- Each on its own property
- 2 hour (2 -1 hour) common walls
- No sprinklers
- Utilities (electrical) must hit each unit separately or be on a pedestal (free standing) with a utility easement. Plumbing and gas must also be addressed



Or if the building is a condo or apartment

- One property (1 owner or the condo association is the owner)
- Built to the IBC R2 occupancy
- NFPA 13R sprinkler system
- 1 hour rated partitions
- Utilities (electric) must be installed together in a common location.



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