

6.1.4 Connectors

A primary difference between MEP components and components for architecture or structural engineering is the concept of connectors.

For system engineers, all MEP components require connectors to behave intelligently. Components created without connectors cannot be integrated into a system. Connectors are logical entities that allow load calculations within a project. Revit maintains information about loads associated with the spaces in a project. As devices and equipment are placed in spaces, Revit tracks the loads based on load type: HVAC, Lighting, Power, or Other. Connectors communicate pipe size and flow, duct size and flow, and circuit voltage, phase, and demand factor information between Revit elements.

SFO uses a custom list of MEP systems specific to the airport campus and each connector type. A description of each SFO MEP system can be found in the SFO Element Attribute Dictionary.

MEP Connectors in Revit Families

The connector type determines the systems it can interact with and how it interacts with other system components. Selecting the correct discipline is critical to the content working correctly. After the connector selection is made, it cannot be changed without first deleting the connector and adding it again with the correct discipline. When connectors are added to a family, the following disciplines can be specified:

- **Duct connectors:** associated with ductwork, duct fittings, and other elements that are part of the air distribution systems.
- **Electrical connectors:** used for any type of electrical connections, including power, telephone, alarm systems, and others.
- **Pipe connectors:** used for piping, pipe fittings, and other components that are meant for transmitting fluids.
- **Cable tray connectors:** used for cable tray, cable tray fittings, and other components that are meant for wiring related to communications.
- **Conduit connectors:** used for conduit, conduit fittings, and other components that are meant for wiring related to all Electrical systems.

Properly specifying connector size, flow, pressure, and power values in Revit families is critical for accurate MEP system calculations in Revit projects. Mechanical and Electrical family connector element data should be mapped to an appropriate SFO shared parameter where available to maintain interoperability with MEP schedules and Coordination Schedules.

MEP Connectors in Revit Projects

Once a family containing MEP connectors is loaded into a Revit project, MEP systems can be created. Selecting a family or element with duct, electrical, pipe, cable tray, or conduit

connector(s) allows for the creation of a new MEP system or modification to an existing MEP system. The specific tools used to create MEP systems depend on the component and the types of connectors in the family. Multiple connectors of the same or various types can be used in a single family. Connectors should be used to accurately represent the size, quantity, and location of MEP equipment connections required and consistent with the Model Element Table in the BIM execution plan.

For connectors to properly pass information throughout a mechanical system or electrical circuit, it is critical for all elements to be connected or capped. If any connector element in the system is disconnected and there is an open duct, pipe, or circuit at the end of a branch, the MEP system flow or power cannot be accurately calculated. Duct and piping systems may show no flow where there are open branches. Power systems will not include equipment disconnected from the electrical system and disconnected equipment will not show up in panel schedules. If data is not being passed throughout MEP systems, ensure all the ducts, pipes, or circuits are properly connected without any open ends.

Fully connected mechanical systems can utilize Revit analysis tools. Revit analysis tools include the system inspector and visibility color schemes, which are explained in more detail under the Mechanical System Analysis Section.