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**Telecommunications Infrastructure Terms and Symbols
as Modified and Accepted by the
TR-42.5 Subcommittee
February 2017**

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FOREWORD

The TR-42.5 Subcommittee develops and maintains the master glossary of terms and symbols including acronyms, abbreviations and units of measurement for all standards developed in TR-42. The membership of TR-42.5 is derived largely from the committees it serves. It is a central point for resolving differences among committees in meaning or usage of telecommunications terms. The Subcommittee submits an updated glossary after each meeting to all committee chairs and representatives. If a subcommittee does not agree with a particular definition, they should bring their concerns to the attention of the TR-42.5 Subcommittee, together with documented rationale for change. No definition may be changed without the agreement of TR-42.5's members, which represents each of the committees concerned.

In the development of the following definitions the Subcommittee followed the instructions in Annex B of the TIA Engineering Style Manual dated 30 Jan 1992.

It should be noted that generally, terms including the word "telecommunications" has been alphabetically listed under the 2nd word, followed by "(telecommunications)".

This document is a working draft that is continually reviewed for use by TR 42. It is intended to serve as the basis for discussion and further development of the standards produced.

1 DEFINITIONS

A

ablative: The development of a hard char that resists the erosion of fire and flames; a characteristic of a firestop when exposed to fire. (569)

access control system: A system that provides selective restriction of access to a place or other resource. [TR-42.1]

access floor: A system consisting of completely removable and interchangeable floor panels that are supported on adjustable pedestals or stringers (or both) to allow access to the area beneath. (569)

access line: A telecommunications circuit provided by a service provider at the demarcation point. (569)

access provider: The operator of any facility that is used to convey telecommunications signals to and from a customer premises.

access switch: A switch used to connect devices, such as servers, to a local area network. [TR 42.1]

access unit: A location that allows entry into the pathway system. (569)

activation unit: A floor system device that contains all components necessary to provide service access. (569)

active cross-connect: A facility enabling the termination of cable elements and their interconnection or cross-connection by electronic means.

adapter: A device that enables any or all of the following:

- (1) different sizes or types of plugs to mate with one another or to fit into a telecommunications outlet,
- (2) the rearrangement of leads,
- (3) large cables with numerous conductors to fan out into smaller groups of conductors, and
- (4) interconnection between cables.(568)

Adapter, optical fiber: A mechanical device designed to align and join two optical fiber connectors (plugs) to form an optical connection.

adapter; optical fiber duplex: A mechanical device designed to align and join two duplex optical fiber connectors (plugs) to form an optical fiber duplex connection.

adapter; optical fiber array: A mechanical device designed to align and join two array optical fiber connectors (plugs) to form an optical array connection.

administration: The method for labeling, identification, documentation and usage needed for installation, moves, additions and changes of the telecommunications infrastructure.(606)

aerial cable: Telecommunications cable installed on aerial supporting structures such as poles, sides of buildings, and other structures. (569)

aggregation switch: A switch that aggregates network traffic to and from access switches and that may also connect to network service devices (e.g., load balancers, network appliances, firewalls). [TR 42.1]

AIM-enabled port: Port which is able to automatically detect the insertion or removal of a cord and process that event as part of an automated infrastructure management system. (TIA-606-B-1)

AIM hardware: Combination of patch panels and controllers that are designed to automatically detect the insertion or removal of cords, to record connectivity information, and to exchange connectivity information with AIM software. (TIA-606-B-1)

AIM system: Integrated hardware and software system that automatically detects the insertion and removal of cords, documents the cabling infrastructure including connected equipment enabling management of the infrastructure and data exchange with other systems. [TR-42.6]

alarmed carrier: A system for detecting intrusion into a pathway using specialized optical fiber that senseS vibration. [TR-42.1]

alien crosstalk: The unwanted signal coupling from a disturbing pair of a 4-pair channel, permanent link, or component to a disturbed pair of another 4-pair channel, permanent link, or component

alien far-end crosstalk: The unwanted signal coupling from a disturbing pair of a 4-pair channel, permanent link, or component to a disturbed pair of another 4-pair channel, permanent link, or component, measured at the far-end

alien limited signal-to-noise ratio: Ratio derived from measurements of the cable insertion loss and alien crosstalk. [TR-42.7]

alien near end crosstalk: Unwanted signal coupling from a disturbing pair of a 4-pair channel, permanent link, or component to a disturbed pair of another 4-pair channel, permanent link, or component, measured at the near-end.

antenna cable: Transmission media that connects to an antenna.

array cable: See array connector cable [568.3-D]

array connector (multi-fiber connector): A single ferrule connector that contains multiple optical fibers arranged in a row or in rows and columns. [TR 42.5]

array connector cable: A length of optical fiber cable with array connector(s) on each end. [TR 41.11]

array patch cord: A patch cord with array connector(s) on each end. [TR 42.11]

attenuation: Reduction in strength of a signal.

attenuation to alien crosstalk ratio far-end: The difference, in dB, between the alien far-end crosstalk from a disturbing pair of a 4-pair channel, permanent link, or component, and the insertion loss of the disturbed pair in another 4-pair channel, permanent link, or component.

average alien near-end crosstalk loss: The calculated average of the alien near-end crosstalk loss of the four pairs of the disturbed cabling

alien far-end crosstalk loss, power sum: The power sum of the unwanted signal coupling from multiple disturbing pairs of one or more 4-pair channels, permanent links, or components to a disturbed pair of another 4-pair channel, permanent link, or component, measured at the far-end.

alien near-end crosstalk loss, power sum: The power sum of the unwanted signal coupling from multiple disturbing pairs of one or more 4-pair channels, permanent links, or components to a disturbed pair of another 4-pair channel, permanent link, or component, measured at the near-end.

average power sum alien near end crosstalk loss: The calculated average of the power sum alien near-end crosstalk loss of the four pairs of the disturbed channel or permanent link.

attenuation to alien crosstalk ratio at the far end: The difference in dB between the alien far-end crosstalk from a disturbing pair of a 4-pair channel, permanent link, or component and the insertion loss of a disturbed pair in another 4-pair channel, permanent link, or component.

average power sum attenuation to alien crosstalk ratio far-end: The calculated average of the power sum attenuation to alien crosstalk ratio far-end of the four pairs of the disturbed channel or permanent link.

alternate entrance: A supplementary entrance facility into a building using a different routing to provide diversity of service and for assurance of service continuity. (569)

alternate route: See **alternate entrance**. (569)

antenna cabling: Cabling that extends to the antenna.

antenna entrance: A pathway facility from the antenna to the associated equipment. (569)

apparatus closet: See **closet (telecommunications)**. (569)

application programming interface: Set of commands, functions, and protocols that specify how software components should interact. (TIA-606-B-1)

approved ground: See **ground**. (607)

architectural assemblies: Walls, partitions, or other barriers that are not load bearing. (568)

architectural structures: Walls, floors, floor/ceilings and roof/ceilings that are load bearing. (568)

array connector (multi-fiber connector): A single ferrule connector that contains multiple optical fibers arranged in a row or in rows and columns

A-to-B patch cord, optical fiber: A duplex patch cord that connects position A on one end of the patch cord to position B on the other end of the patch cord.

A-to-A patch cord, optical fiber: A duplex patch cord that connects position A on one end of the patch cord to position A on the other end of the patch cord.

array patch cord: A length of optical fiber cable with an array connector on each end.

attenuation: The decrease in power between two points, expressed in dB. [TR 42.11]

auxiliary disconnect outlet: A device usually located within the tenant or living unit used to terminate the ADO or backbone cable. (570)

auxiliary disconnect outlet: A device, usually located within the tenant or living unit, that provides a means for connection or disconnection from an access provider. [TR 42.2]

auxiliary disconnect outlet cable: In residential applications, the cable from the auxiliary telecommunications disconnect outlet/connector or the distribution device in a customer's premises to the backbone facility or the point of demarcation. (570)

auxiliary disconnect outlet cable: The cable from the demarcation point or the common equipment room to the auxiliary disconnect outlet. [TR 42.2]

automation island area: An area containing machines, processes and supporting cabling for industrial control and process monitoring.

B

backbone: A facility (e.g., pathway, cable or bonding conductor) for cabling Subsystem 2 and Cabling Subsystem 3.

backbone bonding conductor: A telecommunication bonding connection which interconnects telecommunications bonding backbones (formerly known as the grounding equalizer).

backbone cable: See **backbone**.

backbone cabling: Cabling Subsystem 2 or Cabling Subsystem 3.

backbone raceway: That portion of the pathway system that permits the placing of main and high-volume cables between the entrance location and all cross-connect points within a building and between buildings. (569)

balance: The ratio of the differential signal output at either end of any pair to a common mode signal input, at either end of the same or a different pair, and vice versa, under specified termination conditions.

barrier (architectural): Architectural structures or assemblies. (569)

base transceiver station: Head-end equipment located within a DAS network.

basic connectivity configuration: list of information including, but not restricted to, number and type of ports, number of slots, expansion cards, MAC and IP address [TR-42.6]

bearing wall: A wall supporting a load other than its own weight. (569)

binder group: One of two or more bound collections of pairs or fibers within a cable.

blank cell: The hollow space of a cellular metal or cellular concrete floor unit without factory installed fittings. (569)

blended floor system: A combination of cellular floor units with raceway capability and other floor units with raceway capability, systematically arranged in a modular pattern. (569)

blocking switch fabric: A switch fabric that does not have sufficient bandwidth to ensure that any port can communicate with any other port in the switch fabric at the full bandwidth capacity of either port.

bonding: The joining of metallic parts to form an electrically conductive path.

bonding conductor for telecommunications: A conductor that interconnects the telecommunications bonding infrastructure to the buildings service equipment (power) ground. (607)

bonding conductor: A conductor that joins metallic parts to form an electrically conductive path.

bonding jumper: (see bonding conductor)

bonding network (telecommunications): A set of interconnected conductive structures that provides a low impedance path for the associated telecommunications infrastructure.

braid: A group of non-insulated conductors interwoven to surround one or more insulated conductors.

breakout (fan-out): An optical fiber cable split into multiple branches. (TIA-440-C)

bridged jack: A dual position modular female jack where all pins of one jack are permanently bridged to the other jack in the same order. (568)

bridged tap: A connection that enables multiple appearances of the same cable pair at several distribution points. (568)

building automation system: see intelligent building system [TR 42.1]

building backbone: 1) Pathways or cabling between telecommunications service entrance rooms, equipment rooms, telecommunications rooms, or telecommunications enclosures within a building. (758) 2) Cabling for interconnecting telecommunications spaces from the telecommunications entrance facility to a horizontal cross-connect within a building. (570)

building core: A three-dimensional space permeating one or more floors of the building and used for the extension and distribution of utility services (e.g., elevators, washrooms, stairwells, mechanical and electrical systems, and telecommunications) throughout the building. (569)

building entrance area: See **entrance room or space (telecommunications)**.(569)

building module: The standard selected as the dimensional coordination for the design of the building, e.g., a multiple of 100 mm (4 in), since the international standards have established a 100 mm (4 in) basic module. (569)

bundled cable: An assembly of two or more cables continuously bound together to form a single unit.

buried cable: A cable installed under the surface of the ground in such a manner that it cannot be removed without disturbing the soil. (569, 758)

C

cabinet: A container that may enclose connection devices, terminations, apparatus, wiring, and equipment. (569)

cable: An assembly of one or more insulated conductors or optical fibers, within an enveloping sheath. (568)

cable bundle: A group of cables that are tied together or in contact with one another in a closely packed configuration for at least 1 m. [TR 42.7]

cable impulse noise: See **mechanically-generated cable impulse noise**. [TR 42.7]

cable run: A length of installed media, which may include other components along its path. (568)

cable sheath: A covering over the optical fiber or conductor assembly that may include one or more metallic members, strength members, or jackets. (568)

cabling: A combination of all cables, jumpers, cords, and connecting hardware. (568)

cabbling connectivity information: Combination of connection information automatically detected by AIM and additional cabling infrastructure information from various sources. (TIA-606-B-1)

common bonding busbar: A bonding busbar serving one or more common telecommunications bonding backbones in a multi-tenant building.

common telecommunications bonding backbone: A conductor that interconnects the common bonding busbar of a multi-tenant building to the secondary bonding busbars for shared services and the primary bonding busbars in tenant spaces.

compartmentalization: Creation of a physical barrier between two or more compartments which have separate fire suppression and cooling systems.

connection information: The record of an event generated by the insertion or removal of a connector at an AIM-enabled port. (TIA-606-B-1)

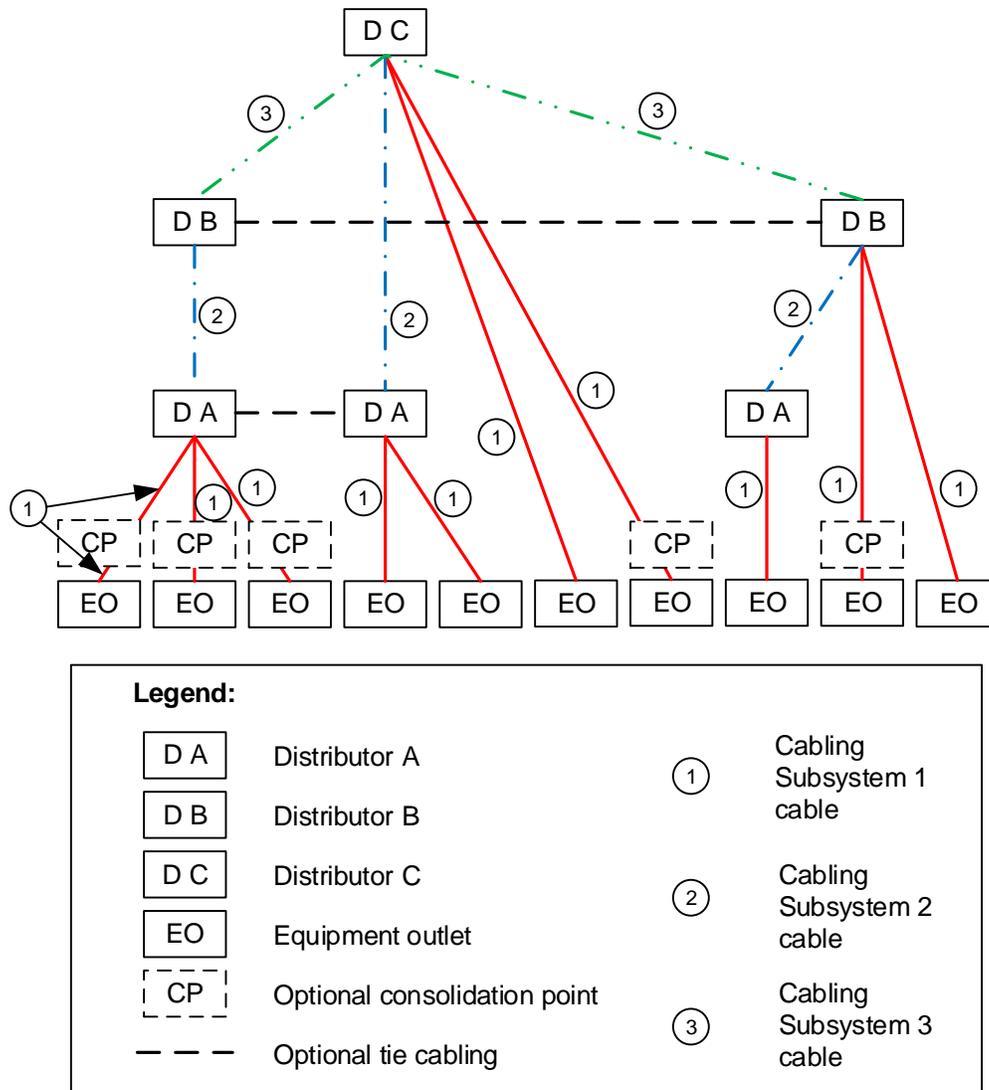
cable tray: a unit or assembly of units or sections and associated fittings forming a rigid structural system used to securely fasten or support cables and raceways.

Cabbling Subsystem 1: Cabling from the equipment outlet to Distributor A, Distributor B, or Distributor C. (TIA-568-C.0)

Cabbling Subsystem 2: Cabling between Distributor A and either Distributor B or Distributor C (if Distributor B is not implemented). (TIA-568-C.0)

Cabbling Subsystem 3: Cabling between Distributor B and Distributor C. (TIA-568-C.0)**Note:** See Figure 1 below for an illustration of the generic cabling topology for **Cabbling Subsystem 1, Cabbling Subsystem 2, Cabbling Subsystem 3, Distributor A, Distributor B, Distributor C,**

an optional **consolidation point** and the **equipment outlet**. Cabling subsystems do not include equipment cords.



NOTE – All elements shown represent cables and connecting hardware, not spaces or pathways.

Figure 1 – Elements of generic cabling topology

campus: The buildings and grounds having legal contiguous interconnection. (569, 758)

campus backbone: Cabling for interconnecting telecommunications spaces between buildings.

cavity wall: A wall built of solid masonry units arranged to provide air space within the wall. (569)

ceiling distribution system: A distribution system that utilizes the space between a suspended or false ceiling and the structural surface above.(569)

cell: 1) A single raceway of a cellular or underfloor duct system. (569) 2) The unit topographical area. (TSB 162)

cellular floor: A floor distribution method in which cables pass through floor cells, constructed of steel or concrete to provide a ready-made raceway for distribution of power and telecommunications cables. (569)

cellular floor raceway: An assembly of hollow, longitudinal units constituting part of a floor, and systematically placed for the distribution of cables. (569)

cementitious firestop: A firestopping material that is mixed with water, similar in appearance to mortar. See **firestopping**. (569)

centralized cabling: A cabling configuration using a continuous cable, an interconnect, or a splice from an equipment outlet to a centralized cross-connect in Distributor B or Distributor C. [TR 42.1]

centralized switch fabric: A data center switch fabric architecture in which the switch fabric is implemented in a single centralized switch [TR 42.1]

channel: The end-to-end transmission path between two points at which application-specific equipment is connected. (568)

coaxial cable: A telecommunications cable consisting of a round center conductor surrounded by a dielectric surrounded by a concentric cylindrical conductor (shield) and an optional insulating sheath (570).

commercial building: A building or portion thereof that is intended for office use. (569)

common bonding network: The set of metallic components that are interconnected to form the principle means for effectively bonding equipment inside a building to the grounding electrode system

common distributor room: A distributor room that services tenants in a multi-tenant building.

common equipment room (telecommunications): An enclosed space used for equipment and backbone interconnections for more than one tenant in a building or campus. (569)

common telecommunications room: An enclosed space used for backbone interconnections for more than one tenant in a building, which may also house equipment. (569)

compression connection: A means of permanently bonding a conductor to a connector by permanently deforming the connector using a compression tool. [TR 42.16]

computer room: An architectural space whose primary function is to accommodate data processing equipment.

concrete fill: A minimal-depth concrete pour to encase single-level underfloor duct. (569)

concurrently maintainable: The ability to have planned maintenance performed at any time on any path, equipment or component of the system without interrupting the operation of the system.

conduit: (1) A raceway of circular cross-section. (2) A structure containing one or more ducts. (569)

NOTE: For the purposes of this Standard the term conduit includes electrical metallic tubing (EMT) or electrical non-metallic tubing (ENT)

conduit sizes: For the purposes of this Standard, conduit sizes are designated according to metric designator and trade size as shown below [TR 42.9]

Table 1 – Conduit sizes

| Metric Designator | Trade Size |
|-------------------|------------|
| 16 | 1/2 |
| 21 | 3/4 |
| 27 | 1 |
| 35 | 1 1/4 |
| 41 | 1 1/2 |
| 53 | 2 |
| 63 | 2 1/2 |
| 78 | 3 |
| 91 | 3 1/2 |
| 103 | 4 |
| 129 | 5 |
| 155 | 6 |

conduit system: Any combination of ducts, conduits, maintenance holes, handholes and vaults joined to form an integrated whole. (569)

connecting hardware: A device providing mechanical cable terminations. (568)

connector (plug), duplex; optical fiber: A remateable device that terminates two fibers and mates with a duplex receptacle or adapter.

connector, small form factor: An optical fiber duplex connector with a size approximating that of an 8-position modular outlet/connector typically used for terminating 4-pair copper cable.

consolidation point: A connection facility within Cabling Subsystem 1 for interconnection of cables extending from building pathways to the equipment outlet

core area: See **building core**.

core switch: A backbone switch at the highest hierarchical layer of a network. [TR 42.1]

core wall: A wall that runs between structural floor and structural ceiling to separate stairwells, elevators, etc. from the rest of the building. (569)

cord (telecommunications): An assembly of cord cable with a plug on one or both ends.

cord: 1) An assembly of cord cable with a plug on one or both ends. 2) An assembly of optical fiber cable with a connector on each end.

cord (equipment): A cord used to establish connection between equipment and cabling. [568.3-D]

cord cable: A cable used to construct patch, work area, and equipment cords.

coupling attenuation: Coupling attenuation is the ratio, in dB, of the transmitted power in the signal conductors and the maximum radiated peak power, conducted and generated by the excited common mode currents. [TIA 1005-A]

coverage area: The area served by a device.

coverage area cable: A cable used for connecting the horizontal connection point to a building automation system device or the cable between two building automation system devices.

cross-connect: A facility enabling the termination of cable elements and their interconnection or cross-connection. (568)

cross-connection: A connection scheme between cabling runs, subsystems, and equipment using patch cords or jumpers that attach to connecting hardware on each end. (568)

cross-modal: related to conversion from differential mode to common mode or vice versa

cross-modal conversion: Conversion from differential mode to common mode or vice versa.

crossover: The junction unit at the point of intersection of two cable trays, raceways, or conduit (pathways) on different planes.

customer premises: Building(s), grounds and appurtenances (belongings) under the control of the customer. (569)

customer premises equipment: Telecommunications equipment located on the customer's premises.

D

data: Electronically encoded information. (570)

data center: A building or portion of a building whose primary function is to house a computer room and its support areas. (942)

data exchange: Ability of an AIM system and other systems to work together reliably. (TIA-606-B-1) Delete – self-explanatory (not needed)

DCPS, end-point: A dc power-source providing power at one end of the cabling channel (TSB-184)

DCPS, mid-span: A dc power-source providing power at a point within the cabling channel (TSB-184)

delay skew: The difference in propagation delay between any two pairs within the same cable sheath.

demarcation point: The point where the operational control or ownership changes.

dew point: The temperature to which air must be cooled (assuming constant air pressure and moisture content) to reach a relative humidity of 100% (i.e., saturation).

direct attach cabling: Cabling that provides a connection between equipment without any intervening connections.

direct-buried cable: A telecommunications cable designed to be installed under the surface of the earth, in direct contact with the soil. (568, 758)

directivity: Ratio of the optical power into an input port of an optical branching component to the unwanted optical power returning to any other input port. [TR 42.11]

discoverable equipment: Equipment with a network address. (TIA-606-B-1)

distributed antenna system: A network of antenna nodes connected to common source(s) that provides wireless service.

distribution device: A facility located within the dwelling unit for interconnection or cross connection. (570)

distribution device cord: A telecommunications cord that extends between the distribution device and the auxiliary disconnect outlet. (570)

distribution duct: A raceway placed within or just below the finished floor and used to extend the wires or cables to a specific service area. (569)

distribution frame: A structure with terminations for connecting the cabling of a facility in such a manner that interconnection or cross-connections may be readily made

(1) **main:** When the structure is located at the entrance facility or main cross-connect and serving the building or campus.

(2) **intermediate:** When the structure is located between the main cross-connect and the telecommunications room. (569)

Distributor A: Optional connection facility in a hierarchical star topology that is cabled between the equipment outlet and Distributor B or Distributor C (TIA 568-C.0)

Distributor B: Optional intermediate connection facility in a hierarchical star topology that is cabled to Distributor C (TIA 568-C.0)

Distributor C: Central connection facility in a hierarchical star topology (TIA 568-C.0).

distributor enclosure: A case or housing designed to contain Distributor A, Distributor B or Distributor C.

distributor room: An enclosed architectural space designed to contain Distributor A, Distributor B or Distributor C.

down conductor: The vertical portion of a conductor which is intended to be used to carry lightning currents between strike termination devices and grounding electrodes.

double pour: The pouring of a concrete floor in two stages. (569)

drain wire: A non-insulated conductor placed in electrical contact with a shield.

drop cable: Cable linking a drop terminal (e.g. from a service provider) to a premises terminal (568-C.3).

dry-bulb temperature: The temperature of air measured by a thermometer freely exposed to the air but shielded from radiation (e.g., sunlight, radiant heat) and moisture.

duct: 1) A single enclosed raceway for conductors or cables (See also conduit, raceway). 2) A single enclosed raceway for wires or cables usually used in soil or concrete. 3) An enclosed air flow path, generally part of the HVAC system of a building. (569)

ductbank: An arrangement of ducts, for wires or cables, in tiers. (569)**duplex connection:** A mated assembly of two duplex connectors and a duplex adaptor. [568.3-D]

duplex patch cord: A patch cord with a duplex connector on each end. (TIA-440-C)

E

earth: See **ground**. (607)

earthing: See **grounding**. (607; 568-B.1-2)

effectively grounded: For a definition see the NEC. (607)

elastomeric firestop: A firestopping material resembling rubber. (569)

electrical closet: Floor-serving facility for housing electrical equipment, panelboards, and controls. (569)

electrical service equipment: That portion of the electrical power installation, the service enclosure or its equivalent, up to and including the point at which the supply authority makes connection. (569, 607)

electromagnetic compatibility: The ability of electronic systems to operate in their intended electromagnetic environment without suffering performance degradation and without causing performance degradation in other equipment.

electromagnetic interference: Radiated or conducted electromagnetic energy that has an undesirable effect on electronic equipment or signal transmissions.

embedded duct: A duct fully enclosed inside a floor or a wall.

emergency power: A stand-alone secondary electrical supply source not dependent upon the primary electrical source. (569)

EMI segregation: Isolation of the telecommunications signal from electromagnetic interference. (568)

enclosure, telecommunications: A case or housing that may contain telecommunications equipment, cable terminations, or horizontal cross-connect cabling.

enclosure, industrial equipment: A case or housing that may contain industrial control equipment with associated telecommunications equipment and cabling

encryption: The coding or scrambling of information so that it can only be decoded and read by someone who has the correct decoding key. (TIA-5017)

end device: Equipment that is either the source or the destination of a message on a networked system. (TIA-606-B-1)

end user: The owner or user of the premises cabling system. (568, 569)

entrance bridge: A terminal strip that is an optional component in a network interface device and is provided for the connection of ADO cable. (570)

entrance facility (telecommunications): An entrance to a building for both public and private network service cables (including wireless) including the entrance point of the building and continuing to the entrance room or space. (569)

entrance point (telecommunications): The point of emergence for telecommunications cabling through an exterior wall, a floor, or from a conduit. (569)

entrance room or space (telecommunications): A space in which the joining of inter or intra building telecommunications cabling takes place. [TIA-569-C]

NOTE - An entrance room may also serve as a distributor room.

equal level far-end crosstalk: A measure of the unwanted signal coupling from a transmitter at the near-end into another pair measured at the far-end, and relative to the received signal level.

equal level transverse conversion transfer loss: A calculation, expressed in dB, of the difference between measured TCTL and the differential mode insertion loss of the disturbed pair. [TIA 568-C.2 and TIA 1005-A]

equipment cord: see **cord**

equipment distribution area: the computer room space occupied by equipment racks or cabinets [TIA 942]

equipment outlet: Outermost connection facility in a hierarchical star topology.

equipment outlet area: see **service area**

equipment outlet space: space served by an equipment outlet.

equipment outlet space: Space served by an equipment outlet or multi-user telecommunications outlet assembly. [TR 42.1]

equipment room (telecommunications): An environmentally controlled centralized space for telecommunications equipment that usually houses Distributor B or Distributor C. (569)

equipment room, industrial: A centralized space for industrial control equipment with associated telecommunications equipment and cabling

equipotential bonding: Bonding between metallic components to achieve a substantially equal potential.

external network interface: Interface between the computer room cabling and external cabling [TIA 942]

exothermic weld: A method of permanently bonding two metals together by a controlled heat reaction resulting in a molecular bond. (607)

F

false ceiling: See **suspended ceiling**.

far-end crosstalk loss: A measure of the unwanted signal coupling from a transmitter at the near end into another pair measured at the far end, and relative to the transmitted signal level.

NOTE -This term is also known as input/output far end crosstalk loss.

fat tree, fabric: A switch connection topology where each access switch is connected to every interconnection switch within the fabric. [TR 42.1]

fault tolerant: The ability to withstand a single fault.

feeder duct: See **header duct**.

ferrule, optical fiber: A component (such as a rigid tube) used to align and protect the stripped end of optical fiber(s).

fiber optic: See **optical fiber**.

field wiring: An electrical connection intended to be made at the time of installation, in the field, as opposed to factory wired. (568)

fire break: A fire-rated material, device, or assembly of parts installed along a cable, other than at a cable penetration of a fire-rated barrier, to prevent the spread of fire along a cable. (569)

fire resistance rating: A classification assigned to a material or assembly of materials when exposed to fire under specified conditions.

fire shield: A fire-rated material, device, or assembly of parts between pathways to prevent propagation of flames from one pathway to an adjacent pathway. (569)

firestop: A fire-rated material, device, or assembly of parts installed in a penetration of a fire-rated barrier. (569)

firestop seals: See **firestop system**.

firestop system: A specific construction consisting of the material(s) (firestop penetration seals) that fill the opening in the wall or floor assembly and any items that penetrate the wall or floor, such as cables, cable trays, conduit, ducts, pipes, and any termination devices, such as electrical outlet boxes, along with their means of support. (569)

firestopping: The process of installing listed, fire-rated materials into penetrations in fire-rated barriers to reestablish the fire-resistance rating of the barrier. (569)

fixed device: A permanently mounted device. [TR 42.2]

floor above grade: All floors above ground level.

floor serving terminal: See **terminal**.

floor slab: That part of a reinforced concrete floor which is carried on beams below. (569)

flush duct: A duct accessible by a cover that is even with the surface it is mounted in.

full-mesh, fabric: A switch connection topology where each switch is directly connected to all other switches within the mesh. [TR 42.1]

furniture cluster: A contiguous group of work areas, typically including space divisions, work surfaces, storage, and seating. (569)

furcation point: the point in a cable assembly that either joins two different cable constructions or where cable construction is altered (often where a cable assembly divides into branches).

G

grid: A collection of adjacent cells.

ground: A conducting connection, whether intentional or accidental, between an electrical circuit (e.g., telecommunications) or equipment and the earth, or to some conducting body that serves in place of earth. (607)

grounding: The act of creating a ground.

grounding: Connecting to ground or a conductive body that extends the ground connection

grounding conductor: A conductor used to connect the grounding electrode to the building's main grounding busbar. (607)

grounding electrode: A conductor, usually a rod, pipe or plate (or group of conductors) in direct contact with the earth for the purpose of providing a low-impedance connection to the earth. (607)

grounding electrode conductor: The conductor used to connect the grounding electrode to the equipment grounding conductor, or to the grounded conductor of the circuit at the service equipment, or at the source of a separately derived system. (607)

grounding electrode system: One or more grounding electrodes that are connected together (607)

grounding equalizer: The conductor that interconnects elements of the telecommunications grounding infrastructure (Note: this term is superseded by **backbone bonding conductor** in TIA-607-C)

grounding mat: An extensive system of bare conductors, buried below the surface of the earth, intended to provide a low resistance connection to earth and to equalize the potential within the area covered. (607)

H

handhole: A structure similar to a small maintenance hole in which it is expected that a person cannot enter to perform work. (569)

hard sheath cable: A cable or wire contained within a continuous inner or outer metal sheath. (569, 758)

header duct (trenchduct, feeder duct): A raceway of rectangular cross-section placed within the floor to tie distribution duct(s) or cell(s) to the distributor room. (569)

head end: Facility to handle the transition of incoming carrier signal(s) to the cabling infrastructure. [TSB-5018]

high-order mode transient losses: Losses in power caused by the attenuation of weakly-guided high-order modes within multimode optical fiber.

home runs: A pathway or cable between two locations without a point of access in between. (568)

horizontal cabling: Cabling Subsystem 1. (568 C.1)

horizontal connection point: A connection point within Cabling Subsystem 1 between a distributor and equipment outlets or devices supporting intelligent building systems. [TR 42.1]

horizontal cross-connect: Distributor A [TR 42.1]

horizontal distribution area: A space in a computer room where a horizontal cross-connect is located. (942)

hybrid cable: An assembly of two or more cables, of the same or different types or categories, covered by one overall sheath. (568)

hybrid optical fiber cable: An optical fiber cable containing two or more fiber types (e.g., multimode and singlemode). (568)

|

identifier: An item of information that links a specific element of the telecommunications infrastructure with its corresponding record. (606)

in-floor pathway: A raceway within a floor structure.

industrial building/structure: A building or structure or portion thereof intended for uses such as transportation, manufacturing, warehousing, processing, refining, or drilling.

industrial equipment enclosure: see enclosure, industrial equipment

industrial equipment room: see equipment room, industrial

Industrial horizontal cabling: A combination of all cables, cords and connecting hardware between two active industrial devices (TIA 1005).

infrastructure (telecommunications): A collection of those telecommunications components, excluding equipment, that together provide the basic support for the distribution of information within a building or campus. (569)

innerduct: A nonmetallic raceway, usually circular, placed within a larger raceway. (569)

insert: An opening into the distribution duct or cell, from which the wires or cables emerge. (569)

insert, afterset: An insert installed after the installation of the concrete floor slab or other flooring material. (569)

insert, preset: An insert installed prior to the installation of the concrete floor slab or other flooring material. (569)

insertion loss: The power loss resulting from the insertion of a component, link or channel (often referred to as attenuation). [TR 42.11]

insertion loss deviation: The difference between the actual insertion loss as measured on a permanent link or channel and the insertion loss as determined by adding the component losses.

insulation displacement connection: An electrical connection made by inserting an insulated wire into a metallic slot.

insulation displacement contact: A contact suitable for making an electrical connection with an insulated conductor.

insulation displacement connection, accessible: An ID connection in which it is possible to access test points for carrying out mechanical tests and electrical measurements without deactivation of any design feature intended to establish or maintain the insulation displacement connection.

insulation displacement connection, non-accessible: An ID connection in which it is not possible to access test points for carrying out mechanical tests and electrical measurements without deactivation of any design feature.

insulation displacement termination: A connection made using an insulation displacement contact.

insulation piercing connection: An electrical connection made by piercing an insulated wire with a metallic element.

insulation piercing contact: An electrical connection made by piercing an insulated wire with a metallic element.

intelligent building system: Equipment and telecommunications infrastructure that supports monitoring, control, operation and management of building services. [TR 42.1]

Interconnection: A connection scheme that employs connecting hardware for the direct connection of a cable to another cable without a patch cord or jumper, or employs a patch cord or jumper to make a connection between connecting hardware and equipment.

interconnecting bonding conductor: A conductor that interconnects the telecommunications bonding backbones. (607)

interconnected mesh fabric: A switch connection topology in which pods, each containing a full-mesh fabric, are connected using interconnection switches. [TR 42.1]

interconnection switch: A switch used to connect access switches, or lower level interconnection switches, in a fabric. [TR 42.1]

intermediate cross-connect: Distributor B (568)

intermediate distribution area: a space in a data center where an intermediate cross-connect is located [TIA 942]

intermediate distribution frame: See **distribution frame**. (569)

intrabuilding telecommunications backbone: See building backbone.

intumescent firestop: A firestopping material that expands under the influence of heat. (569)

isolated bonding network: A bonding network that has a single point of connection to either the common bonding network or another isolated bonding network.

J

jack: A female telecommunications connector.

jack contact: The current carrying metallic member in a modular jack. (568)

jack header: A raceway similar to a header duct, usually provided in short lengths to connect a quantity of distribution ducts together. (569)

jumper: 1) An assembly of twisted-pairs without connectors, used to join telecommunications circuits/links at the cross-connect. (568) 2) An assembly of optical fiber cable with a connector on each end (often referred to as a cord).

junction box: A location in the pathway system that allows transition of pathways and access to cables. (569)

K

keying: The mechanical feature of a connector system that guarantees correct orientation of a connection, or prevents the connection to a jack, or to an optical fiber adapter of the same type intended for another purpose. (568)

L

leaf and spine switch fabric architecture: See **fat tree, fabric**. [TR 42.1]

leaf switch: An access switch in a leaf and spine switch fabric architecture. [TR 42.1]

light commercial building: A building or portion thereof that is intended for use with one to four non-residential exchange access lines per tenant. (570)

link: A transmission path between two points, not including equipment and cords. (568)

linkage: A connection between a record and an identifier or between records. (606)

liquidtight: Impervious to moisture ingress.

listed: Equipment included in a list published by an organization, acceptable to the authority having jurisdiction, that maintains periodic inspection of production of listed equipment, and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner. (569)

local exchange carrier: The telecommunications company that provides public switched network access service. (568, 569, 570)

longitudinal conversion loss: A ratio, expressed in dB, of measured differential voltage relative to the common mode voltage on the same conductor pair applied at the same end.

longitudinal conversion transfer loss: A ratio, expressed in dB, of measured differential voltage at one end of a conductor pair relative to the common mode voltage applied on any pair at the opposite end or on any other pair on the same end. (568-B.2-AD1)

M

main cross-connect: Distributor C

main distribution area: The space in a data center where the main cross-connect is located. [TIA 942]

main distribution frame: See **distribution frame**. (568)

main distribution panel (electrical): The primary point of distribution for electrical services within a facility.

main terminal room: See main terminal space.

main terminal space: The location of the cross-connect point of incoming cables from the telecommunications external network and the premises cable system (See also common equipment room). (569)

maintenance hole (telecommunications): A vault located in the ground or earth as part of an underground duct system and used to facilitate placing, connecting, and maintaining cables as well as the placing of associated equipment, in which it is expected that a person will enter to perform work. (569, 758)

managed network distribution equipment: Discoverable network distribution equipment that uses communications protocols such as the Simple Network Management Protocol to exchange management information. (TIA-606-B-1)

mechanical room: An enclosed space serving the needs of mechanical building systems. (862)

mechanically-generated cable impulse noise: Impulse noise from balanced twisted-pair cable bending, which can be produced by cable installation. [TR 42.7]

media (telecommunications): Wire, cable, conductors or fibers used for telecommunications.

membrane penetration: An opening through only one surface or side of a barrier. (569)

mesh bonding network: A bonding network to which all associated equipment (e.g., cabinets, frames, racks, trays, pathways) are connected using a bonding grid, which is connected to multiple points on the common bonding network.

mesh bonding network: A bonding network to which all associated equipment (e.g., cabinets, frames, racks, trays, pathways) are connected together, and also connected to multiple points on the common bonding network.

mesh isolated bonding network: A mesh bonding network that has a single point of connection to either the common bonding network or another isolated bonding network.

minimum point of entry: Either the closest practicable point to where the carrier facilities cross the property line or the closest practicable point to where the cabling enters a multi-unit building

or buildings. (569, 758)

mixed mode: Containing differential mode and common mode signals.

mode: A path of light in an optical fiber.

modular jack: A female telecommunications connector that may be keyed or unkeyed and may have 6 or 8 contact positions, but not all the positions need be equipped with jack contacts. (568)

modular plug: A male telecommunications connector for cable or cords that may be keyed or unkeyed and may have 6 or 8 contact positions, but not all the positions need be equipped with contacts. (568)

modular plug cord: A length of cable with a modular plug on both ends. (568-B.2)

modular plug terminated link: A type of link terminated with a modular plug on one end.

monolithic pour: The single, continuous pouring of a concrete floor or columns of any given floor of a building structure.

monolithic slab: The result of a monolithic pour. (569)

multi-fiber connector: See **array connector**.

multimedia: (1) An application that communicates to more than one of the human sensory receptors. (2) Applications that communicate information by more than one means.

multimode optical fiber: An optical fiber that carries many paths of light. (568)

multipair cable: A cable having more than four pairs.

multipoint bus: An open sequence of connected devices.

multipoint ring: A closed sequence of connected devices.

multi-user telecommunications outlet assembly: A grouping in one location of several equipment outlets. [TIA 568.0]

N

near-end crosstalk loss: A computation of the unwanted signal coupling from a transmitter at the near-end into a different receiver at the near end. [TIA 568-C.2 & TIA 1005-A]

network distribution equipment: Electronic equipment that provides connectivity and supports data exchange between end-devices. (TIA-606-B-1)

network interface device: The point of connection between networks.(570)

network termination equipment: See network interface device.

non-blocking switch fabric: A switch fabric that has sufficient bandwidth to ensure that any port can communicate with any other port in the switch fabric at the full bandwidth capacity of either port. [TR 42.1]

non-discoverable equipment: Equipment without a network address. (TIA-606-B-1)

non-removable: Unable to be disconnected or taken away from the area without damage to the objects to which they were attached. (TIA 5017)

non-wavelength-selective passive optical branching device: A passive component (wavelength nonselective), typically used in passive optical network applications, possessing three or more ports which shares optical power among its ports in a predetermined fashion, without any amplification, switching or other active modulation (often referred to as coupler, splitter-combiner). See: star coupler, passive optical splitter [TR 42.11]



open cable tray: A cable tray that is open on the top.

open office: A floor space division provided by furniture, moveable partitions, or other means instead of by building walls. (569)

optical fiber: Any filament made of dielectric materials that guides light.

optical fiber cable: An assembly consisting of one or more optical fibers. (568)

optical fiber duplex connection: A mated assembly of two duplex connectors and a duplex adapter. (568)

outlet box (telecommunications): A housing used to hold telecommunications outlet/connectors. (569)

outlet cable: A cable placed in a residential unit extending directly between the telecommunications outlet/connector and the distribution device. (570)

outlet cabling: The outlet cable and its connectors at both ends.

outlet/connector (telecommunications): The fixed connector in an equipment outlet

outlet/connector (building automation system): A connecting device between a horizontal cable and coverage area cable/cord.

outside plant: Telecommunications infrastructure designed for installation exterior to buildings. (758)

over-subscribe (bandwidth): The assignment of more traffic to a link than the bandwidth capacity of the link. [TR 42.1]

P

passive cross-connect: A facility enabling the termination of cable elements and their interconnection or cross-connection by means of jumpers or patch cords.

passive optical network - A fiber optic point to multipoint network that uses a passive optical splitter as a branching or interconnection device. [TR 42.11]

passive optical splitter: A non-wavelength-selective passive optical branching device with one or two input ports and more than one output port intended to produce optical power at the output ports according to a target split ratio. See: non-wavelength-selective passive optical branching device

patch cord: A cord used to establish connections on a patch panel

patch panel: A connecting hardware system that facilitates cable termination and cabling administration using patch cords.

patch panel, adapter: A device used to mate a group of connectors. [TIA-440-C]

pathway: A facility for the placement of telecommunications cable. (569)

penetration seals: See **firestop system**.

permanent link: The fixed portion of cabling installed between an equipment outlet and its immediate distributor or between two distributors.

pigtail: One or more conductors or fibers with only one end terminated.

plaster ring: A metal or plastic plate that attaches to wallboard or a wall stud for the purpose of mounting a telecommunications faceplate. (569)

plenum: A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system. (569)

plug: A male telecommunications connector.

pod, data center: A modular subset of the data center. [TR 42.1]

polarity (optical fiber): A method of positioning optical fibers to ensure connectivity between transmitter(s) and receiver(s).

polarization dependent loss: Maximum variation of insertion loss due to a variation of the state of polarization over all states of polarization. [TR 42.11]

poke-thru device: An assembly that allows through-penetration of floor decking with telecommunication cables, or power, or both, while maintaining the fire-rating integrity of the floor.

poke-thru system: A poke-thru device installed in a penetration through a fire-resistant floor

structure.

port : A connection point for one or more conductors or fibers [TR 42.6]

port extender: A device that provides additional ports to the controlling switch to which it is connected

post-tensioned concrete: A type of reinforced concrete construction in which the embedded steel members are first put under tension, the concrete poured and allowed to harden, and the tension of the steel members released causing compression of the concrete.

post-tensioned floor: A floor that is constructed of post-tensioned concrete

power source equipment: An active device that provides power (TSB-184)

power sum alien far-end crosstalk loss: The power sum of the unwanted signal coupling from multiple disturbing pairs of one or more 4-pair channels, permanent links, or components to a disturbed pair of another 4-pair channel, permanent link, or component, measured at the far-end.

power sum alien near-end crosstalk loss: The power sum of the unwanted signal coupling from multiple disturbing pairs of one or more 4-pair channels, permanent links, or components to a disturbed pair of another 4-pair channel, permanent link, or component, measured at the near-end.

power sum attenuation to alien crosstalk ratio at the far end: The difference in dB between the power sum alien far-end crosstalk from multiple disturbing pairs of one or more 4-pair channels, permanent links, or components, and the insertion loss of a disturbed pair in another 4-pair channel, permanent link, or component. [42.7]

power sum attenuation-to-crosstalk ratio: A ratio in dB, determined by subtracting the insertion loss from the power sum near-end crosstalk loss.

power sum equal level far-end crosstalk: A computation of the unwanted signal coupling from multiple transmitters at the near-end into a pair measured at the far-end, and normalized to the received signal level.

power sum near-end crosstalk loss: A computation of the unwanted signal coupling from multiple transmitters at the near-end into a pair measured at the near-end.

prewiring: (1) Wiring installed before walls are enclosed or finished. (2) Wiring installed in anticipation of future use or need. (568, 569)

primary bonding busbar: A busbar placed in a convenient and accessible location and bonded, by means of the telecommunications bonding conductor, to the buildings service equipment (power) ground (formerly known as the telecommunications main grounding busbar). [TR 42.16]

primary protector: The protector located at the building telecommunications entrance point

primary protector grounding conductor: The conductor connecting the primary protector to ground.

private branch exchange: A private telecommunications switching system. (569)

propagation delay: The time required for a signal to travel from one end of the transmission path to the other end.

protected distribution system: A telecommunications system with adequate mechanical, electrical, electromagnetic and acoustic safeguards to permit use for the transmission of sensitive information. [TIA 5017]

protector: A device consisting of one or more protector units and associated mounting assemblies intended to limit abnormal voltages or currents on metallic telecommunications circuits.

pull box: A housing located in a pathway run used to facilitate the placing of wire or cables.(TR42.3)

pullcord; pullwire: A cord or wire placed within a raceway and used to pull wire and cable through the raceway. (569)

pull strength: See **pull tension**.

pull tension: The pulling force that can be applied to a cable.

Q

R

raceway: Any enclosed channel designed for holding wires or cables. (569)

radiating cable: Coaxial cable designed to receive and emit radio frequency signals along the length of the cable and act as an antenna.

radio frequency interference: Electromagnetic interference within the frequency band for radio transmission.

rack: Supporting frame equipped with side mounting rails to which equipment and hardware are mounted.

rack bonding busbar: A busbar within a cabinet, frame or rack. [TR 42.16]

rack bonding conductor: Bonding conductor from the rack or rack bonding busbar to the telecommunications equipment bonding conductor. [TR 42.16]

rack unit: Vertical mounting space of 1.75 in (44.45 mm) for cabinets or racks compliant with IEC 60297-3-100 or CEA-310-E.

rearrangement: An action taken to replace, add, adapt or remove existing premises wiring system components. (568)

record: A collection of detailed information related to a specific element of the telecommunications infrastructure. (606)

record drawing (as built): A plan, on paper, that graphically documents and illustrates the installed telecommunications infrastructure in a building, or portion thereof. (606)

reference measurement (optical): The measurement of the output power of a light source and attached reference test cord(s) used to establish a reference power level for insertion loss testing. [TR 42.11]

reinforced concrete: A type of construction in which steel (reinforcement) and concrete are combined, with the steel-resisting tension and the concrete-resisting compression. (569)

remote power: low voltage power supplied over telecommunications cabling (TSB 184)

report: A presentation of a collection of information from the various records. (606)

resident: The individual responsible and accountable for the telecommunications services provided to the premises who may reside on the premises or, in the case of a rental unit, be the owner or property manager.

residential gateway: A device that enables communication among networks in the residence and between residential networks and service providers' networks.

return loss: A ratio expressed in dB of the power of the outgoing signal to the power of the reflected signal.

S

saddle: A device for establishing the position of the raceway or raceways within the concrete relative to the screed line, and for maintaining the spacing between the raceways. (569)

screed line: The line to which poured concrete is leveled. (569)

screen: An element of a cable formed by a shield.

screening attenuation: The ratio, expressed in dB, of the power fed into the cable and the radiated power. (570)

screened twisted-pair (ScTP): A balanced cable with an overall screen.

secondary bonding busbar: A common point of connection for telecommunications system and equipment bonding to ground, and located in the distributor room (formerly known as the telecommunications grounding busbar). [TR 42.16]

secondary protector: A device that protects against electrical transients passed through the primary protector or generated within the customer premises

secure area: Area that provides physical security to prevent access by unauthorized personnel. (TIA 5017)

sensor, optical fiber: An optical fiber device to sense changes in physical parameters. (TIA-440-C)

service area: A building space containing one or more equipment outlets (e.g., a work area or a coverage area).

service entrance: See **entrance facility (telecommunications)**. (569)

service equipment (power): The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the electrical supply.

service fitting: An outlet box to house the connections for telecommunications in the service area - see also **insert**. (569)

service fitting: An outlet box to house the connections for telecommunications at the user work area. See also **insert**. (569)

service provider: The provider of any service that furnishes telecommunications content (transmissions) delivered over access provider facilities.

sheath: See **cable sheath**.

shield: 1) A metallic layer placed around a conductor or group of conductors. **2)** The cylindrical outer conductor with the same axis as the center conductor that together form a coaxial transmission line. (570)

shielded enclosure cabinet: A metal electronics cabinet, constructed with welded seams and conductive gaskets on the doors that serve as an effective shield against electromagnetic radiation. (569)

singlemode optical fiber: See **single-mode optical fiber**.

single-mode optical fiber: An optical fiber that carries only one path of light. (568)

slab on grade: Concrete floor placed directly on soil, without basement or crawlspace. (569)

sleeve: An opening, usually circular, through the wall, ceiling, or floor to allow the passage of cables. (569)

slip sleeve: An oversized conduit that moves easily along an inner conduit and covers a gap or missing part of the smaller conduit. (569)

slot: An opening through a wall, floor, or ceiling, usually rectangular, to allow the passage of cables. (569)

small form factor connector: See connector, small form factor.

smart lighting system: A lighting system that uses centralized controls of lighting within a building, allowing implementation of scheduling, occupancy control, daylight harvesting, etc. [TR 42.1]

space (telecommunications): An area used for housing the installation and termination of telecommunications equipment and cable.

spanning tree protocol: Link management protocol that provides path redundancy while preventing undesirable loops in the network.

spine switch: An interconnection switch in a leaf and spine switch fabric architecture. [TR 42.1]

splice: A joining of conductors, meant to be permanent. (568)

splice box: An enclosed space between pathways intended to house a cable splice.(Added October 2002)

splice closure: A device used to protect one or more splices

splice-on connector: A pre-polished ferrule connector that is terminated in the field using a splice. (TIA-440-C)

star coupler: A device in which power from one or several input fibers is distributed amongst a number of output optical fibers. See: **non-wavelength-selective passive optical branching device**.

star topology: A topology in which telecommunications cables are distributed from a central point. (568)

state of polarization: A particular magnitude and phase of the electric field components of a propagating electromagnetic wave. [TR 42.11]

station conductor: A wire that terminates at the equipment side of the protector.

supplementary bonding grid: A set of conductors or conductive elements formed into a grid or provided as a conductive plate that is part of a bonding network

support strand (messenger): A strength element used to carry the weight of the telecommunications cable. (569, 758)

suspended ceiling: A ceiling that creates an area or space between the ceiling material and the structure above. (569)

switch fabric: A network topology where devices connect with one another using network switches over multiple paths. [TR 42.1]

T

telecommunications: The transmission and reception of information by cable, radio, optical or other electromagnetic systems.

telecommunications bonding backbone: A conductor that interconnects the primary bonding busbar to the secondary bonding busbar.

telecommunications closet: See **telecommunications room**.

telecommunications enclosure: See **enclosure, telecommunications**.

telecommunications entrance facility: See **entrance facility (telecommunications)**.

telecommunications entrance point: See **entrance point (telecommunications)**.

telecommunications entrance room or space: See **entrance room or space (telecommunications)**.

telecommunications equipment bonding conductor: A conductor that connects the telecommunications main grounding busbar or telecommunications grounding busbar to equipment racks or cabinets

telecommunications equipment room: See **equipment room (telecommunications)**.

telecommunications grounding busbar: A common point of connection for telecommunications system and equipment bonding to ground, and located in the telecommunications room or equipment room. (Note: this term is superseded by **secondary bonding busbar** in TIA-607-C)

telecommunications infrastructure: See **infrastructure (telecommunications)**.

telecommunications main grounding busbar: A busbar placed in a convenient and accessible location and bonded, by means of the bonding conductor for telecommunications, to the buildings service equipment (power) ground. (Note: this term is superseded by **primary bonding busbar** in TIA-607-C)

telecommunications media: See **media (telecommunications)**.

telecommunications outlet: An assembly of components consisting of one or more connectors mounted on a faceplate, housing or supporting bracket.

telecommunications room: An enclosed architectural space designed to contain telecommunications equipment, cable terminations, or cross-connect cabling. (569)

telecommunications service entrance: See **entrance facility (telecommunications)**.

telecommunications space: See **space (telecommunications)**.

terminal: (1) a point at which information may enter or leave a communications network. (2) The input-output associated equipment. (3) A device by means of which wires may be

connected to each other. (568)

termination: See **connecting hardware**.

termination block: A connecting hardware system that facilitates cable termination and cabling administration using jumpers [TR 42.6]

termination hardware: See **connecting hardware**.

termination position: A discrete element of connecting hardware where telecommunications conductors are terminated. (568)

tie cabling: Cabling between distributors at the same hierarchical level

tip and ring: respective designators for the positive (ground) conductor and negative (battery) conductor of a pair.

through penetration: A continuous opening that passes through both surfaces of a fire-rated barrier. (569)

topology: The physical or logical arrangement of a telecommunications system. (568, 569)

transceiver: A device that transmits and receives electrical or optical signals in one module. [TR 42.11]

transfer impedance: A measure of shielding performance determined by the ratio of the voltage on the conductors enclosed by a shield to the surface currents on the outside of the shield.

transition, optical fiber: An assembly of optical fibers and connectors, with an array connector on one end and simplex or duplex connectors on the other end.

transition point: A connection between round cable and flat undercarpet cable in Cabling Subsystem 1 (568)

transverse conversion loss: A ratio, expressed in dB, of the measured common mode voltage on a pair relative to the differential mode voltage on the same pair applied at the same end.

transverse conversion transfer loss: A ratio, expressed in dB, of the measured common mode voltage on a pair relative to the differential mode voltage applied at the opposite end of the same pair or on either end of another pair.

trenchduct: See **header duct**.

trough: A pathway for the containment of cable, typically provided with a removable cover. (569)

two-level duct: An underfloor raceway system installed with the header raceways and the distribution raceways on two different planes. (569)

U

unbundle: To re-arrange a grouping of cables by physical separation. [TR 42.7]

underground cable: A telecommunications cable designed to be installed under the surface of the earth in a trough or duct that isolates the cable from direct contact with the soil. (569, 758)

underfloor raceway: A pathway placed within the floor and from which wires and cables emerge to a specific floor area. (569)

uniformity (insertion loss of branching component): The maximum variation in insertion loss, expressed in dB, from one input port to any two output ports, or from two input ports to any one output port, of a passive optical branching component having nominally symmetric coupling ratios. [TR 42.11]

uninterruptible power supply: A buffer between utility power or other power source and a load that requires continuous precise power.

unit bonding conductor: A bonding conductor from equipment or a patch panel to a rack bonding conductor or a rack bonding busbar. [TR 42.16]

usable floor space: Floor space which is capable of being used as a work area. (569)

user code: A unique designation assigned to a person who is expected to use the circuit, equipment, service etc. serving a particular work area (e.g.: telephone number, a name, a circuit number, telecommunications outlet/connector, or a logical address). (606)

utility column: An enclosed pathway extending from the ceiling to furniture or to the floor, that forms a pathway for electrical wiring, telecommunications cable, or both. (568)

utility tunnel: An enclosed passageway, usually placed between buildings, for the distribution of utility services. (569, 758)

V

vault (telecommunications): An enclosure, typically cast concrete, used to protect telecommunications infrastructure or equipment (TIA-5017)

vetted: Investigated and approved for access to a given level of sensitive infrastructure or information [TIA 5017]

virtual switch fabric: A switch connection topology in which a switch fabric is formed by interconnecting multiple switches to form a single large virtual switch [TR 42.1].

W

wire: An individually insulated solid or stranded metallic conductor. (568)

wireless: The use of radiated electromagnetic energy (e.g., radio frequency and microwave signals, light) traveling through space to transport information.

wireless access point: A device that allows wireless devices to connect to a wired telecommunications network

wireline: The use of conductors or optical fibers to transport information.

wire run: See **cable run**.

work area: A building space where the occupants interact with telecommunications terminal equipment. (569)

work area cord: see cord

work order: Set of one or more actions that should be performed by a technician or user of the system. (TIA-606-B-1)

X

Y

Z

zip cord, optical fiber: Two or more optical fiber cables held together by an insulating jacket designed to be easily separated in the field. (TIA-440-C)

zone enclosure: An enclosure used to house one or more of the following; a) a consolidation point, b) a horizontal connection point, c) equipment outlets.

zone distribution area: A space in a data center where an equipment outlet or a consolidation point is located [TIA 942]

2 ACRONYMS AND ABBREVIATIONS

A

| | |
|---------|---|
| AASHTO | American Association of State Highway and Transportation Officials |
| ac | alternating current |
| ACMC | alien crosstalk margin computation |
| ACR | attenuation-to-crosstalk ratio |
| ACS | access control system (TIA-5017) |
| AACRF | attenuation to alien crosstalk ratio far-end |
| ACEG | alternating current equipment ground |
| ACRF | attenuation-to-crosstalk ratio far-end |
| ACRN | attenuation-to-crosstalk ratio near-end |
| ADA | Americans with Disabilities Act |
| ADO | auxiliary disconnect outlet |
| ADSL | asynchronous digital subscriber line |
| AELFEXT | alien equal level far-end crosstalk |
| AFEXT | alien far-end crosstalk |
| AHJ | authority having jurisdiction |
| AIA | American Institute of Architects |
| AIM | automated infrastructure management |
| AM | amplitude modulation |
| ANEXT | alien near-end crosstalk |
| ANSI | American National Standards Institute |
| ANT | antenna |
| AP | access provider |
| API | application programming interface (TIA-606-B-1) |
| ASHRAE | American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| ASTM | ASTM International, formerly American Society for Testing and Materials |

| | |
|------|--|
| ATIS | Alliance for Telecommunications Industry Solutions |
| ATM | asynchronous transfer mode |
| AV | audio-visual |
| AWG | American Wire Gauge |
| AXT | alien crosstalk |

B

| | |
|-------|--|
| BAS | building automation system |
| BBC | backbone bonding conductor |
| BBOSP | Broadband Outside Plant |
| BC | bonding conductor |
| BCD | backbone conduit |
| BCT | bonding conductor for telecommunications |
| BCT-C | broadcast and communications technologies, coaxial |
| BDA | bi-direction amplifier |
| BER | bit error rate |
| BMS | building management system |
| BN | bonding network |
| BNC | bayonet Neill-Concelman |
| BOCA | Building Officials and Code Administrators |
| BOMA | Building Owners Managers Association |
| BRI | basic rate interface |
| BTS | base transceiver station |

C

| | |
|-------|--|
| CATV | community antenna television |
| CCTV | closed-circuit television |
| CBB | common bonding busbar |
| CBC | coupled bonding conductor |
| CBN | common bonding network |
| CCA | copper coated aluminum |
| CCITT | International Telegraph and Telephone Consultative Committee |
| CCS | copper coated steel |
| CD | compact disc |
| CDMA | Code Division Multiple Access |
| CEA | Consumer Electronics Association |
| CEC | Canadian Electrical Code, Part I |
| CER | common equipment room |
| CISPR | International Special Committee on Radio Interference |
| CM | common mode |
| CMR | common mode rejection |
| CP | consolidation point |
| CPE | customer premises equipment |
| CPU | central processing unit |
| CSA | Canadian Standards Association International |
| CSI | Construction Specifications Institute |
| CTBB | common telecommunications bonding backbone |
| CTR | common telecommunications room |
| CU | copper |
| CWDM | coarse wavelength division multiplexing |

D

| | |
|------|------------------------------------|
| dc | direct current |
| DCPL | dc power load |
| DCPS | dc power source |
| DD | distribution device |
| DOC | Communications Canada |
| DIP | dual inline package |
| DM | differential mode |
| DMCM | differential mode plus common mode |
| DPST | double pole, single throw |
| DSP | digital signal processing |
| DSS | digital satellite system |
| DSX | digital signal cross-connect |
| DTE | data terminal equipment |
| DUT | device under test |
| DVD | digital versatile disc |
| DVI | digital visual interface |
| DVR | digital video recorder |

E

| | |
|--------|---|
| ECA | Electronic Components Association |
| EDA | equipment distribution area |
| EF | entrance facility |
| EFT | electrical fast transient |
| EFT/B | electrical fast transient, burst |
| EIA | Electronic Industries Alliance |
| | Note: ceased operation Dec.31, 2010. EIA standards are managed by ECA |
| ELFEXT | equal level far-end crosstalk |
| ELTCTL | equal level transverse conversion transfer loss |
| EMC | electromagnetic compatibility |
| EMI | electromagnetic interference |
| EMS | energy management system |
| EMT | electrical metallic tubing |
| ENT | electrical nonmetallic tubing |
| EO | equipment outlet |
| EP | entrance point |
| ER | equipment room |
| ES | entrance space |
| ESD | electrostatic discharge |

F

| | |
|----------|---|
| FCC | Federal Communications Commission |
| FDDI | fiber distributed data interface |
| FDU | fiber distribution unit |
| FEXT | far-end crosstalk loss |
| ffs | for future study |
| FIPS PUB | Federal Information Processing Standard Publication |
| FLS | fire life safety |
| FOCIS | Fiber Optic Connector Intermateability Standard |
| FOTP | Fiber Optic Test Procedure [TR 42.11] |
| FTP | foiled twisted-pair |
| FTR | Federal Telecommunications Recommendation |
| F/UTP | foil (surrounding) unscreened twisted-pairs [42.7] |

G

GE grounding equalizer

GSM Global System for Mobile Communications

H

| | |
|------|---|
| HC | horizontal cross-connect |
| HCP | horizontal connection point |
| HDA | horizontal distribution area |
| HDG | heavy duty galvanized |
| HDSL | high bit-rate digital subscriber line |
| HEE | head-end equipment |
| HSC | hermetically sealed closure |
| HVAC | heating, ventilation and air conditioning |
| HDTV | high definition television |



| | |
|--------|--|
| I/O | Input/output |
| IBC | interconnecting bonding conductor |
| IBN | isolated bonding network |
| IBS | intelligent building system |
| IBT PM | intelligent building technology project manager |
| IC | intermediate cross-connect |
| ICEA | Insulated Cable Engineers Association |
| ICT | information and communications technology |
| IDA | intermediate distribution area |
| IDC | insulation displacement contact |
| IDEN | Integrated Digital Enhanced Network |
| IDS | intrusion detection system (TIA-5017) |
| IEC | International Electrotechnical Commission |
| IFC | International Fire Code |
| IFMA | International Facility Management Association |
| IL | insertion loss |
| ILD | insertion loss deviation |
| IP | internet protocol |
| IPC | insulation piercing contact |
| IPTV | internet-protocol television |
| IR | infrared |
| ISDN | integrated services digital network |
| ISO | International Organization for Standardization |
| ITE | information technology equipment |
| ITU-R | International Telecommunication Union - Radio sector |

ITU-T International Telecommunication Union - Telecommunication sector

J

K

KVM keyboard, video, mouse

L

| | |
|------|---|
| LAN | local area network |
| LCL | longitudinal conversion loss |
| LCTL | longitudinal conversion transfer loss |
| LEC | local exchange carrier |
| LED | light emitting diode |
| LFMC | liquidtight flexible metallic conduit |
| LFNC | liquidtight flexible non-metallic conduit |
| LPS | limited power source |
| LSZH | low smoke zero halogen (TIA-440-C) |
| LTE | Long Term Evolution |

M

| | |
|----------|---|
| MAU | media attachment unit |
| MC | main cross-connect |
| MDA | main distribution area |
| MDF | main distributing frame |
| MDP | main distribution panel |
| mesh-BN | mesh bonding network |
| mesh-IBN | mesh isolated bonding network |
| MICE | mechanical, ingress, climatic/chemical, electromagnetic |
| MH | maintenance hole |
| MPD | multiple plastic duct |
| MPO | multifiber push-on |
| MPTL | modular plug terminated link |
| MR | mechanical room |
| MUTOA | multi-user telecommunications outlet assembly |

N

| | |
|--------------------------|---|
| N/A | not applicable |
| NBC | National Building Code of Canada |
| NCS | National Communications System |
| <i>NEC</i> [®] | National Electrical Code [®] |
| NEMA | National Electrical Manufacturers Association |
| NEXT | near-end crosstalk |
| <i>NESC</i> [®] | National Electrical Safety Code [®] |
| NFPA | National Fire Protection Association |
| NIC | network interface card |
| NID | network interface device |
| NIR | near-end crosstalk to insertion loss ratio |
| NIST | National Institute for Standards and Technologies |
| NRTL | national recognized testing laboratory |
| NVP | nominal velocity of propagation |
| NVR | network video recorder |

O

| | |
|------|---|
| OC | outlet cable |
| OC | outlet cable (570) or optical carrier (942) |
| OCC | other common carrier |
| OLTS | optical loss test set [TR 42.11] |
| OSHA | Occupational Safety and Health Administration |
| OSB | output signal balance |
| OSP | outside plant |
| OTDR | optical time domain reflectometer |

P

| | |
|----------|--|
| PBB | primary bonding backbone |
| PBX | private branch exchange |
| PCB | printed circuit board |
| PCM | pulse code modulation |
| PD | powered device (TSB-184) |
| PDL | polarization dependent loss [TR 42.11] |
| PDS | protected distribution system (TIA-5017) |
| PDU | power distribution unit |
| PE | polyethylene |
| PIMF | pairs in metal foil |
| PIN | personal identification number (TIA 5017) |
| PIR | passive infrared |
| PON | passive optical network |
| POS | passive optical splitter (TIA-440-C) |
| PSAACRF | power sum attenuation to alien crosstalk ratio far-end |
| PSACR | power sum attenuation-to-crosstalk ratio |
| PSACRF | power sum attenuation to crosstalk ration, far end |
| PSAFEXT | power sum alien far-end crosstalk |
| PSANEXT | power sum alien near-end crosstalk |
| PSD | power spectral density |
| PSE | power source equipment |
| PSELFEXT | power sum equal level far-end crosstalk |
| PSFEXT | power sum far-end crosstalk |
| PSNEXT | power sum near-end crosstalk |
| PVC | polyvinyl chloride |

Q

R

| | |
|------|--|
| RACI | responsible, accountable, consulted or informed (TIA-5017) |
| RBB | rack bonding busbar |
| RBC | rack bonding conductor |
| REA | Rural Electrification Administration |
| RES | radio enhancement system |
| REX | request-to-exit device |
| RF | radio frequency |
| RFI | radio frequency interference |
| RFID | radio-frequency identification |
| RG | radio guide |
| RGB | rack grounding busbar |
| RH | relative humidity |
| RJ | registered jack |
| RL | return loss |
| rms | root mean square |
| RoHS | Restriction of Hazardous Substances Directive (TIA-440-C) |
| RU | rack unit |
| RUS | Rural Utilities Service |

S

| | |
|--------|--|
| SAN | storage area network |
| SBB | secondary bonding busbar |
| SBCA | Satellite Broadcasting and Communications Association |
| SBG | supplementary bonding grid |
| SCC | Standards Council of Canada |
| SCTE | Society of Cable Telecommunications Engineers |
| ScTP | screened twisted-pair |
| SDH | synchronous digital hierarchy |
| SE | single ended |
| SELV | safety extra-low voltage |
| SFF | small form factor |
| SFP | small form-factor pluggable (TIA-440-C) |
| S/FTP | overall shield surrounding individually foiled twisted-pairs |
| SIP IC | Single Inline Package Integrated Circuit |
| SL | security level (TIA 5017) |
| SNMP | Simple Network Management Protocol (TIA-606-B-1) |
| SNR | signal to noise ratio [42.7] |
| SONET | synchronous optical network |
| SP | service provider |
| SPC | single point connection |
| SQL | Structured Query Language (TIA-5017) |
| SRL | structural return loss |
| STM | synchronous transport model |
| STP | shielded twisted-pair |
| SSTP | screened and shielded twisted-pair |

SVGA super video graphics array

SWOT strengths, weaknesses, opportunities and threats (TIA-5017)

T

| | |
|------|--|
| TBB | telecommunications bonding backbone |
| TCL | transverse conversion loss |
| TCTL | transverse conversion transfer loss |
| TDMM | Telecommunications Distribution Methods Manual |
| TE | telecommunications enclosure |
| TEBC | telecommunications equipment bonding conductor |
| TEF | telecommunications entrance facility |
| TGB | telecommunications grounding busbar |
| TIA | Telecommunications Industry Association |
| TMGB | telecommunications main grounding busbar |
| TNC | threaded Neill-Concelman |
| TO | telecommunications outlet |
| TP | transition point |
| TR | telecommunications room |
| TRS | tip, ring, sleeve |
| TS | telecommunications space |
| TSB | Telecommunications Systems Bulletin |
| TV | television |

U

| | |
|-------|--|
| UBC | unit bonding conductor |
| U/FTP | individually foiled twisted-pairs without an overall shield (see PIMF) |
| UL | Underwriters Laboratories Inc |
| ULC | Underwriters Laboratories of Canada |
| UPC | universal product code |
| UPS | uninterruptible power supply |
| USB | universal serial bus |
| UTP | unshielded twisted-pair |
| U/UTP | unscreened and unshielded twisted pairs (see UTP) |
| UV | ultraviolet |

V

| | |
|------|---------------------------------|
| VGA | video graphics array |
| VFL | visual fault locator [TR 42.11] |
| VoIP | voice over internet protocol |

W

| | |
|--------|--|
| WA | work area |
| WAN | wide area network |
| WAP | wireless access point |
| W-CDMA | Wideband Code Division Multiple Access |
| WP | waterproof outlet box |
| WTRD | wireless transmission reception device |
| WTRS | wireless transmission reception space |

X

- X cross-connect
- XVGA extended video graphics array
- XML Extensible Markup Language (TIA-5017)

Y

Z

ZDA zone distribution area

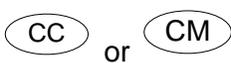
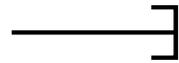
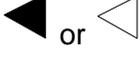
3 UNITS OF MEASURE

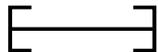
| | |
|----------|--|
| A | ampere |
| dB | decibel |
| dBm | decibel (referenced to milliwatts) [TR 42.11] |
| cm | centimeter |
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| ft | feet, foot |
| <i>g</i> | acceleration of gravity (shown in Helvetica oblique for English measure) |
| g | gram |
| Gb/s | gigabit per second |
| GHz | gigahertz |
| hp | horsepower |
| Hz | hertz |
| in | inch |
| in-lb | inch-pound |
| J | joule |
| kcmil | thousand circular mils |
| kb/s | kilobit per second |
| kg | kilogram |
| kHz | kilohertz |
| km | kilometer |
| kN | kilonewton |
| kPa | kilopascal |
| kV | kilovolt |
| kVA | kilovoltamp |

| | |
|----------------|---|
| kW | kilowatt |
| lb | pound |
| lbf | pound-force |
| lx | lux |
| m | meter |
| μC | microcoulomb |
| μF | microfarad |
| mA | milliampere |
| mg | milligram |
| mW | milliwatt [TR 42.11] |
| mi | mile |
| ms | millisecond |
| m/s^2 | acceleration of gravity in SI ($1g = 9.7536 \text{ m/s}^2$) |
| Mb/s | megabit per second |
| MHz | megahertz |
| mm | millimeter |
| mV | millivolt |
| MW | megawatt |
| N | newton |
| nF | nanofarad |
| N-m | newton-meter |
| nm | nanometer |
| ns | nanosecond |
| ohms-cm | ohms-centimeter |
| pF | picofarad |
| ppm | parts per million |

| | |
|-------|---------------------------|
| psi | pounds per square inch |
| sq in | square inch |
| sq mm | square millimeter |
| U | rack unit |
| V | volt |
| VA | volt-ampere |
| Vac | volts alternating current |
| Vdc | volts direct current |
| V rms | volts root mean square |
| W | watt |
| μg | microgram |
| μm | micrometer (micron) |
| Ω | ohm |

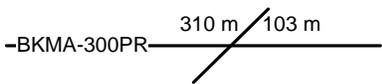
4 SYMBOLS

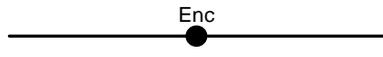
| | |
|---|-----------------------------|
|  | 110 Volt Receptacle |
|  | 20 Amp Twistlock |
|  | Ceiling Access |
|  | Ceiling Mount |
|  | Closed Circuit |
|  | Conduit Size |
|  | cross-connection |
|  | Door, Motorized |
|  | Drop Location |
|  | Drop Location w/Blank Plate |
|  | Electric Door Lock |
|  | Electric Door Opener |
|  | Electric Door Strike |
|  | Electrical Panel |
|  | Emergency Phone |
|  | Existing Location |

| | |
|---|---|
|  | Fire Alarm |
|  | Floor Mounted |
|  | Future Location |
|  | Ground Bar (Busbar) |
|  | horizontal connection point [862] (remove shading and increase font and make circle smaller) |
|  | Horizontal Sleeve |
|  | Interconnection |
|  | Lighting Protection |
|  | Magnetic Door Strike |
|  | Motion Detector |
|  | Pay (Public) Phone |
|  | Push Button |
|  | Pushbutton |
|  | Secure Phone |
|  | Security or Fire |
|  | Security Panel |
|  | Security System |
|  | Television Location |

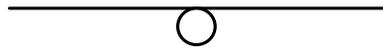
| | |
|---|-----------------|
|  | Thermostat |
|  | Vertical Sleeve |
|  | Wall Phone |

The following symbols shall be used in the design of customer-owned OSP. Documentation shall be accompanied by a legend specifying all symbols used.

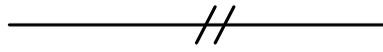
| | |
|---|--|
|  | Existing cable |
|  | Proposed cable |
|  | Future cable |
|  | To be removed |
|  | Buried cable |
|  | Buried in joint trench (C=CATV, E=Electric, G=Gas) |
|  | Underground duct or cable in duct |
|  | Gauge, type and size |
|  | Submarine Cable |
|  | Change in cable size, gauge, count or type |
|  | Point on cable (other than splice), where a division of measurement or point of record is required |
|  | Existing straight splice |
|  | Proposed straight splice |



Encapsulated splice



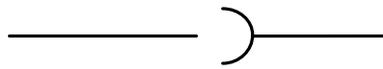
Cable loop – no splice involved



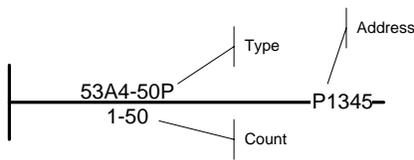
Pairs cut and ends cleared in splice enclosure



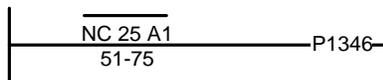
Cable cut, ends cleared and capped



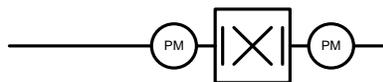
Insulating joint



Fixed-count terminal



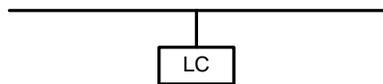
Fixed-count terminal with cable protection



Interface with moisture plug



Case with factory equipped stub



Load coils and case



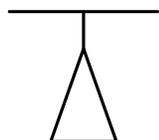
Repeater station – two way



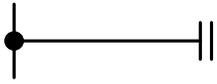
Capacitor (wire diagram)



Optical fiber cable



Multiplexer

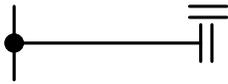


Fixed count terminal block spliced to cable

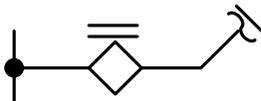


Ready access type connecting block; pairs terminated on fixed count basis

a

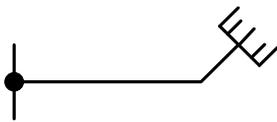


Protected fixed count type terminal block spliced



Protected block spliced to cables with pairs terminated on ready access type connecting block

a



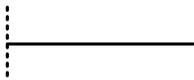
Optical fiber cable termination



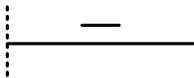
One 6-pair Multiple Drop Wire



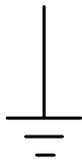
Buried wire



Non-protected wire terminal



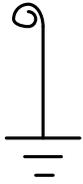
Protected wire terminal



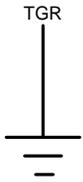
Ground



Ground to multiground neutral vertical



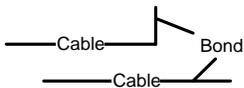
Power multigrounded neutral



Telecommunications ground rod



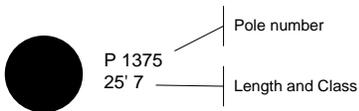
Power neutral bond



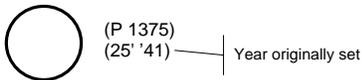
Bond between separate cable strands



Existing pole



Proposed Pole



Pole to be removed



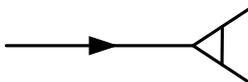
Nonwood pole



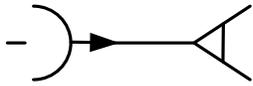
Anchor only



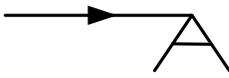
Guy only



Anchor and guy



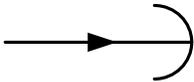
Anchor and insulated guy



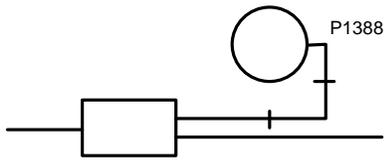
Sidewalk anchor and guy



Push Brace

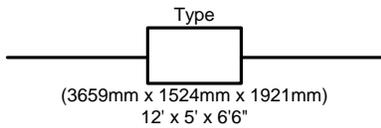


Anchor and guy owned by others

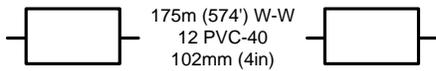


pole

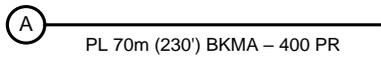
Underground conduit, manhole and subsidiary conduit to



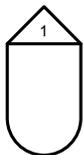
Proposed maintenance hole – type, length, width, headroom and type of frame and cover



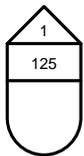
Trench meters of conduit and type of duct



Placing stamp



Splice and splice number



Symbols are scalable in Word, i.e., cut and paste and size