The $+f_1s_1.x_1y_1+r_1:P_1$=W format is for Cabling Subsystem 1 links that are not terminated on patch panels or termination blocks in the same space. With this format, a Cabling Subsystem 1 link is identified by the port on which the link terminates followed by an equal sign "=" and capital letter "W" ("W" is the letter code specified in IEC 81346-2 for cables).

5.1.7.3 Implementation and labeling

For a balanced twisted-pair Cabling Subsystem 1 link, the elements include:

a) the connecting hardware, e.g., patch panel port or the position of a termination block terminating a four-pair Cabling Subsystem 1 cable

b) a four-pair Cabling Subsystem 1 cable

c) an equipment outlet terminating a four-pair Cabling Subsystem 1 cable in the work area

d) if a consolidation point (CP) is present:

   i. the segment of four-pair Cabling Subsystem 1 cable extending from the TS to the CP connecting hardware

   ii. the CP connecting hardware or section of an IDC connector terminating a four-pair Cabling Subsystem 1 cable

   iii. the segment of four-pair Cabling Subsystem 1 cable extending from the CP connecting hardware to the outlet/connector, if present

e) if a MUTOA is present, a telecommunications outlet/connector in the MUTOA

For a fiber Cabling Subsystem 1 link, the elements include:

a) a pair of fiber terminations on a patch panel in the TS

b) a pair of fibers in a cable

c) a pair of fiber terminations in the work area

d) a telecommunications outlet/connector terminating a pair of fibers in the work area

e) splices

f) if a consolidation point (CP) is present:

   i. the segment of fiber cable extending from the TS to the CP connecting hardware

   ii. the CP connecting hardware or section terminating a pair of fibers

   iii. the segment of fiber cable extending from the CP connecting hardware to the outlet/connector, if present

g) if a MUTOA is present, a telecommunications outlet/connector in the MUTOA

The pair of fiber terminations may be two simplex connectors or one duplex connector, and includes adapters, if present.

When consolidation points are used, some elements of the Cabling Subsystem 1 link may not be installed initially.

All elements of a Cabling Subsystem 1 link shall be labeled at the time they are installed with the Cabling Subsystem 1 link identifier.

- The consolidation point identifier should be used on consolidation point labels if optional consolidation point identifiers are used.
- The splice identifier should be used on splice labels if optional splice identifiers are used.
- Patch panels and termination blocks shall be labeled as specified in 5.1.3.1.3. Additionally, if the *fs-an* format is used for Cabling Subsystem 1 link identifiers, in the TS, each patch panel port or position of a termination block shall be labeled with the *an* portion of the identifier. This requirement may be met by labeling a patch panel with the *a* portion of the identifier, and each port with the *n* portion. The port numbers marked on a patch panel by its manufacturer may be used as the *n* portion. Similarly, an IDC connector or group of termination blocks may be labeled with the *a* portion of the identifier, and the section of an IDC connector terminating a four-pair Cabling Subsystem 1 cable labeled with the *n* portion.
- Each end of a Cabling Subsystem 1 cable shall be labeled within 300 mm (12 in) of the end of the cable jacket with the Cabling Subsystem 1 link identifier, which shall be visible on the exposed part of the cable jacket. This shall include each cable end in the TS, at the work area, and at a CP, if present.
- In commercial buildings, industrial premises, data centers, and multi-tenant buildings each individual telecommunications outlet or equipment outlet shall be labeled with the Cabling Subsystem 1 link identifier. The labeling shall appear on the connector, faceplate, or MUTOA, in a way that clearly identifies the individual connector associated with the particular identifier. In single-dwelling residences, labeling of telecommunications outlets is recommended, but not required.
- Certain applications may provide electrical power in addition to data transmission over balanced twisted-pair cables. Visual segregation and identification of ports and outlets with power may be accomplished through the use of the symbol in figure 16.

5.1.8 Equipment outlet and telecommunications outlet identifiers

Identifiers for equipment outlets (EOs) or telecommunications outlets (TOs) are optional, however labels may be required for EOs and TOs as specified in 5.1.7.3. Typically these labels only have the Cabling Subsystem 1 link identifier rather than the EO or TO identifier.

If identifiers are assigned to EOs and TOs, they shall be unique within the telecommunications administration system.

5.1.8.1 TIA-606-A compatible format

The TIA-606-A compatible format for EOs and TOs is:

fs-an=XO (Cabling Subsystem 1 link terminated in work area outlet)

or

$fs.x_2y_2\text{-}r_2\text{:}P_2$ (Cabling Subsystem 1 link terminated on patch panels on both ends)

The *fs-an*=XO format for Cabling Subsystem 1 links has been retained for compatibility with administration systems that use previous revisions of this Standard. The *fs-an* format is defined in 5.1.7. (“X” is the letter code specified in IEC 81346-2 for connections, “O” specifies that the connection is an outlet).

The *fs.*x_2y_2-r_2:P_2 format shall be used for Cabling Subsystem 1 links that are terminated on both ends on patch panels or termination blocks, for example Cabling Subsystem 1 links in computer rooms and equipment rooms. The format is specified in 5.1.6 where *fs.*x_2y_2-r_2:P_2 is the port ID of the EO or TO.

5.1.8.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for EOs and TOs is:

+f_1s_1.x_1y_1+r_1:P_1=XO (Cabling Subsystem 1 link terminated in work area outlet)

or

+*fs.*x_2y_2+r_2:P_2 (Cabling Subsystem 1 link terminated on patch panels on both ends)

5.1.8.3 Implementation and labeling

See 5.1.7.3 regarding labeling of EOs and TOs.

5.1.9 Identifiers for consolidation points on Cabling Subsystem 1 links

Identifiers for consolidation points on Cabling Subsystem 1 links are optional; however labels are required for CPs as specified in 5.1.7.3. The labels may consist of the Cabling Subsystem 1 link identifier or the consolidation point identifier.

If identifiers are assigned to consolidation points on Cabling Subsystem 1 links, they shall be unique within the telecommunications administration system.

5.1.9.1 TIA-606-A compatible format

The TIA-606-A compatible format for CPs on Cabling Subsystem 1 links is:

fs-an=XC[:P_5]

fs-an is the port identifier or the termination position identifier in the telecommunications room for the Cabling Subsystem 1 link and is defined in 5.1.7.

"=XC" specifies that the component is a consolidation point.

The port on the consolidation point may optionally be identified by a colon ':' and the port number (field P_5 above) after "=XC".

5.1.9.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for CPs on Cabling Subsystem 1 links is:

+f_1s_1.x_1y_1+r_1:P_1=XC[:P_5]

5.1.9.3 Implementation and labeling

See 5.1.7.3 regarding labeling of CPs on Cabling Subsystem 1 links.

5.1.10 Identifiers for zone distribution area ports

Identifiers for zone distribution area (ZDA) ports on Cabling Subsystem 1 links are optional; however labels are required for ports in ZDAs. The labels may consist of the Cabling Subsystem 1 link identifier or the ZDA port identifier.

If identifiers are assigned to ZDA ports, they shall be unique within the telecommunications administration system.

5.1.10.1 TIA-606-A compatible format

The TIA-606-A compatible format for ZDA ports is:

$f_1s_1.x_1y_1\text{-}r_1\text{:}P_1$ / $f_2s_2.x_2y_2\text{-}r_2\text{:}P_2$=XL[:$P_5$]

The format consists of the Cabling Subsystem 1 link identifier as defined in 5.1.7 followed by "=XL[:P_5]",

where:

=XL designates the object as being a ZDA port ("X" is the letter code specified in IEC 81346-2 for connections. "L" specifies that the connection is a ZDA port, L comes from LDP, the ISO/IEC equivalent of the ZDA).

The port on the consolidation point may optionally be identified by a colon ':' and the port number (field P_5 above) after "=XL".

5.1.10.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for ZDA ports is:

$+f_1s_1.x_1y_1+r_1\text{:}P_1$ / $+f_2s_2.x_2y_2+r_2\text{:}P_2$=XL[:$P_5$]

5.1.10.3 Implementation and labeling

See 5.1.7.3 regarding labeling of ZDA ports on Cabling Subsystem 1 links.

5.1.11 Identifiers for splices on Cabling Subsystem 1 links

Identifiers for splices on Cabling Subsystem 1 links are optional. If identifiers are assigned to splices on Cabling Subsystem 1 links, they shall be unique within the telecommunications administration system.

5.1.11.1 TIA-606-A compatible format

The TIA-606-A compatible format for splices on Cabling Subsystem 1 links is:

$f_1s_1.x_1y_1\text{-}r_1\text{:}P_1$ / $f_2s_2.x_2y_2\text{-}r_2\text{:}P_2$=XS$z$ (Cabling Subsystem 1 link terminated on patch panels on both ends)

or

$fs\text{-}an$=XSz (Cabling Subsystem 1 link terminated in work area outlet).

The format consists of the Cabling Subsystem 1 link identifier as defined in 5.1.7 followed by "=XSz",

where:

=XS designates the object as being a splice

z is the approximate distance in meters from the termination point in the telecommunications room or HDA. No two splices on the same cable shall use the same value z.

5.1.11.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for splices on Cabling Subsystem 1 links is:

$+f_1s_1.x_1y_1+r_1:P_1$=XSz (Cabling Subsystem 1 link terminated in work area outlet)

or

$+f_1s_1.x_1y_1+r_1:P_1$ / $+f_2s_2.x_2y_2+r_2:P_2$=XSz (Cabling Subsystem 1 link terminated on patch panels on both ends).

5.1.11.3 Implementation and labeling

Splices on Cabling Subsystem 1 links shall be labeled. The label shall be either the identifier of the splice or the (if the splice has an identifier), or of the Cabling Subsystem 1 pairs/ports contained within the splice.

5.1.12 TMGB identifier

The telecommunications main grounding busbar (TMGB) identifier is used to identify the single TMGB present in a building.

5.1.12.1 TIA-606-A compatible format

The TIA-606-A compatible format for the TMGB identifier is:

fs-TMGB

where *fs* is the identifier for the space containing the TMGB, see 5.1.1.

-TMGB designates the element as being a telecommunications main grounding busbar.

5.1.12.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for the TMGB identifier is:

+fs=TMGB

5.1.12.3 Implementation and labeling

The TMGB shall be labeled on the front with the TMGB identifier. If it is not practical to label the surface of the TMGB then apply the label on wall near the TMGB. Care should be exercised when applying labels to the surface of the TMGB to ensure that hazardous current is not present in the device.

See Annex B for an overview and examples of telecommunications grounding system identifiers.

5.1.13 TGB identifier

The telecommunications grounding busbar (TGB) identifier is used to identify TGBs in the bonding and grounding system. A unique TGB identifier shall be assigned to each TGB.

5.1.13.1 TIA-606-A compatible format

The TIA-606-A compatible format for TGB identifiers is:

fs-TGB[*i*]

where *fs* is the identifier for the space containing the TGB, see 5.1.1.

-TGB designates the element as being a telecommunications grounding busbar.

i optional sequence number starting at 1 to be used if there is more than one TGB in the space.

5.1.13.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for TGB identifiers is:

+fs=TGB[*i*]

5.1.13.3 Implementation and labeling

Each TGB shall be labeled on the front with the TGB identifier. If it is not practical to label the surface of the TGB then apply the label on wall near the TGB. Care should be exercised when applying labels to the surface of the TGB to ensure that hazardous current is not present in the device.

See Annex B for an overview and examples of telecommunications grounding system identifiers.

5.1.14 RGB identifier

The rack grounding busbar (RGB) identifier is used to identify RGBs in racks, cabinets, and frames. This identifier is optional and should be unique.

5.1.14.1 TIA-606-A compatible format

The TIA-606-A compatible format for RGB identifiers is:

fs.xy=RGB[*j*]

where *fs.xy* is the identifier of the cabinet, rack, frame, or wall segment identifier as defined in 5.1.2.

=RGB designates the element as being a rack grounding busbar.

j optional sequence number starting at 1 to be used if there is more than one RGB in the cabinet, rack, frame, or wall segment.

5.1.14.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for RGB identifiers is:

+fs.xy=RGB[*j*]

5.1.14.3 Implementation and labeling

Each RGB should be labeled with its identifier at a location that is in clear view of someone making a termination on the RGB.

5.1.15 Mesh-BN identifier

The mesh bonding network (mesh-BN) identifier is used to identify common bonding networks in a computer room, equipment room, or other space. This identifier is optional and should be unique.

5.1.15.1 TIA-606-A compatible format

The TIA-606-A compatible format for mesh-BN identifiers is:

fs=MBN

where +*fs* or *fs* is the identifier for the space containing the mesh-BN, see 5.1.1.

=MBN designates the element as being a mesh-BN.

5.1.15.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for mesh-BN identifiers is:

+*fs*=MBN

5.1.15.3 Implementation and labeling

There is no need to label the mesh-BN, but connections made to the mesh-BN should be labeled.

5.1.16 BCT identifier

The bonding conductor for telecommunications (BCT) identifier is used to identify the BCT in the telecommunications bonding and grounding system. This identifier shall be unique.

5.1.16.1 TIA-606-A compatible format

The TIA-606-A compatible format for BCT identifiers is:

$f_M s_M / f_E s_E$=BCT

where

$f_M s_M$ TS identifier for the space containing the TMGB, see 5.1.1.

$f_E s_E$ TS identifier for the space, typically the electrical entrance facility, that contains the service equipment (power) ground to which the bonding conductor for telecommunications is attached, see 5.1.1.

=BCT designates the element as being the bonding conductor for telecommunications.

5.1.16.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for BCT identifiers is:

$+f_M s_M / +f_E s_E$=BCT

5.1.16.3 Implementation and labeling

Each BCT shall be labeled with its identifier on both ends. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

5.1.17 TBB identifier

The telecommunications bonding backbone (TBB) identifier is used to identify a TBB in the bonding and grounding system. The TBB is identified by the names of the telecommunications grounding busbars on either end of the TBB. This identifier shall be unique.

5.1.17.1 TIA-606-A compatible format

The TIA-606-A compatible format for TBB identifiers is:

$f_M s_M$-TMGB /$f_2 s_2$-TGB[i_2]

or

$f_1 s_1$-TGB[i_1] /$f_2 s_2$-TGB[i_2]

where

$f_M s_M$-TMGB is the identifier for TMGB, see 5.1.12.

$f_1 s_1$-TGB[i_1] and $f_2 s_2$-TGB[i_2] are identifiers for TGBs, see 5.1.13.

5.1.17.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for TBB identifiers is:

$f_M s_M$=TMGB /$f_2 s_2$=TGB[i_2]

or

$f_1 s_1$=TGB[i_1] /$f_2 s_2$=TGB[i_2]

5.1.17.3 Implementation and labeling

Each TBB shall be labeled with its identifier on both ends. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

5.1.18 GE identifier

The grounding equalizer (GE) identifier is used to identify a GE in the bonding and grounding system. This identifier should be unique and have the format based on the identifiers of the TGBs on either end of the GE (see 5.1.13) separated by a forward slash '/'.

5.1.18.1 TIA-606-A compatible format

The TIA-606-A compatible format for GE identifiers is:

$f_1 s_1$-TGB[i_1] / $f_2 s_2$-TGB[i_2]

5.1.18.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format for GE identifiers is:

$+f_1 s_1$=TGB[i_1] / $+f_2 s_2$=TGB[i_2]

5.1.18.3 Implementation and labeling

Each GE shall be labeled with its identifier on both ends. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

5.1.19 Identifier for bonding conductor attached to TMGB

All bonding conductors attached to a TMGB shall have a unique identifier.

5.1.19.1 TIA-606-A compatible format

The TIA-606-A compatible format is:

fs-TMGB / *object*

where:

fs-TMGB is the identifier of the TMGB, see 5.1.12.

object is the identifier of an object to which the bonding conductor is attached. It can be the identifier of a cabinet/rack (see 5.1.2), a mesh-BN (see 5.1.15), an RGB (see 5.1.14), an electrical panel, a pathway (see 9.4), building steel (e.g., 'bldgsteel'), a cable tray system (e.g., 'cabletrays'), or the identifier of equipment such as a LAN switch.

5.1.19.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format is:

+*fs*=TMGB / *object*

5.1.19.3 Implementation and labeling

All bonding conductors attached to a TMGB shall be labeled with their identifiers on both ends. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

Note that BCTs, TBBs, and GEs attached to TMGBs are special bonding conductors that have their own format – see 5.1.16, 5.1.17, and 5.1.18 respectively.

5.1.20 Identifier for bonding conductor attached to TGB

All bonding conductors attached to a TGB shall have a unique identifier.

5.1.20.1 TIA-606-A compatible format

The TIA-606-A compatible format is:

fs-TGB / *object*

where:

fs-TGB is the identifier of the TGB, see 5.1.13.

object is the identifier of a object to which the bonding conductor is attached. It can be the identifier of a cabinet/rack (see 5.1.2), a TBB (see 5.1.17), a mesh-BN (see 5.1.15), an RGB (see 5.1.14), an electrical panel, a pathway (see 9.4), building steel (e.g., 'bldgsteel'), a cable tray system (e.g., 'cabletrays'), or the identifier of equipment such as a LAN switch.

5.1.20.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format is:

+*fs*=TGB / *object*

5.1.20.3 Implementation and labeling

All bonding conductors attached to a TGB shall be labeled with their identifiers on both ends. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

TBBs, and GEs attached to TGBs are bonding conductors that have their own format – see 5.1.17 and 5.1.18 respectively. Note, however, that taps off a TBB are separate conductors and should have their own identifiers – see Annex B for examples.

5.1.21 Identifier for bonding conductor attached to mesh-BN

All bonding conductors attached to a mesh-BN should have a unique identifier.

5.1.21.1 TIA-606-A compatible format

The TIA-606-A compatible format is:

fs=MBN / *object*

where:

fs=MBN — is the identifier of the mesh-BN, see 5.1.15.

object — is the identifier of a object to which the bonding conductor is attached. It can be the identifier of a cabinet/rack (see 5.1.2), an RGB (see 5.1.14), an electrical panel, a pathway (see 9.4), building steel (e.g., 'bldgsteel'), a cable tray system (e.g., 'cabletrays'), or the identifier of equipment such as a LAN switch or PDU.

5.1.21.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format is:

+*fs*=MBN / *object*

5.1.21.3 Implementation and labeling

Bonding conductors attached to a mesh-BN should be labeled on both ends with their identifiers. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

5.1.22 Identifier for bonding conductor attached to RGB

Bonding conductors attached to a rack grounding bar (RGB) may have identifiers. The identifier should be unique.

5.1.22.1 TIA-606-A compatible format

The TIA-606-A compatible format is:

fs.xy=RGB[*j*] / *object*

where:

fs.xy=RGB[*j*] — is the identifier of the RGB, see 5.1.14.

object — is the identifier of a object to which the bonding conductor is attached. It is typically the identifier of the equipment or patch panel in the rack, frame, or cabinet bonded to the RGB.

5.1.22.2 ISO/IEC compatible format

The ISO/IEC 14763-2-1 compatible format is:

+*fs.xy*=RGB[*j*] / *object*

5.1.22.3 Implementation and labeling

Bonding conductors attached to a RGB should be labeled on both ends with their identifiers. The labels shall be durably affixed to both ends conspicuously displayed just prior to the conductor being routed into its termination.

5.2 Required records

In class 1 administration, one Cabling Subsystem 1 link record is required for each Cabling Subsystem 1 link.

Cabling Subsystem 1 link records shall contain the following information:

a) Cabling Subsystem 1 link identifier (primary indexing identifier, e.g., 1NC2B4-3TRA.1-35**:**1=W)

b) cable type (e.g., 4-pair, UTP, category 6, plenum)

c) location of telecommunications outlet/connector (room, office, or grid location)

d) outlet connector type (e.g., 8-position modular, T568A, category 6)

e) cable length (e.g., 51m/166ft)

f) cross-connect hardware type (e.g., 48-port modular patch panel, T568A, category 6)

g) service record of link (e.g., passed category 6 at installation 1/12/11, re-terminated and re-tested at cross-connect 4/22/11 due to broken wire).

Additional items of information desired by the system owner or operator may be added at the end of the record, such as, the location of test results, the location of the outlet within the room or office, or other telecommunications outlet/connectors at same location (generally, the other outlet connectors in the same faceplate).

6 CLASS 2 ADMINISTRATION

Class 2 administration addresses infrastructure with one or more telecommunications spaces (TSs) in a single building.

6.1 Infrastructure identifiers

The following infrastructure identifiers shall be required in class 2 administration, when the corresponding elements are present:

a) identifiers required in class 1 administration (see 5.1 for requirements for TS, Cabling Subsystem 1 link, TMGB, and TGB identifiers)

b) building Cabling Subsystem 2 and 3 (backbone) cable identifiers

c) building Cabling Subsystem 2 and 3 port identifiers

d) firestopping location identifiers.

Class 2 administration may additionally include pathway identifiers. See clause 9 for examples of additional optional identifiers.

Additional information may be enclosed by parentheses after the end of the required format of an identifier.