2008 NEC Changes

Reference Guide
The following slides identify the changes in the 2008 National Electrical Code affecting hazardous location requirements.
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Sections 500.5(A) & (B) - Classifications of Class I Locations.

These sections were revised as follows:

– In several places the description of materials causing an area to be classified were changed by adding the terms “flammable liquid-produced vapors or combustible liquid-produced vapors.”

Explanation of the changes

– The added terms more accurately describe the materials. These changes should have no impact on presently classified areas.
Section 500.7(K) - Protection Techniques, Combustible Gas Detection System

This section was revised as follows:

- Text was added: “Combustible gas detection equipment shall be listed for Class I, Division 1, for the appropriate material group, and for the detection of the specific gas or vapor to be encountered.” For the interior of a building, the listing could also be for Division 2.

Explanation of the changes

- Without this addition, it was unclear what the equipment had to be suitable for.
Section 500.8(A) - Equipment, Suitability

This section was revised as follows:

- Previously Suitability was part of Approval for Class and Properties which was moved to a new (B).
- In addition, a Fine Print Note was added: “Additional documentation for equipment may include certificates demonstrating compliance with applicable equipment standards indicating special conditions of use, and other pertinent information.”

Explanation of the changes

- These changes make Articles 501, 505, and 506 consistent. The added Fine Print Notes acknowledge the practice of providing certificates as part of the required documentation.
Section 501.10(B)(1)(6)- Wiring Methods Class I, Division 2; General

This section was revised as follows:

- The previous requirement that single conductor Type MV cables be shielded or metallic armored was deleted.

Explanation of the change:

- A proposal to delete this requirement was accepted based on the fact that in the 2005 NEC, the Exception to 310.6 and Table 310.63 limits the voltage on single conductor non-shielded cable to 2400 volts. Previously the limit was 8000 volts which was considered not acceptable in Class I, Division 2 areas.
Section 501.10(B)(1)(7)- Wiring Methods Class I, Division 2; General
A new paragraph (7) was added to this section as follows:

- In industrial establishments with restricted public access where the conditions of maintenance and supervision ensure that only qualified persons service the installation and where metallic conduit does not provide sufficient corrosion resistance, reinforced thermosetting resin conduit (RTRC), factory elbows, and associated fittings all marked with suffix- XW, and Schedule 80 PVC Conduit, factory elbows, and associated fittings, all marked with the suffix –XW, and Schedule 80 PVC conduit, factory elbows, and associated fittings shall be permitted.

- Where seals are required for boundary conditions as defined in 501.15(A)(4), the Division 1 wiring method shall extend into the Division 2 area to the seal, which shall be located on the Division 2 side of the Division 1- Division 2 boundary.

Explanation of the changes:

- This change allows RTRC and Schedule 80 PVC conduit, elbows and associated fittings into certain Class 1, Division 2 areas. It is restricted to areas where metallic conduit does not provide sufficient corrosion protection as well as other restrictions noted.
Section 501.30(B) – Types of Equipment Grounding Conductors, Class I, Divisions 1 and 2

This section was reworded as follows:

- Flexible metal conduit and liquidtight flexible metal conduit shall not be used as the sole ground-fault current path. Where equipment bonding jumpers are installed, they shall comply with 250.102.

Explanation of the change:

- This rewording has no effect on the requirement; it is the same as before. As the Panel Statement says, it “...has revised the current text for clarity.”
Section 502.30(B) – Types of Equipment Grounding Conductors, Class II, Divisions 1 and 2

This section was reworded as follows:

- Flexible metal conduit and liquidtight flexible metal conduit shall not be used as the sole ground-fault current path. Where equipment bonding jumpers are installed, they shall comply with 250.102.

Explanation of the change:

- This rewording has no effect on the requirement; it is the same as before. As the Panel Statement says, “The revised wording clarifies the requirement…”
Section 502.115(A) – Switches, Circuit Breakers, Motor Controllers, and Fuses, Class II, Division 1

This section was revised as follows:

- 502.115(A)(2) for Isolating Switches has been deleted. Previously, these types of switches, containing no fuses and not intended to interrupt current and not installed in areas with conductive dusts, were permitted to have tight metal enclosures designed to minimize the entrance of dust plus meeting some other construction requirements. They were not required to be even dusttight.

- Deletion of this paragraph means that these enclosures switches must comply with (A)(1) which requires them to be dust-ignitionproof.

Explanation of the change:

- For the past several Code revisions, the numerous descriptions of “tight metal enclosures…” were mostly eliminated, being replaced with “dusttight.” This paragraph was one of the few where it remained. This change, however, moves the requirement beyond dusttight to dust-ignitionproof, not consistent with the other changes.
Section 502.120(B)(2) – Coils and Windings, Class II, Division 2

This section was revised as follows:

- Under certain conditions, these devices must have tight metal housings without ventilated openings. The revision also permits dusttight enclosures and, effective January 1, 2011, only dusttight enclosures will be permitted.

Explanation of the change:

- For the past several Code revisions, the numerous descriptions of “tight metal enclosures…” were mostly eliminated, being replaced with “dusttight.” This paragraph was one of the few where it remained. This change is consistent with the other changes, although it has a future effective date.
Section 502.130(B)(2) – Fixed Lighting, Class II, Division 2

This section was revised as follows:

- These luminaires, where not of a type identified for Class II locations, were previously required to have enclosures for lamps and lampholders designed to minimize the deposit of dust on lamps and prevent the escape of sparks, burning material, or hot metal. This revision requires the entire luminaire to be dusttight.

Explanation of the change:

- For the past several Code revisions, the numerous descriptions of "tight metal enclosures..." and other construction criteria such as this one were mostly eliminated, being replaced with "dusttight." This paragraph was one of the few where it remained. This change is consistent with the other changes
Section 502.150(B)(1) – Signaling, Alarm, Remote-Control, and Communications Systems; and Meters, Instruments, and Relays; Class II, Division 2; Contacts

This section was revised as follows:
- Contacts must have tight metal enclosures… The revision also permits dusttight enclosures and, effective January 1, 2011, only dusttight enclosures will be permitted.

Explanation of the change:
- For the past several Code revisions, the numerous descriptions of “tight metal enclosures…” were mostly eliminated, being replaced with “dusttight.” This paragraph was one of the few where it remained. This change is consistent with the other changes, although it has a future effective date.
Section 503.30(B) – Types of Equipment Grounding Conductors, Class III, Divisions 1 and 2

This section was reworded as follows:

- Liquidtight flexible metal conduit shall not be used as the sole ground-fault current path. Where equipment bonding jumpers are installed, they shall comply with 250.102.

Explanation of the change:

- This rewording has no effect on the requirement; it is the same as before. As the Panel Statement says, “The revised wording clarifies the requirement…”
Section 504.70 – Sealing

Text was added as follows:

- The previous wording stated that conduit and cables required to be sealed shall be sealed to minimize the passage of gases, vapors, or dusts. These seals are nor required to be explosionproof or flameproof. Additional text now states “but shall be identified for the purpose of minimizing passage of gases, vapors or dusts under normal operating conditions and shall be accessible.

Explanation of the change:

- The added text, as does similar text in 501.15, makes it clear that even seals not required to be explosionproof still must meet the air leakage requirement in 501.15(E)(3) which requires leakage to not exceed 0.007 cu. ft./hr. of air at a pressure of 6 in. of water. This would normally be verified by seals being listed.
Section 505.7(A) – Implementation of Zone Classification System

This section was revised as follows:

- 505.7(A) was previously titled Supervision of Work and required classification of areas and selection of equipment and wiring methods to be under the supervision of a qualified Registered Professional Engineer.

- It now also covers engineering and design, installation, and inspection. But instead of supervision of a qualified RPE, it requires all these functions to be performed by “qualified persons.”

Explanation of the change:

- The section is now identical to 506.7(A) for dusts which was added to the 2005 NEC.
Article 505

➤ Section 505.7(K) - Protection Techniques, Combustible Gas Detection System

➤ This section was revised as follows:
  - Text was added: “Combustible gas detection equipment shall be listed for Class I, Zone 1, for the appropriate material group, and for the detection of the specific gas or vapor to be encountered.” For the interior of a building, the listing could also be for Zone 2.

➤ Explanation of the changes
  - An identical change was made in 501.7(K). Without this addition, it was unclear what the equipment had to be suitable for.
Section 505.9(A) - Equipment, Suitability

This section was revised as follows:

- A Fine Print Note was added: “Additional documentation for equipment may include certificates demonstrating compliance with applicable equipment standards indicating special conditions of use, and other pertinent information.”

Explanation of the changes

- These changes make Articles 501, 505, and 506 consistent. The added Fine Print Note acknowledges the practice of providing certificates as part of the required documentation.
505.15(C)(1)- Wiring Methods; Class 1 Zone 2; General

A new paragraph was added as follows:

- (g) In industrial establishments with restricted public access where the conditions of maintenance and supervision ensure that only qualified persons service the installation and where metallic conduit does not provide sufficient corrosion resistance, reinforced thermosetting resin conduit (RTRC), factory elbows, and associated fittings, all marked with the suffix -XW, and Schedule 80 PVC conduit, factory elbows, and associated fittings shall be permitted. Where seals are required for boundary conditions as defined in 505.16(C)(1)(b), the Zone 1 wiring method shall extend into the Zone 2 area to the seal, which shall be located on the Zone 2 side of the Zone 1-Zone 2 boundary.

Explanation of the change:
- This change allows RTRC and Schedule 80 PVC conduit, elbows and associated fittings into Class 1 Zone 2 areas. It is restricted to areas where metallic conduit does not provide sufficient corrosion protection as well as other restrictions noted.
505.17 – Flexible Cords, Class I, Zones 1 and 2

A new paragraph was added as follows:

- (6) Cord entering an increased safety “e” enclosure shall be terminated with a listed increased safety “e” cord connector.

Explanation of the change:

- This requirement was not previously clear.
Section 505.25(B) – Types of Equipment Grounding Conductors, Class I, Zones 1 and 2

This section was reworded as follows:

- Flexible metal conduit and liquidtight flexible metal conduit shall not be used as the sole ground-fault current path. Where equipment bonding jumpers are installed, they shall comply with 250.102.

Explanation of the change:

- This rewording has no effect on the requirement; it is the same as before. As the Panel Statement says, it “…has revised the current text for clarity.”
Section 506.8 – Protection Techniques

Five additional types of protection were added to this section:

- (E) Encapsulation “maD”
- (F) Encapsulation “mbD”
- (I) Protection by Enclosure “tD”
- (J) Protection by Pressurization “pD”
- (K) Protection by Intrinsic Safety “iD”

Explanation of the change:

- Since the 2005 edition of the NEC, new American standards have been put in place defining requirements for additional types of protection.
Section 506.9(A) – Equipment Requirements, Suitability

This section was revised as follows:

- A Fine Print Note was added: “Additional documentation for equipment may include certificates demonstrating compliance with applicable equipment standards indicating special conditions of use, and other pertinent information.”

Explanation of the changes

- These changes make Articles 501, 505, and 506 consistent. The added Fine Print Notes acknowledge the practice of providing certificates as part of the required documentation.
Section 506.9(C) – Equipment Requirements, Marking

This section was revised as follows:

- New paragraph and Table 506.9(C)(2) were added to indicate marking requirements for zone equipment.

Explanation of the changes

- The marking requirements for zone equipment were not in the 2005 NEC.
Section 506.25(B) – Types of Equipment Grounding Conductors

This section was reworded as follows:

- Liquidtight flexible metal conduit shall not be used as the sole ground-fault current path. Where equipment bonding jumpers are installed, they shall comply with 250.102.

Explanation of the change:

- This rewording has no effect on the requirement; it is the same as before. As the Panel Statement says, it “…has revised the current text for clarity.”
Section 511.2 – Definitions

This is a new section defining

– Major Repair Garage
– Minor Repair Garage

Explanation of the change:

– In previous editions of the NEC, there were differing requirements between these two types of garages, but no definition of them. As a consequence, enforcement could vary. This change should allow more consistent enforcement.
Article 511

- Section 511.3 – Area Classification
- This section has been entirely reorganized

Explanation of the change:
- All the present requirements in 511.3 have been retained, but in a much more understandable format.
Section 513.3(C) – Classification of Locations, Vicinity of Aircraft

This section was reorganized.

- In addition, a new 513.3(C)(1) was added for aircraft painting hangars.

Explanation of the change:

- Reorganization was to meet the NEC Style Manual. New requirements are from NFPA 409 which was revised to differentiate between aircraft painting hangars and general maintenance hangars.
References

2008 National Electrical Code, NFPA 70, pp 354 - 410