



**SUPPLEMENTAL CORRECTION SHEET
FOR
METHANE MITIGATION SYSTEMS - ELECTRICAL**

This is intended to provide uniform application of the codes by the plan check staff and to help the public apply the codes correctly.

Plan Check No. _____ **PCIS #:** _____ - _____ - _____

Checked by: _____ **Telephone:** _____

NOTE: Unless otherwise as noted, numbers in a parenthesis () refer to Code sections of the 2002 editions of the City of Los Angeles Electrical Code

PLAN DETAILS

- 1. Provide a copy of the methane report and identify the measured methane gas concentration and pressure. (93.0207, LADBS Information Bulletin P/BC 2008-101 Methane Standard)
- 2. Conduit Seal
 - a. Install conduit or cable seals within or outside of the hazardous area boundaries in accordance with the provisions of the Los Angeles City Electrical Code. (501.15)
 - b. Any conduit run or multiconductor cable leaving the Class I, Division 1 or Class I, Division 2 location shall be provided with a conduit or cable seal. The cable shall be incapable of transmitting gasses or vapors through the cable core. The seal shall be installed on either side within 10 feet of the specified hazardous area boundary, unless shorter distance is required by the Methane Standard. (501.15(A)(4), (B)(2), (D)(3))
 - c. Cables installed in Class I, Division 1 shall be sealed at all terminations. (501.15(D)(1))
 - d. Cable without a gas/vapor-tight continues sheaths shall be sealed at the boundary of the Class I, Division 2 to unclassified area. (501.15(E)(4))
 - e. The cross-sectional area of conductors in a conduit seal shall not exceed 25 percent fill of a rigid metal conduit of the same trade size, unless the seal is specifically approved for a higher percentage of a fill (i.e., 40%). (93.0204, 501.15(C)(6))
 - f. The seal fitting that is subject to a liquid or water condensation trap within a raceway system (typically in outdoor areas) shall contain an approved drain to prevent accumulation or to permit periodic drainage. (501.15(F))
- 3. Trench Dams
 - a. Provide a trench dam at any trench to or from a building or structure. (Methane Standard Part V, Sec. D.1.)
 - b. Trench dams shall be installed in the trench immediately adjacent to the exterior perimeter of the building foundation. (Methane Standard Part V, Sec. D.1.c)
 - c. A trench dam shall have a minimum length of twice the width of the trench or a minimum of 36 inches in length. (Methane Standard Part V, Sec. D.1.d)
 - d. The entire cross section of the trench shall be backfilled with minimum of 6 inches of material encompassing all conduits and pipes. (Methane Standard Part V, Sec. D.1.e)
- 4. Hazardous Area Classification
 - For the purpose of wiring and equipment installation within an identified Methane Zone or Methane Buffer Zone, the building site Hazardous Area shall be Identified and Classified as follows: (Methane Standard Part V, Sec. D.2.)
 - a. Outdoor Hazardous Area Classifications shall be in accordance with Table 8.
 - b. Hazardous Area Classifications of Vent risers shall be in accordance with Table 9.
 - c. Building Hazardous Area Classifications shall be in accordance with Table 10.
 - d. The wiring and equipment installation within the methane zone or the methane buffer zone shall be based on Level V design, if the measured gas concentration is not

known.

- e. The wiring and equipment installation within the methane zone or the methane buffer zone shall be based on soil gas pressure more than 2 inches of water column, if the measured gas pressure is not known.

□ 5. Wiring Method

The wiring and equipment installed within an identified Methane Zone (or Methane Buffer Zone) including hazardous areas shall comply with the following requirements:

- a. Wiring method and equipment installed within or outside of a Hazardous Area boundary shall be in accordance with the provisions of the Los Angeles Electrical code. (Art. 500, 93.515.17 and 93.515.18)
- b. Wiring method in underground installations shall be of materials suitable for the exposed corrosive environment. (300.6)
- c. Provide a pull box fitted with a breather suitable for class I, Group D locations were: (Methane Standard Part V, Sec. D.3.a.iii)
 - i. The breather shall be located on the side of the enclosure within 2 inches from the top of the pull box.
 - ii. The breather shall have minimum dimensions of 1.5 inches long, and 15/16 inch in diameter.
- d. Provide a pull box fitted with louvers as follows: (Methane Standard Part V, Sec. D.3.a.iii)
 - i. The louvered openings shall be within 2 inches from the top of the box.
 - ii. The minimum total enclosure ventilation opening shall be 1.41 square inches. A louvered pull box shall be installed in a non classified area.
- e. All outdoor equipments with open bottoms when installed on grade or a finished floor shall be mounted on a minimum 2 inches thick concrete pads that are installed on top of a 30-mil High Density Polyethylene (HDPE) or equivalent impervious membrane. All penetrations through the membrane shall be sealed against gas migration with approved material.(Methane Standard Part V, Sec. D.3.b)
- f. The DWP pull box and the Service pull box shall be installed as follows: (Methane Standard Part V, Sec. D.3.c)
 - i. The DWP pull box shall be located outside of the building.
 - ii. The wiring system from the DWP pull box to a service pull box shall be supplemented with a code approved seal fittings.
 - iii. The service pull box shall be at a location either outside of a building or structure or inside nearest to the point of entrance of the service conductors.
 - iv. The conduit or cable seal fittings shall be installed at the point of service entrance conductor emergence into the service pull box or within 18 inches from the service pull box.
- g. Polyvinyl chloride conduits (PVC) are not permitted to be installed in Class I Division 2 Hazardous Area, unless it is installed in accordance with provisions of Class I Division 1 wiring method. (501.10(B), Methane Standard Part V, Sec. D.3.e).
- h. PVC installed in a Class I Division 1 Hazardous Area shall be encased in concrete envelop that is minimum of 2 inches thick . There shall be no less than 24 inches of cover measured from the top of the PVC conduit to the grade. (501.10(A)(Exception 1))
- i. In Class I Division 1 Hazardous Area, the last 24 inches of the underground run of PVC before emergence from a grade or to the above ground installed raceways shall be a threaded rigid metal conduit or threaded steel intermediate conduit. (501.10(A)(Exception 1))
- j. Provide an equipment grounding conductor for any PVC installed in Hazardous Classified area. (501.10(A)(Exception 1), 501.30)

□ 6. Manholes and Other Underground Electric Enclosures Intended for Personnel Entry (here in referred to as "Underground Enclosures") (Methane Standard Part V, Sec. D 4)

- a. Underground Enclosures such as vaults that are more than 4 feet in depth and width shall be submitted to building plan check for Methane mitigation and other structural approval.(LADBS Information Bulletin P/BC 2008-017, Concrete Vaults)
- b. Vent System:

- i. Non explosion proof Underground Enclosures installed in Hazardous Classified Area intended for personnel entry shall be ventilated per detail 19 of the methane standard. (Methane Standard Part V, Sec. D 4.a.i& Appendix)
 - ii. Purged or Pressurized protected (i.e., Mechanically ventilated) Underground Enclosures intended for personnel entry shall be provided with a minimum of 24 hours of back-up power and a main visual and audible power failure alarm at a readily accessible location. (Methane Standard Part V, Sec. D 4.a.ii)
 - c. Enclosure Exterior
 - i. Joints between pre-cast sections of Underground Enclosures shall be sealed with an approved (waterproof epoxy) compound (extending 2 inches beyond the rims of the joint) as indicated in detail 19. (Methane Standard Part V, Sec. D 4.b.i & Appendix)
 - ii. Underground Enclosure entree cover and its restraint system shall be per detail 19 of the Methane Standard. (Methane Standard Part V, Sec. D 4.b.ii & Appendix)
 - iii. Soil gas under the Underground Enclosure shall be vented according to provisions of detail 19. (Methane Standard Part V, Sec. D 4.b.iii & Appendix)
 - d. Enclosure Interior
 - i. All wiring terminations, equipment and insulating materials used inside the vault shall be suitable for wet location. (Methane Standard Part V, Sec. D 4.c.i)
 - ii. Conduits entering or leaving the vault shall be sealed with an approved duct seal. The duct seal shall have a depth of not less than the diameter of the conduit. (Methane Standard Part V, Sec. D 4.c.ii)
 - iii. The wiring method in Purged or Pressurized (i.e., Mechanically ventilated) protected Underground Enclosures shall be in accordance with NFPA 496-2004 (500.4(B))
- 7. Grounding (Methane Standard Part V, Sec. D 3.d.)
 - a. Electrical Systems shall be grounded using ONLY one of the following grounding electrode system: (Methane Standard Part V, Sec. D 3.d.i)
 - i. Metal Underground Water Pipe
 - ii. Ground Ring, or
 - iii. Made and Other (Approved) Electrodes.
 - b. Modified or altered approved grounding electrode systems shall be designed based on site investigation of the soil electrical resistivity as specified below: (Methane Standard Part V, Sec. D 3.d.ii)
 - i. Soil Electrical Resistance -
 - (1) The soil resistivity shall be measured by the four-point method as described in IEEE Standard 81, 1983-edition.
 - (2) The soil resistivity measurement shall take into account the geological features of the soil as determined by the engineer. Whenever driven ground rods are to be used, the measurement shall correlate with the installed effective depth of the ground electrodes.
 - (3) The engineering analysis shall take into account the expected deviations in soil temperature, moisture and gas or soluble chemical contents.
 - (4) The soil resistivity measurement shall be based on embedment of the electrodes below the permanent moisture level, when such installation is possible.
 - ii. Measurement -
 - (1) For installations of multiple rod and pipe or plate electrodes in a single row, measurement shall be in a straight line at the location were these electrodes are intended to be installed.
 - (2) For installations of ground rings (circular or square), grids, grid beds, radial, etc., the area that is to be used for grounding shall be divided into rows. Each row shall be equally spaced apart. The measurement shall be started at the corner of the first row and then continued through each pre determined point in the row. This measurement is then

