



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

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. _____ **Application No.** _____

Checked by: _____ **Telephone:** _____

GENERAL REQUIREMENTS FOR METHANE MITIGATION PLAN CHECK SUBMITTAL

1. Provide a building floor plan (1/8 inch per foot or larger scale) showing building lines, the perforated horizontal pipes, the de-watering pipes (if required), other subsoil drainage pipes, locations of public sewer, storm drainage, vent risers (passive and/or active type), de-watering sump pump pit(s) (if required), foundation sump pump pit(s) (if required), emergency drain sump pump pit(s) (if required), deep vent well(s) (if required), and all other piping and equipment related to the methane mitigation systems. (94.101.3.1, 94.101.3.4)
2. Provide a copy of the approved civil site utility plan. (94.101.3.1, 94.101.3.4)
3. Provide a copy of the section of the soil report indicating the design capacity of the de-watering system if the system is required at the site. (94.307.0)
4. Provide a copy of the signed certificate of compliance for methane test data, Form 1 of the Methane Mitigation Standard.
5. Provide a copy of the approved plan from Bureau of Sanitation, Industrial Waste Division, if the sump pumps discharge to the sanitary sewage system. (94.307.0)
6. Provide a copy of the approved plan from Bureau of Engineering, Storm Water Management Division, if the sump pumps discharge to the storm drain system. (94.307.0)
7. Plans shall bear the registration or license number and signature of an architect, engineer, or geologist, registered in the appropriate classification by the State of California. (94.101.3.2, 94.101.3.6, 94.103.2.2)
8. Plan check and permit fees shall be determined in accordance to Table 1 -A of the Los Angeles Plumbing Code. (94.103.4)

STANDARDS, CODES, ORDINANCES, RULES AND REGULATIONS REQUIRED FOR THE METHANE MITIGATION DESIGN

1. Los Angeles City Ordinance No. 175790, approved on February 4, 2004.
2. Methane Mitigation Standard, Information Bulletin (Document No. P/BC 2002-101).
3. For Playa Vista Project Phase I, the Methane Prevention, Detection and Monitoring Program approved by LADBS on January 31, 2001.
4. Los Angeles Plumbing Code, the latest edition.

5. Los Angeles Mechanical Code, the latest edition.
6. Los Angeles Building Code Chapter 71, the latest edition.
7. Any request for variance from the mechanical requirements requires approval from the mechanical plan check supervisor with concurrence from Building Plan Check, and/or Inspection, and/or the Los Angeles Fire Department.

METHANE MITIGATION SYSTEMS:

1. De-Watering System:
 - a. De-Watering System is required when the historical high ground water table is within twelve (12) inches from the Lowest Perforated Horizontal Piping. (P/BC 2002-101 – V.A.1.a)
 - b. De-Watering System is not required for either of the following:
 - i. If during the site testing, the ground water level is deeper than 10 feet below the Perforated Horizontal Pipes; or
 - ii. If the soil investigation or analysis, as approved by LADBS, reveals the groundwater level is more than 12 inches below the bottom of the Perforated Horizontal Piping. (P/BC 2002-101-V.A.1.b)
 - c. Provide a riser diagram showing the sump, sump inlet and outlet, the control water level of the sump, the vent, the sump pumps with the required valves, and the gravity line. (94.101.3.1, 94.103.2.3)
 - d. De-Watering rates shall be noted on the plan. (P/BC 2002-101 – V.A.1.c)
 - e. The engineer or geologist responsible for determining the de-watering rates shall approve the plan. (P/BC 2002-101 – V. A.1.c)
 - f. Applications for water discharge location shall be approved and permitted by the Department of Public Work. (P/BC 2002-101 – V.A.1.d)
 - g. De-Watering drainage is normally required to discharge to the sanitary sewer system. Therefore, footing drains, emergency drains, area drains, and/or rainwater drains shall not combine with the De-watering system. (94.1101.2)
 - h. The de-watering pipes shall be minimum Schedule 40, slotted or perforated Polyvinyl Chloride (PVC) pipe of minimum three (3) inches in diameter. Other pipe materials shall be approved by the Los Angeles Mechanical Testing Laboratory (LAMTL) under Los Angeles Research Report for the intended use. (94.1101.5, P/BC 2002-101 - V.A.1.e)
 - i. De-watering pipes shall be sloped at ¼ inch vertical to 12 inch horizontal (2% slope). The slope may be reduced to 1% if the pipe size is increased one full size in pipe diameter. (P/BC 2002-101 – V. A.1.f.i)
 - j. Combination de-watering and Sub-slab vent piping system may be used when installed with nominal four (4) inches diameter pipes. The maximum pipe spacing is 50 feet and shall be sloped at ¼ inch vertical to 12 inch horizontal (2% slope). (P/BC 2002-101 – V.A.1.f.ii, P/BC 2002-101 – V.A.2.a.ii, P/BC 2002-101 – Table 3)
 - k. PVC is not allowed for the subsoil solid piping within the commercial building or the residential building of more than two stories in height. (94.1101.3.3)
 - l. Sump(s) shall be made of concrete, metal or other approved materials. Fiberglass of the prefabricated

sumps shall be approved by LAMTL or The International Association of Plumbing and Mechanical Officials (IAPMO). (94.710.8, 94.103.4)

- m. Sump pit(s) outside the building shall not connect to drainage piping inside the building and vice-versa. No running trap is allowed. (P/BC 2002-101)
- n. Provide airtight cover for the sump. (94.710.10)
- o. Sump(s) shall be provided with a vent pipe, which shall extend through the roof. (94.710.7)
- p. Show high water level. It shall be at least 2 inches below the lowest inlet. (94.710.7)
- q. Show the make, model, and horsepower of the sump pumps on the plan. (94.101.3.1, 94.103.2.3)
- r. Provide size, length, and type of material of the pump discharge piping. (94.101.3.1, 94.0701.0)
- s. The pump shall have a discharge capacity of not less than 15 gpm. (94.1101.5.3)
- t. Provide pump performance curve. (94.101.3.1, 94.103.2.3)
- u. State the length of the pipe from the pump to the gravity line, and the elevation difference between the bottom of the sump and the gravity line. (94.11.3.1, 94.103.2.3)
- v. Provide dual pumps, each shall be capable of handling the load independently. (94.710.9)
- w. The discharge line from the sump shall be at least 1-½ inches in diameter. (94.1101.5.3)
- x. The discharge line from the sump pump shall be provided with an accessible check valve and gate valve. (94.710.4)
- y. The gate valve shall be located on the discharge side of the check valve. Gate valve and check valve shall be located outside the sump. (94.710.4)
- z. Provide pump sizing calculation by the following steps:
 - i. Provide calculations for the system curve. Take into consideration all the fittings, gate valve and check valve.
 - ii. Draw the system curve on the pump curve to determine the point of intersection, which will determine the pump discharge flow.

2. Sub-slab Vent System: (This section is for information only, plumbing plan check is not required.)

- a. Perforated Horizontal Pipes:
 - i. The Perforated Horizontal Pipes shall be minimum Schedule 40, slotted or perforated PVC pipe or other materials approved by LAMTL for the intended use. (P/BC 2002-101-V.A.2.a.ii)
 - ii. The spacing and locations of the Perforated Horizontal Pipes shall comply with Table 3 of the Methane Mitigation Standard. (P/BC 2002-101 -V.A.2.a.ii)
 - iii. PVC is not allowed for the subsoil solid piping within the commercial building or the residential building of more than two stories in height. (94.1101.3.3)
 - iv. The Perforated Horizontal Pipes passing through the interior footings shall be protected. (P/BC 2002-101 – V.A.2.a.ii)

v. The length of the transition from the Perforated Horizontal Pipes to the Vent Riser shall not be more than 5 feet. (P/BC 2002-101)

b. Vent Riser:

i. Show the total footprint area of the building on the plan. (P/BC 2002-101 – Table 3)

ii. Number of Vent Risers required shall be based on Table 3 of the P/BC 2002-101.

iii. Vent Riser shall be constructed of cast iron and any other materials approved by LAMTL. (P/BC 2002-101 – V.A.2.d.i)

iv. Acrylonitrile Butadiene Styrene (ABS) pipes may be allowed for residential buildings up to two (2) stories. (P/BC 2002-101 – V.A.2.d.i)

v. The spacing and locations of the Vent Risers shall comply with Table 3 of the Methane Mitigation Standard. (P/BC 2002-101 -V.A.2.d.ii)

vi. Vent Riser outlets shall be located at least:

- 10 feet above grade,
- 10 feet away from any window, doors, roof hatch, opening or air intake into the building,
- 3 feet above the roofline,
- 3 feet away from any parapet,
- 4 feet away from the property line, and
- 5 feet away from any electrical device. (P/BC 2002-101 – V.A.2.d.iii)

vii. Rain guard shall be of non-restricting type. (P/BC 2002-101 – V.A.2.d.iv)

3. Mechanical Extraction System:

a. The design of centralized Mechanical Extraction System requires stamp and signature of a mechanical engineer, registered in the state of California. (94.101.3.2, 94.101.3.6, 94.103.2.2)

b. Provide calculation to size the Gas Extraction Power Devices. (P/BC 2002-101 – V.B.1.b.ii)

c. The Gas Extraction Power Devices shall be capable of ventilating the Gravel Blanket and Perforated Horizontal Pipes spaces at a rate of three (3) air changes per hour. Application of porosity factor to estimate the void space in the gravel blanket is acceptable. If the porosity factor is less than 25%, an evaluation of the gravel shall be provided. (P/BC 2002-101 – V.B.1.b.ii)

d. Show on the plan the make, model, and horsepower of the blowers, fans, or other Gas Extraction Power Devices. (95.113.2)

e. Provide performance curve of the Gas Extraction Power Devices. (95.113.2)

f. Both the Gas Extraction Power Device and the casing shall be constructed of non-sparking materials. (95.503.2)

g. The maintenance isolation valves on the Gas Extraction Power Device shall be locked open with signage indicating the normal valve positions. (95.113.2)

h. Detector shall be fitted within the active Vent Riser of the Mechanical Extraction System. (P/BC 2002-101 – V.B.1.b.i)

4. Mechanical Ventilation System:

- a. Show on the plan the make, model, and horsepower of the blowers, fans, or other power devices. (95.113.2)
 - b. The exhaust of the Mechanical Ventilation System shall discharge to the outside of the building. (95.506.9)
 - c. The make-up air shall be 100% make-up air. (P/BC 2002-101-V.B.2.b.ii)
 - d. Provide performance curve of the Mechanical Ventilation Devices. (95.113.2)
 - e. Mechanical Ventilation System shall be provided using one of the following options for garages, lowest occupied and unoccupied spaces: (P/BC 2002-101 – V.B.2.b.iii)
 - Option #1: Activated Mechanical Ventilation – Mechanical Ventilation System shall be capable of removing methane gas at a rate of four (4) air changes per hour when activated by the Gas Detection and Control Panel, at 10% LEL (5,000 ppmv). Back-up power is not required.
 - Option #2: Continuous Ventilation – Mechanical Ventilation System sized to ventilate the building spaces at a rate of one (1) air change per hour on a continuous basis. Mechanical ventilation in this option shall be provided with 24 hours of back-up power when Detectors and Pressure Sensors are not provided.
 - Option #3: Scheduled Start-up Ventilation – Mechanical Ventilation System shall start-up at least once every six (6) hours to provide a minimum of 24 air changes per day. Mechanical Ventilation in this option shall be provided with 24 hours of back-up power when Detectors and Pressure Sensors are not provided.
 - Option #4: Alternate Natural Ventilation – Alternate method of ventilation may be utilized in lieu of mechanical ventilation in Option #1, #2, and #3 when Building Plan Check approves the building design is in compliance with the Natural Ventilation requirements.
5. Sequence of Operation:
- a. Show the sequence of operation of the methane mitigation system on the plan. (95.113.2)
 - b. The sequence of operation of the methane mitigation system shall be in accordance to Table 6 of P/BC 2002-101. (95.113.2)
6. Deep Vent Well System: The Vent Riser from the deep vent well(s) shall not extend to the building interior. (P/BC 2002-101)
7. Elevator:
- a. All elevator piston shaft casing of the hydraulic elevator shall be constructed of stainless steel. (P/BC 2002-101-V.A.3.b.iii)
 - b. All elevator piston shaft casing of the hydraulic elevator shall be sealed at the elevator pit floor slab level in accordance with the specifications of the Impervious Membrane manufacturer. (P/BC 2002-101-V.A.3.b.iii)
 - c. The bottom of the elevator piston casing of the hydraulic elevator shall be sealed to prevent gas migrating into the building. (P/BC 2002-101-V.A.3.b.iv)
 - d. If hydraulic elevator is proposed in the Playa Vista Project, check the requirements with Building Plan Check.

8. Hardscape Venting System: Paved area that are over 5,000 square feet in area and within 15 feet of the exterior wall of a commercial, industrial, institutional or residential building, shall be vented in accordance with the Methane Mitigation Standards. (91.7104.4)
9. Miscellaneous Requirements:
 - a. The penetration of plumbing pipes through the Impervious Membrane shall be sealed by using sleeves or boots composed of the same material of Impervious Membrane or other materials and methods in accordance with the Impervious Membrane manufacturer. (P/BC 2002-101-V.A.3.b.iii)
 - b. For Playa Vista Project only, the air-conditioning unit shall be provided with charcoal filter or an electronic filter system. (Recommendation 97 – City Planning and Land Use Management dated 12-8-1995)

PLAN CHECK AND PERMIT FEES FOR THE METHANE MITIGATION SYSTEMS:

1. For the mechanical design of the methane mitigation system, both plumbing permit and HVAC permit are required.
2. Based on the fee schedule of the 2002 Los Angeles Plumbing Code, the plumbing permit and plan check fees are calculated as follows: (94.103.4)
 - a. Permit fees:
 - i. Sub-slab Vent (under miscellaneous permit) ----- \$65.00 per passive vent riser
 - ii. Deep Vent Well (under miscellaneous permit) ----- \$65.00 per well
 - iii. Methane Gas Extraction System ----- \$84.00 per active vent riser
 - iv. Subsurface Drainage Piping System ----- \$55.00 per De-watering system
 - v. Sump Pump ----- \$55.00 each
 - vi. Connection to the public sewer ----- \$28.00 each
 - vii. Tar Collection System (under miscellaneous) ----- \$65.00 per collection point
 - viii. The equipment associated with Tar collection ----- Per items of regular plumbing
 - b. Plan check fees:
 - i. Methane Venting System ----- \$150.00 each system
 - ii. Additional fees per LAPC Section 94-103.4.2.1:
 - Apartments and condominiums, three or fewer stories, and dwelling: 40% of the permit fee
 - All others: 70% of the permit fee.
3. Based on the fee schedule of the 2002 Los Angeles Mechanical Code, the plumbing permit and plan check fees are calculated as follows: (95.115.0)
 - a. Permit fees:
 - i. Methane Gas Extraction System (under product conveying system) - \$41.00 per active vent riser
 - ii. Mechanical Ventilation System (under product conveying system) --- \$41.00 per system
 - iii. Air inlet / outlet ----- \$3.50 each
 - iv. Witnessing test on the ventilation system ----- \$75.00 each trip
 - b. Plan check fees:
 - i. Apartments and condominiums, three or fewer stories, and dwelling: 40% of the permit fee.
 - ii. All others: 70% of the permit fee.