

**CHAPTER 10**

**BUSDUCT WORK**

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### **BUSDUCT WORK**

#### **10.1 Introduction**

1. This is a guide for the safe and proper handling, installation, operation and maintenance of busduct and associated fittings. Proper planning and coordination between different trades during installation of busduct are important for a good busduct installation. Furthermore, proper handling, installation, operation and maintenance, coupled with proper design and fabrication are important to the long term reliability and safe operation of busducts. Installing the busduct not in accordance with basic principles, manufacturer's instruction or best practices may lead to personal injury, failure of the busduct or damage to other property. Some useful points are listed below for consideration.
2. A REC/REW shall always adhere to the Code of Practice for the Electricity (Wiring) Regulations, manufacturer's instructions and recommendations.

#### **10.2 Planning Stage**

1. Feeder busduct and plug-in busduct must be used alternately such that any one section can easily be removed for repair and maintenance without opening the floor slab.
2. Busduct shall not run close to or traverse any water pipe, or in the route where it will be affected in case of water pipe leakage/bursting. Otherwise, weatherproof type busduct shall be used.
3. Adequate clearance shall be provided for future maintenance and repair.
4. Copper busduct is preferred for Hong Kong conditions as aluminium, in particular the busduct joint, is more sensitive to workmanship and corrosion. To eliminate workmanship problems in busduct work, cable risers or branched cables shall be considered if conditions permit.

### **10.3 Storage**

1. Always store the busduct sections and fittings in a dry and clean location with adequate air circulation to prevent condensation. The location shall also be protected from dirt, fumes, water and physical damage.
2. Never store busduct outdoor. If stored outdoor, busduct must be securely covered for protection against water, weather, dirt and physical damage.
3. Weatherproof busduct must be treated exactly the same as indoor type until it is properly installed.
4. If busduct is to be stored any length of time prior to installation, always leave the packing intact until installation.

### **10.4 Installation**

1. General

It is highly recommended that busduct erection shall only commence when the builder's work for busduct room/duct has been completed. The room/duct shall be in a dry and clean condition with lockable door and kerb.

2. Hoisting and handling
  - a. Do not drag busduct across the floor.
  - b. Handle busduct with great care to avoid damage to internal components, the enclosure and its finish. Never subject the busduct to twisting, denting, impact or rough handling.
3. Busduct support
  - a. Follow manufacturer's recommendations to provide support to secure an installation.
  - b. Align vertically and horizontally before the final tightening of all joint bolts.

4. Joint assembly

- a. All contact surface must be cleaned so that it is free from oxides and contaminants before jointing.
- b. If joints or joint assemblies which may be exposed to moisture, plaster, or any other types of contaminant, they shall be properly covered before installation.

5. Plug-in devices

All plug-in openings that are not in use must be covered.

6. Protection against ingress of liquid

- a. Busduct shall not run close to or traverse any water pipe, or in the route where it will be affected in case of water pipe leakage/bursting. Otherwise, weatherproof type busduct shall be adopted.
- b. If there is possible leakage, sheet metal shield or appropriate protective cover shall be provided to prevent contamination of busduct.

7. Summary

- a. Check the bill of materials.
- b. Tighten all bolts using the recommended torque setting.
- c. Check insulation resistance for each section of busduct before and after it is installed.
- d. Check insulation resistance for each installed portion daily until the busduct is energized.
- e. Check for possible sources of water that may drip/accumulate on indoor busduct, and take preventive action to prevent this.

## **10.5 Maintenance**

1. Inspect busduct periodically and after any major electrical fault.
2. Check-list
  - a. Check for moisture condensation, signs of previous wetness or water dripping onto busduct, connection boxes, and changes in pipework such as sprinklers or other plumbing that might be a source of trouble to busduct.
  - b. Remove dust by brush, vacuum cleaner or clean lint-free rags. DO NOT use blower or compressed air as the blown dust may contaminate other equipment.
  - c. Check all joints and terminations for signs of corrosion or overheating.
  - d. Check the tightening bolt torques for all electrical connections.
  - e. Check insulation resistance before re-energisation.
  - f. Keep record of insulation resistance value and maintenance details.

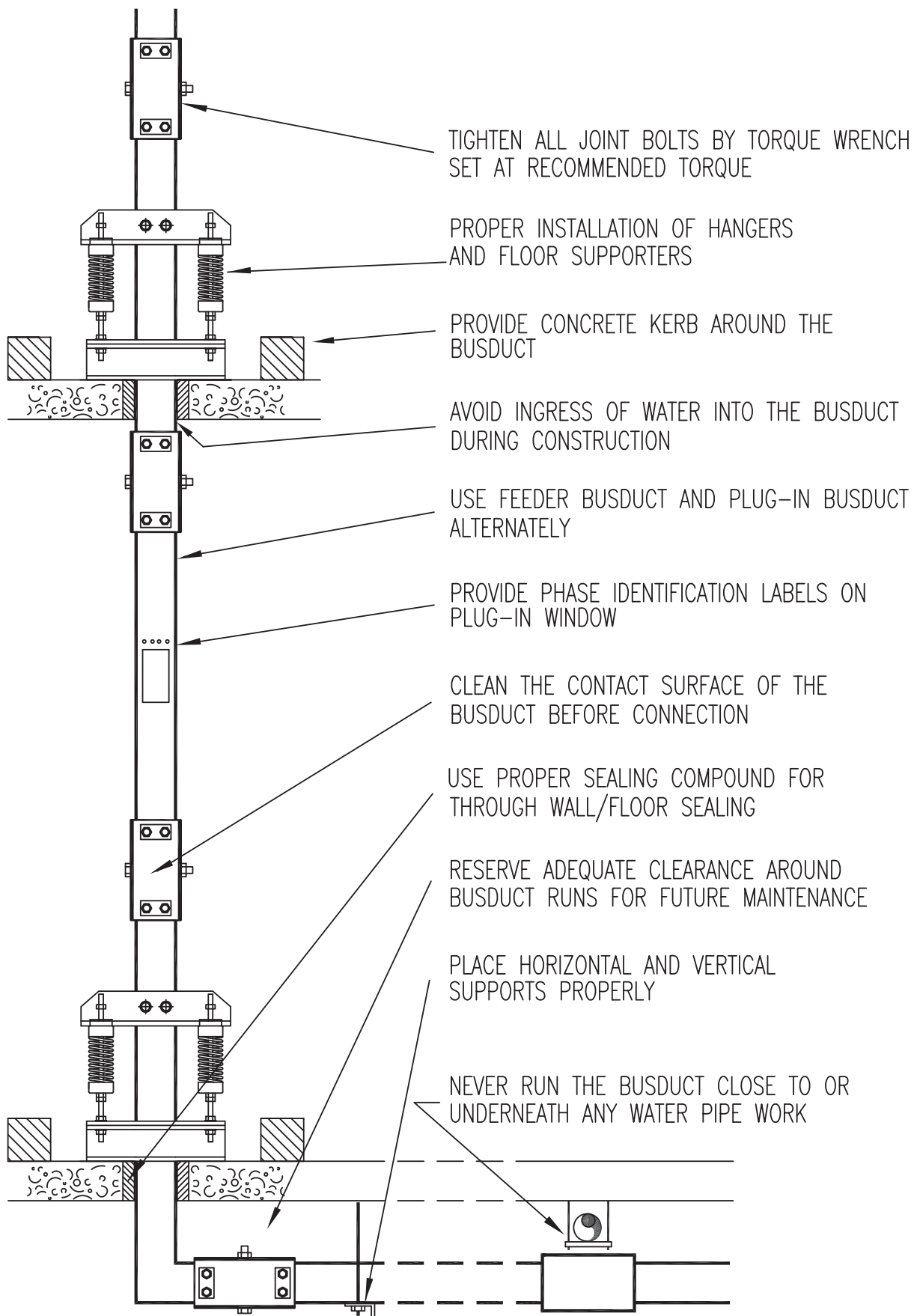
## **10.6 Common Departures Relating to Busduct Risers**

1. Rusty casing shall be repaired.
2. Busduct joint bolt shall be tightened to manufacturer's recommended torque.
3. Peeled-off conductor coating shall be repaired.
4. Damaged/tucked insulation sheath for conductor shall be repaired.
5. Insulation resistance of riser shall be improved to manufacturer's recommended value.
6. Busduct flange end and power cable shall be jointed properly.

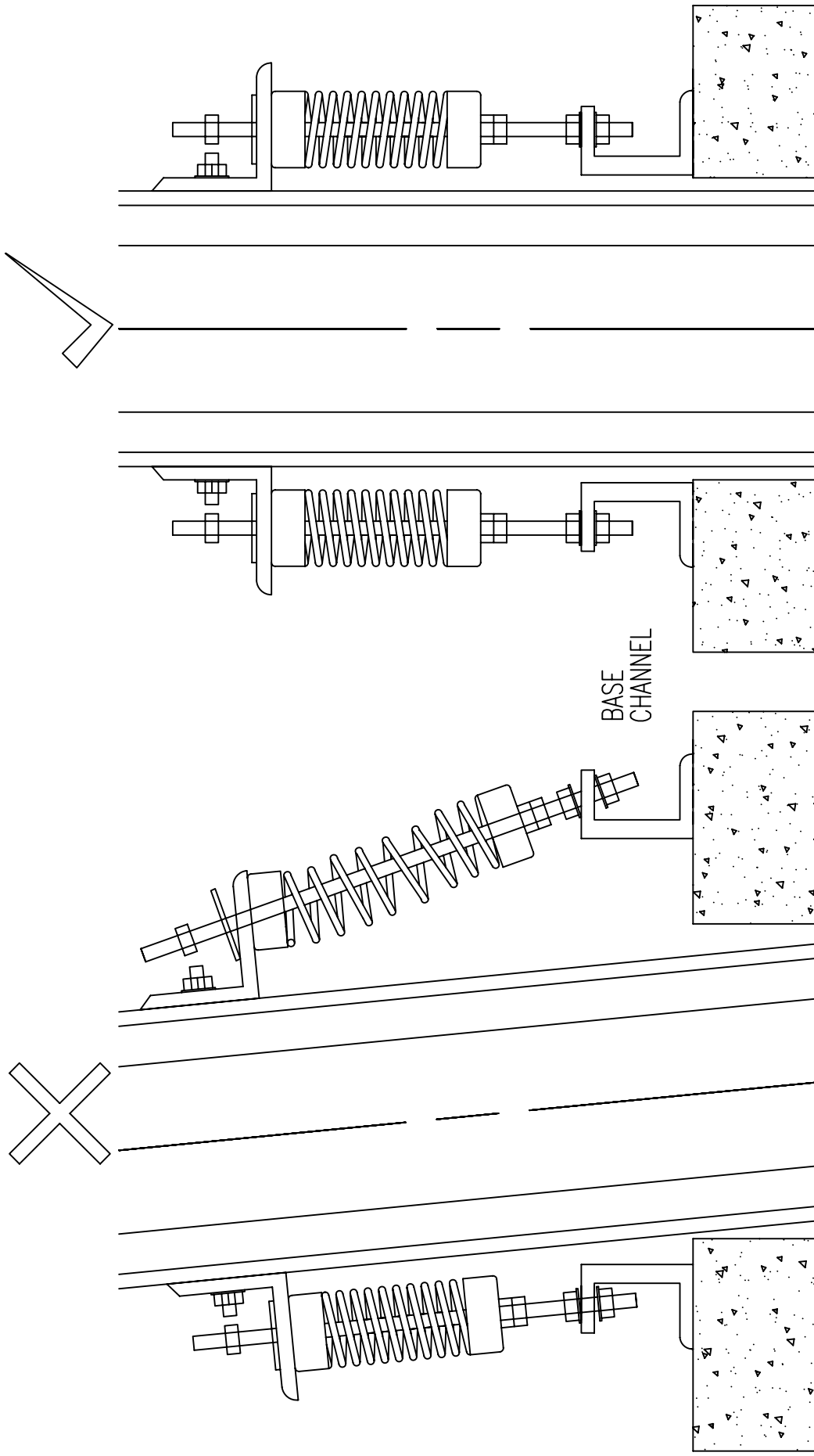
7. Powdery particles/oxidation at busduct conductor surface shall be removed.
8. Spring hanger unit shall be installed at each floor.
9. Stain of cement water/cement at busduct joint position shall be removed.
10. Fire barrier shall be provided between floors.
11. Alignment of busduct spring hanger shall be improved to manufacturer's standard.
12. Alignment of busduct section shall be improved.
13. Spring hanger nuts shall not be fully tightened.
14. Conditions of duct room shall be reasonably good.

**10.7 Schedule of Drawings - Busduct Work**

<u>Drawing No.</u>	<u>Drawing Title</u>
GCS/10/01	Salient Points on Busduct Work
GCS/10/02	Alignment of Spring Hangers
GCS/10/03	Departures at Busduct Joints
GCS/10/04	Busduct Departures at Through-floor Portion
GCS/10/05	Alignment of Busducts



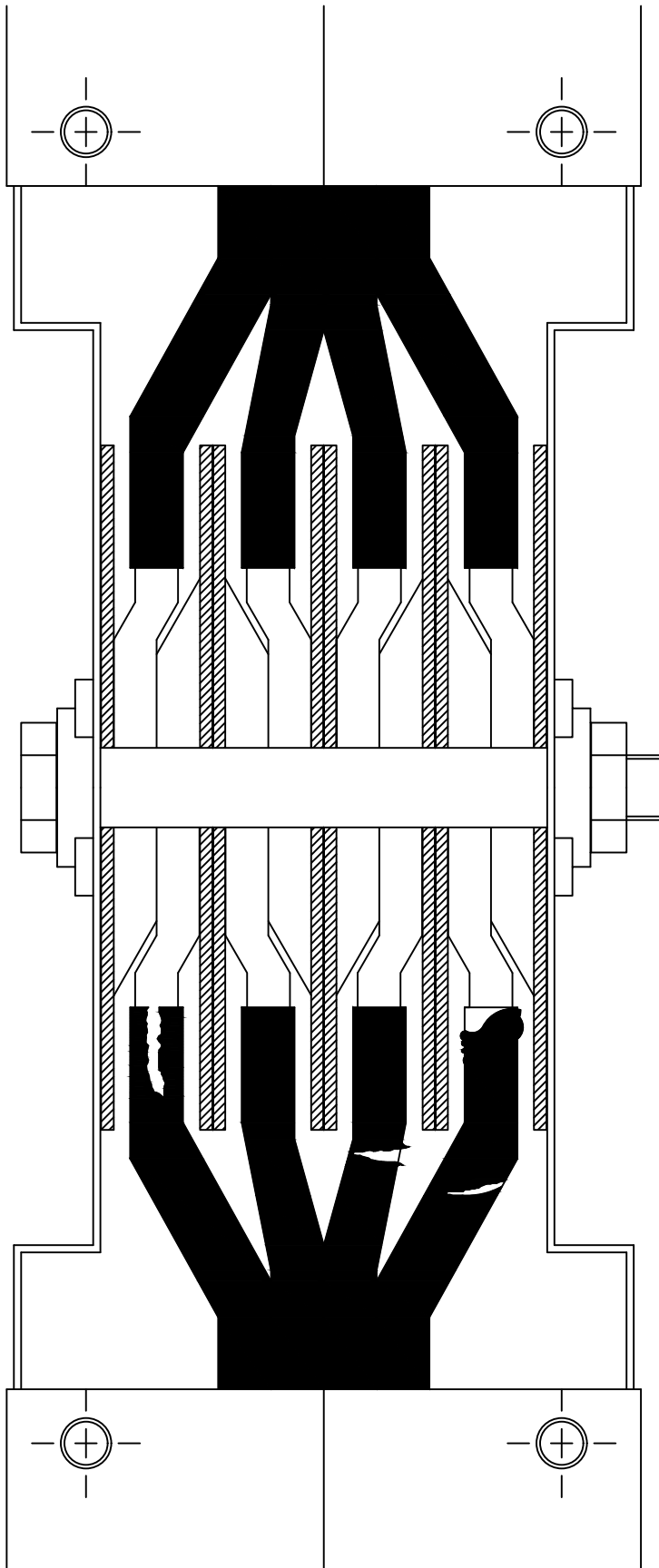
Drg. No. GCS/10/01  
SALIENT POINTS ON BUSDUCT WORK



NOTE : ALIGNMENT OF BUSDUCT SPRING HANGER SHALL COMPLY WITH MANUFACTURER'S STANDARD.

**Drg. No. GCS/10/02**  
**ALIGNMENT OF SPRING HANGERS**

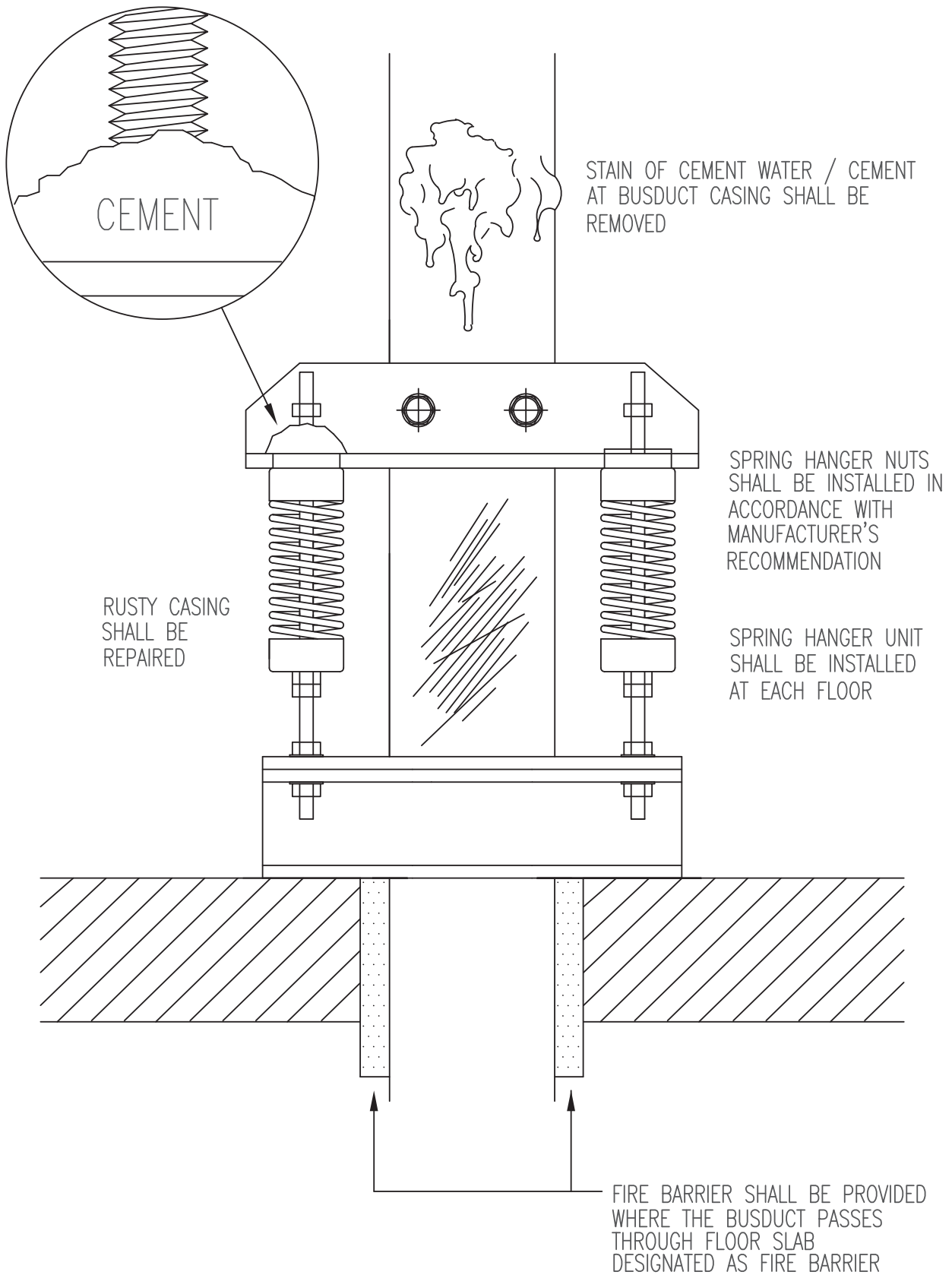




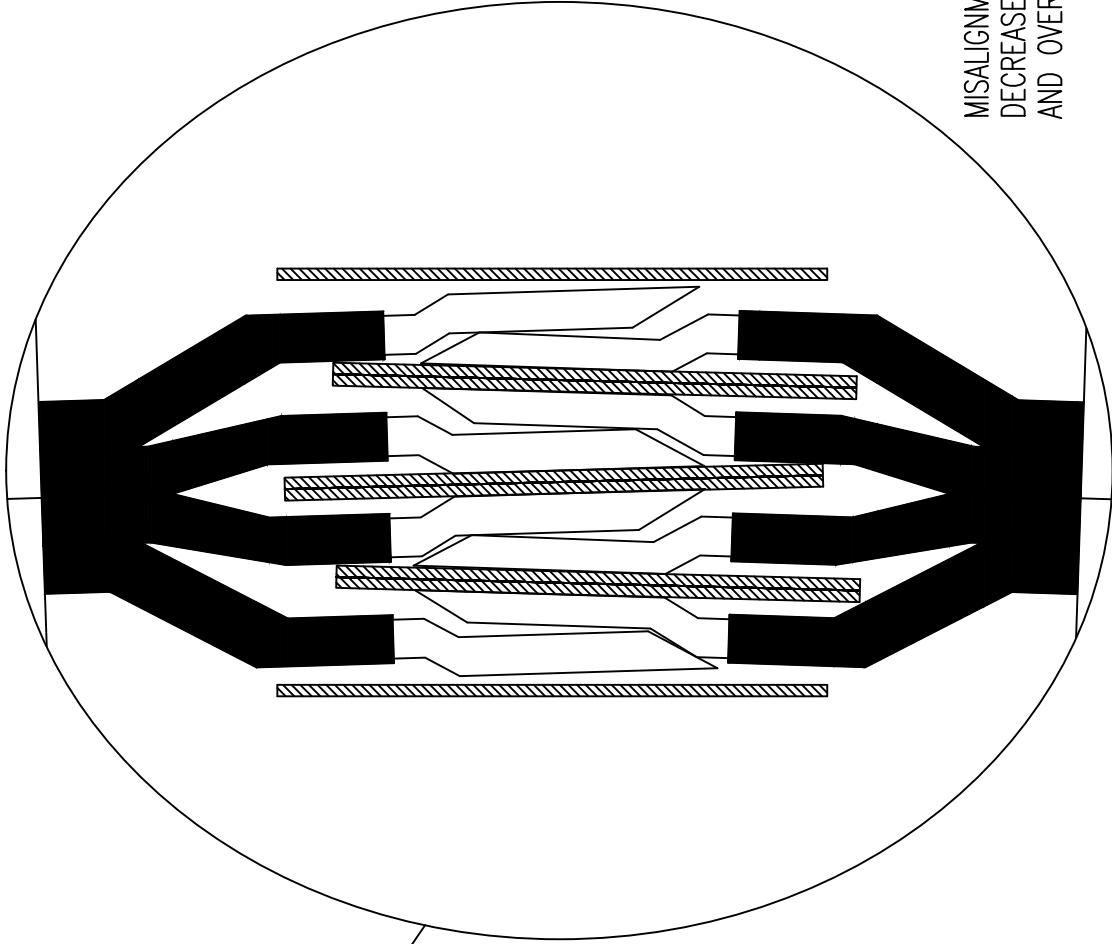
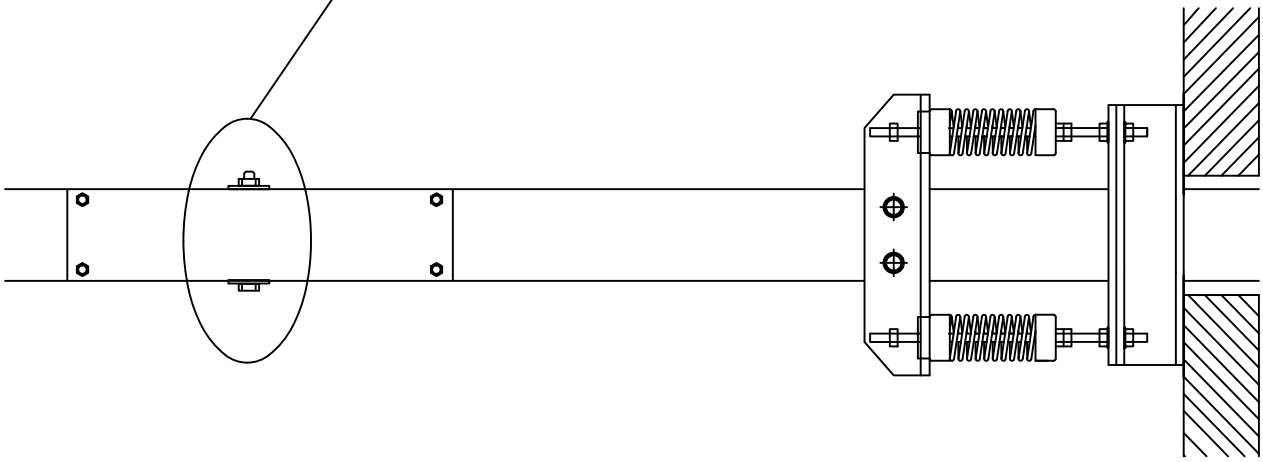
BUSDUCT JOINT BOLT  
SHALL BE TIGHTENED  
TO MANUFACTURER'S  
RECOMMENDED TORQUE

DAMAGED AND TUCKED  
INSULATION SHEATH  
SHALL BE REPAIRED

Drg. No. GCS/10/03  
DEPARTURES AT BUSDUCT JOINTS



**Drg. No. GCS/10/04**  
**BUSDUCT DEPARTURES AT THROUGH-FLOOR PORTION**



MISALIGNMENT RESULT TO  
DECREASE OF CONTACT AREA  
AND OVERHEATING.

Drg. No. GCS/10/05  
ALIGNMENT OF BUSDUCTS