Alpha
Consulting Engineers Pte Ltd

FEEDBACK REPORT FORM

Ref No: 166-210715(S)

To: CCG From: AWL

Job No./Project: All Projects *(where applicable)*

Source of feedback: SS553:2009

Scope of Feedback: * [ ] Quality [ ] Environmental [ ] Administrative [ ] Contractual
[ ] Technical [X] Specification [X] Others

Section A : Problem & Cause

Existing ACMV Master Specs indicates flexible ducting as not to exceed more than 4m.
SS553:2009 has revised the maximum limit to 2m.

Section B : Mitigating Action Taken, if any

To revise ACMV Master Specs & highlight to CAD on the requirement.

Section C : Suggested Corrective Action

As indicated in Section B.

Section D : Approved Corrective Action

Document Affected * : [X] Yes [ ] No Affected Document : A/C Mech Spec.

Approved By : Date : 17/7/15.

Section E : Action

Action By : KA.

Targeted Completion : 31/7

Actual Completion : 21/7 Verified By : 21/7/2015

** Mark [X] where appropriate*

Distribution:

To all staff via email on 21/7/2015

4.21 Flexible Ducting

Flexible ducting shall be supplied and fitted where shown in the Specification Drawings.

Flexible ducting shall be of the acoustic type with the equivalent of 25mm thickness fibreglass of density 32 kg/cu m. A relatively smooth internal finish is preferred.

Flexible ducting shall be continuous between connections and shall be capable of bending, twisting, stretching under installation conditions, without denting or cracking. Maximum length of each section of flexible duct shall not exceed 2.0m.

Ductwork shall be suitable for the air pressure involved.

Flexible ducting shall be constructed such that it complies with the requirements for Class 'O' surface, when tested in accordance to BS 476: Part 6 and 7. Ducting shall be approved by BCD and acceptable to the Architect. Sub-Contractor shall submit sample of flexible ducting for Architect's review prior to commencement of work.

Flexible ducting shall be fixed to the sheet metal duct and diffusers by means of an approved self-locking worm-drive stainless steel clips. Each joint shall be taped with 50mm self-adhesive, and fire resisting tape to ensure complete air-tight joint.

4.22 Linear Diffusers

Linear diffusers shall be provided at locations and of capacities as shown in the Specification Drawings.

Material shall be of galvanised steel construction minimum 26 gauge. Interior surfaces shall be lined with 12mm thickness minimum coated fibreglass or scrimped mineral wool. The exterior surfaces shall be suitably prime etched to prevent rusting. The Architect shall reserve the right to reject the diffusers where rust is detected.

Diffusers shall be designed to effect high induction ratio of room air to supply air of variable supply air quantities. One or 2-way direction shall be used as shown in the Specification Drawings. Generally linear diffuser shall be 2 slots unless otherwise specified in the Specification Drawings. All slot edges shall be formed over, providing double thickness; all cut-edged shall be suitably treated against rusting taking into account that moist air conditioned air will pass through the slot surfaces continuously.
The Sub-Contractor shall obtain from the manufacturer a noise level guarantee in writing before placing the order.

The Sub-Contractor shall submit air flow characteristic of the diffusers showing clearly the diffusion air pattern for each type of diffuser for 100%, 75%, 50% and 40% of the designed air quantities.

The Sub-Contractor shall submit within four weeks from the day of award of the Sub-Contract the size, shape and constructional details of the diffusers to the Architect. All details shall be provided to ensure an accurate co-ordination with the ceiling grid system.

Exposed surfaces of slot(s) shall be finished to a colour approved by the Architect.

Approximate length of each diffuser shall be as shown in the Specification Drawings. However final length and overall width of the linear diffuser shall be co-ordinate with the ceiling system. For the purpose of Tender, the Sub-Contractor shall assume that the length may vary by +/-

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Flexible ducting shall be continuous between connections and shall be capable of bending, twisting, stretching under installation conditions, without denting or cracking. Maximum length of each section of flexible duct shall not exceed 4.0m. 2.0m

Ductwork shall be suitable for the air pressure involved.

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Approximate length of each diffuser shall be as shown in the Specification Drawings. However final length and overall width of the linear diffuser shall be co-ordinate with the ceiling system. For the purpose of Tender, the Sub-Contractor shall assume that the length may vary by +/- 50mm from that indicated and all incidental cost for such adjustment to the diffuser length shall be deemed included in the Sub-Contract Price.

Sound power levels of linear diffusers shall be sufficiently low such that the noise levels as specified for the various spaces/areas are complied with.

15.1.8 Ducts shall not be located where they will be subject to damage or rupture. Where so located they shall be suitably protected.

15.1.9 Return air ducts should be routed away from toilets or places where odours are expected and may recirculate into the supply air stream.

15.2 Construction

15.2.1 The inner surfaces of the ducts for supply and return air should be smooth and resistant to abrasion to reduce dust accumulation.

15.2.2 Where ceiling space is used as a return air plenum, the ceiling and the side-walls should be properly plastered and painted. Masonry ducts should be finished in a similar manner where possible.

15.2.3 Rigid ducts shall be manufactured from steel, aluminium, glass-fibre batt or mineral wool or other approved materials. Ducts or duct linings where glass fibre batt or mineral wool is exposed to the air stream shall be suitably protected to prevent erosion of fibres.

15.2.4 Ducts shall be sturdily supported. Hangers and brackets for supporting ducts shall be of metal.

15.2.5 Duct covering, duct lining and flexible connection materials should be non-combustible. However, if it is necessary to use combustible material it shall comply with the following requirements:

a) When tested in accordance with the methods specified in the Code of Practice for Fire Precautions in Buildings, it should have a surface flame spread rating of not lower than Class 1. But in areas of the building where Class 0 flame spread rating is required for the ceiling construction under the said code, a Class 0 rating for the covering and lining materials shall be required; and

b) When involved in a fire, it should only generate a minimum amount of smoke and toxic gases.

15.2.6 Flexible connections at the extremity of ventilation ductwork connecting terminal units, extract units and ventilation grilles shall not exceed 2 m.

15.2.7 Flexible joints, which are normally provided to prevent and/or allow for thermal movements in the duct system, shall not exceed 250 mm in length.

15.2.8 Flexible joints shall be made of material classified as 'not easily ignitable' when tested under British Standard BS 476 : Part 5.

15.2.9 Ducts shall be installed with openings at suitable intervals and locations to enable cleaning of all the ducts.

15.2.10 The construction and support of air ducts, fittings and plenums, including joints, seams, stiffening, reinforcing and access openings shall conform to the appropriate requirements of the duct construction standards contained in ASHRAE Handbook, IHVE guide books or SMACNA Manuals.

15.2.11 Ducts and plenum sealing

Ductwork and plenums shall be sealed in accordance to Table 9 so as to meet the requirements of duct leakage test in 15.2.11.1.