Items Required to Undertake a Shielding Design

1. Make and model of the machine that will occupy the space. If this is not decided, then give the range of equipment that is being considered. If assistance or impartial input is desired, then contact the designer by phone at 250-898-9089 or by email at xray@innovativebiomedical.com to discuss what has been purchased throughout the Province.

2. The expected workload of the system expressed as the number of exams per week that the practice plans to provide in both the immediate and far future. The number of exams per week (averaged) relates to the amount and type of radiation shielding material required. If this is not known, please contact the designer for further instructions in this regard. In deciding on the eventual number of exams to take per week, consider that the machine will most likely be in operation for 15 years and the practice may be resold or expanded during this interval.

3. A dimensioned sketch showing the planned location of the x-ray machine in the room as well as the location of the room in relation to the rest of the practice. Include all openings (doors, windows, vent locations etc.) and their dimensions on this sketch.

4. Indicate the desired location of the exposure control. Some machines use a remote exposure switch, others use a computer mouse etc. If this is not decided upon, the shielding plan will suggest one or more locations.

5. Provide on the sketch a listing, if possible, of the existing materials and their thickness used in the walls of the CBCT room. (Typically gyproc, plywood, concrete block, plaster, Lead sheeting etc.)

6. Show on the sketch the occupancy (or activity) that occurs in all rooms and spaces surrounding the room (as well as above and below the room) that will occupy the CBCT unit. i.e. Office, washroom, staff room, storage, garage etc.

7. Provide on the sketch the distance from the floor of the CBCT room to the floor of the space above the CBCT unit and the occupancy (activities) that go on above the suite. Also indicate the material(s) used for the floor above. (ie) wood, concrete, steel, etc. and the thicknesses of each if possible. (if no occupancy above, please advise)

8. Provide on the sketch the distance from the floor of the CBCT room to the floor of the space below. Also indicate the thickness of the materials used on the floor of the CBCT room and indicate the materials used on this floor as in 6 above. (If no occupancy below, please advise)

9. Provide contact information for the purchaser. Also indicate both the address and Zip Code of the site where the equipment is to be installed. If the billing address is different than the site address, please indicate this as well.

10. When this information has been gathered, please forward it either by snail mail to:

Dan Hanson, P. Eng.,
Chief Engineer,
Innovative Biomedical Engineering Ltd.
P.O. Box 75128 RPO White Rock
Surrey, B.C.
V4A 0B1

Or as an attachment to an email to either: dan@danhanson.net or xray@innovativebiomedical.com

11. On receipt, a full radiation shielding design matching your equipment, space and expected workload will be completed and forwarded to you. The design will provide all information necessary in order for your contractor to complete the work and will provide methods to ensure the work has been properly undertaken. Following completion of the work and installation of the machine, it will be necessary to undertake a full radiation survey of the facility within as short a time as practical to ensure that proper practices of radiation safety are in place. If there are any further questions, please call 250-898-9089 or email at the above address.

12. The shielding design will include some or all of the following:

a.) Sketch of the space with appropriate wall identifications and the approximate location of the CBCT (or other) device.
b.) A list of the shielding materials and the quantities required for each wall, the floor and the ceiling (if required).
c.) A suggested list of suppliers for shielding materials (if required).
d.) Contact information for your contractor so that he may discuss the installation of the shielding materials with the designer.
e.) Directions to ensure proper installation of the lead or other shielding materials.
f.) Supplier list of alternate shielding materials, doors, windows etc.
g.) Instructions for your staff in regard to the wearing of personal dosimeters.
h.) Information regarding the foundation for the design undertaking, the effectiveness of the shielding and the target compliance requirements.
i.) Instructions for the owner or responsible user of the system relating to the retention of documentation required to ensure proper shielding for the CBCT (or other) device.
j.) Special instruction, if required for the creation of doors, windows, ventilation openings, and others that may relate to the unique space surrounding the CBCT (or other) device.
k.) An invoice for the work completed.
l.) In addition to the above, the designer will keep on file a complete record of the all design work including the detailed shielding calculations such that if a change in the equipment, use of the facility, or of the surrounding spaces occurs, it will be easy and straightforward to carry out re-design work as necessary.

Note: Unless otherwise arranged, the owner or responsible user of the CBCT device (or any other radiation emitting device covered by the design) will be responsible for the costs of the design work. Please arrange with the designer either by telephone or by email for an estimate of these costs. In British Columbia, the costs for the on-site inspection are presently covered by the dues paid to the B.C. Dental Association as part of Associations' involvement in the Province Wide Dental Radiation Inspection Program. However, this may change as details of testing protocols for such devices are finalized.

9/7/2011