Where to Begin

One of the most important steps that can be taken when planning renovations to an existing building or designing a new building is to select the organ builder early enough in the architectural design phase so that the builder can work with the architect and persons from the building committee in the planning of the building itself. Bringing the builder on board early in the process can save time and money in assuring that the necessary space is available and that the organ is placed in the best possible position in the structure. Things to keep in mind:

Placement

The location of the organ (pipes and mechanism) needs to be made with a view toward optimum sound propagation in the building and the most effective relationship with choristers and instrumentalists that will perform with the organ. The keydesk or console needs to be located so that the organist can hear the resources of the instrument, choirs and other musicians in proper balance. If the organist is also the choir director then sight lines from the choir to the player are important, or if there is a separate choral director it will be important for the organist to be able to see the conductor easily from the console. Perhaps the ideal location for these three elements is to have the organ behind and above the heads of the choir with the organist in front of the choir in order to judge the balance of all the musical forces. With mechanical action organs the keydesk is normally attached directly to the organ case. Mechanical action organs can employ a detached console but the distance between the console and the organ case needs to be kept to a maximum of six feet, which is the basic space for two rows of choristers.

How much room is needed for the organ?

A very general rule of thumb to estimate the floor area needed for an organ is to use a figure of ten square feet per stop for organs employing electro-pneumatic action and six square feet per stop for organs using slider windchests. While these are average figures, they are also conservative and normally allow sufficient space for the mechanism as well as room to perform regular tuning and maintenance. Organ windchests are always rectangular in shape so in consideration of the organ's internal layout one should think of the long dimension of the rectangle being ten feet in length, which is an average length for manual windchests. The height needed for a small instrument is approximately 13 feet. For larger instruments the available height should be increased to approximately twenty-three feet in order to accommodate the taller bass pipes that are an essential part of a larger specification. This height can be reduced somewhat if the lowest bass pipes are stopped or mitered, however since these conditions are related to an organ designed for a specific situation it is best to have the building plans evaluated by an organ builder. Organs can also be built on more than one level, thus reducing the footprint of the instrument. However in this case it is very important for the organ builder to evaluate all aspects of such placement in relationship to the stop specification taking into account the environmental and acoustical implications of such placement.

Since organ windchests are rectangular in shape organ spaces that have angled or curved walls will have spaces around the perimeter of the windchests that will be of little or no use in housing pipework. Sloped walls or angled ceilings impact on an organ space in the same way.

The size of an organ console will depend upon the number of manuals and stops. In a small church a two manual console will require a space roughly five feet by five feet. For a three manual instrument these dimensions should be increased by at least one foot in each direction. Certain consoles, such as the French terraced style, will require additional width so it is always best to begin with the actual organ specification and have the builder supply specific dimensions for the style console being used. Consoles for electric action organs can be moveable in which case allowances need to be provided for the path in which it will be moved as well as allowing space for any turns that may be required.

What does an organ weigh?

The weight of the internal mechanism and pipes of an organ without any casework can be calculated by using a figure of approximately 550 pounds per stop. For planning purposes this figure will suffice in determining the total weight, however it is very important to note that the weight distribution will not be spread equally over the legs supporting the windchests. Various factors come into play in determining the weight loads, with the main one being the way in which the pipes are grouped on the chest. If the pipes are arranged chromatically so that the largest bass pipes are on one end and the small treble pipes on the opposite end, then the legs nearest the bass notes will bear a proportionately heavier load of the total chest weight. Organs that have windchests located on more than one level will have greater concentrations of weight on the floor than an instrument that is on one level. Casework will add additional weight to the total, however such weight loads must be calculated using a specific design.

What about the organ blower?

During the early part of the twentieth-century organ blowers were most often relegated to the basement of a church because they were often huge and made a lot of noise when they were operated. Fortunately contemporary blowers are more efficient and much quieter in operation. Sometimes, if the organ is not too large and there is sufficient space, the blower can be placed in a sound-absorbing enclosure located within the organ or in close proximity to it. The obvious advantage with this placement is that windlines from a remote blower room to the organ are not required and the blower can draw air from the same temperature and humidity as the organ itself thus promoting better tuning stability. Wherever the blower is located, it is important to remember that it functions basically as a giant vacuum cleaner, blowing whatever is in the area into the internal parts of the organ. Therefore a clean environment is essential to the long-term well being of the organ.

The most efficient current to run an organ blower is 208/220 volt, three phase current. Small instruments sometimes can be powered by blowers that run on 110-volt current. The organ builder can provide advice as to the size of the blower, its best location and the current characteristics that will be required. Organ blower motors require a magnetic starter that can become noisy and develop a humming noise after a period of time. Therefore it is important to locate these starter switches outside the room where the organ speaks. (Cf. Guidelines: Temperature and Humidity)

What about temperature and humidity control?

Occasionally proponents of digital substitutes for pipe organs like to make first-time pipe organ purchasers feel that they need to keep the building at a constant temperature in order for the organ to be well-maintained. If one considers the very oldest instruments in Europe one quickly realizes that these organs survived for centuries in unheated churches. In terms of tuning, an organ will be in tune when it is played at the same temperature it was when it was tuned.

The rate of change of temperature is very important and one needs to take into consideration the location of the pipework and the ambient air in the space closest to the pipes. If the organ is in an area where there is less air circulation than the area where people sit, the air and equipment in this area probably will not reach the desired temperature without additional time to attain it. Most important is the rate of change and the subsequent effect on the level of humidity. Virtually all of the organ's wind containing areas, such as the windchests, reservoirs, wind trunks, etc. are made from wood. Raising the temperature too quickly can dry the wood too fast and result in cracks in the wood itself or in separation of glue joints. With a deliberately slow rate of change this problem can be avoided. This is important not just for the organ but for all the other wood objects in the building as well. (Cf. Guidelines: Temperature and Humidity)

Water and the organ

Water and organs do not mix any better than oil and water. Therefore it is important to take all possible precautions to avoid roof leaks by considering the consequences in the building design and by regular maintenance of valleys, shingles, etc. Plumbing anywhere near, and especially above an organ, should be avoided at all cost. If local fire code requires sprinkler systems it is desirable to use a dry system and to place protective cages over all sprinkler heads that are in or near the organ.

How long does it take to build an organ?

This is a complicated question because it depends upon many factors. Included is the size of the instrument itself, the complexity and amount of woodwork that the builder is supplying, the size of the builder's workshop, the size of the staff and the backlog of orders that the builder has at the time the contract is signed. For these reasons it is

difficult to provide any general information that would meaningful or current, therefore it is best to request this type information directly from the builder who can provide this information based on the size of the instrument under consideration.

How many manuals do we need?

Like most things in organ building there is no magic number for when one should think of having three manuals instead of two, or four instead of three. Each situation is different and requires an individual approach in order to answer this question. Some general thoughts that might be helpful include:

- It is important to provide complete divisional structures in all of the departments of an instrument. Each manual division should have its own well-developed structure before another manual is added.

- The cost associated with the added manual, its windchest and playing mechanism can be equivalent to adding several stops to an existing division, therefore it is wise to evaluate such costs in relationship to what could be added to the existing manuals before another keyboard is considered.

- Occasionally a keyboard is used for some specialized purpose such as to control a remote division (Antiphonal) or some solo stops. As always, the question that should be asked is, is the addition of a manual the best way to control these stops or can they be accessed in another way, such as a floating division, for example?

It is important to keep in mind that organs ultimately are judged on their musical merits related to the number and quality of the stops and not on the number of keyboards controlling those stops.

What is a recital organ?

People sometimes say, "we don't need a recital organ, we just need a church organ", which begs the question, what is a recital or church organ. In the minds of the people who make such statements this suggests that the recital organ is an instrument that has capability beyond the needs that the person thinks is necessary for their own situation. Certainly recitals are often played on large instruments but the size of an instrument is not a condition for recital performance. With all organs the question of what it will play well is tied directly to the design. Good design principles should apply to every instrument regardless of size. Therefore it is not so much a question of recital/ church organ as it is of good/ poor design. It is also important to remember that a very large amount of the organ literature written over the past centuries, even that which is often heard in recital settings, was composed originally for use in worship so the question is not one of needing a "recital" organ but of needing a well-designed musical instrument.

Doesn't adding stops just mean that the organ will get louder?

A common misconception about pipe organs is that the larger they are the louder they are. Generally speaking large instruments are built for use in equally large buildings and therefore need additional resources to fill the cubic volume of such rooms. If one considers the contrast of placing a spinet piano or a concert grand on the stage of a concert hall the differences become obvious. An organ that is too small for the building will not be adequate to the task of making music in the given space. Beyond providing what is needed to fill the space and meet the musical requirements of the instrument, the additional resources added to an instrument are those to enhance musical possibilities and provide additional colors.

An example of an orchestral performance provides an excellent example of differences in musical resources. An orchestra begins a concert with a modest number of players for the performance a symphony by Mozart. If the next work on the program is a symphony of Mahler, additional string players and a whole host of woodwind, brass and percussion players will be added. The musical needs of these two compositions are quite different even though an orchestra performs both works. A larger organ often has appropriate additional color stops that increase its physical size but do not necessarily make it louder. Ironically some of the stops included in a large organ are voices that produce some of the softest sounds possible. Such ethereal effects may be equally desirable in a smaller organ but may not be included due to space or cost issues. Therefore the assumption that a large instrument is automatically louder because it has more stops is one of the many myths surrounding pipe organs.

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