The
Broadcasters' Desktop Resource
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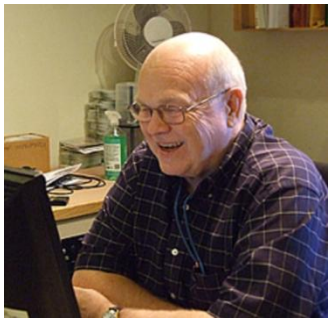
Broadcast Operations

Planning Your Studio Build
Part 3 – Getting Ready to Start Building



by Gordon S. Carter, CPBE, DRB, CBNT

[July 2021] This is the third installment of Gordon's discussion of ways to ensure the process of building a studio goes smoothly. Tips and tricks follow.

In this section of our discussion we will be looking at planning of the actual studio contents. However, before digging in to the details, I would like to take a moment to talk about the idea of getting help.

GETTING THE RIGHT HELP

Studio planning requires several inter-related disciplines, most of which no one person is an expert in all of them. For example: architects are rarely experts in acoustics, though they may claim to be.

To do studios right requires someone proficient in acoustics, HVAC, carpentry, and studio electronics. In this day and age, you also need some expertise in computer networking, even if you are building an analog facility. So it is important, when selecting consultants and contractors, be sure to check their references.

As I mentioned in Part 1 of this series, if you get references from the contractor, be sure to also get references from the references. Remember that a consultant or contractor will typically give you the names of their "success stories," not their failures. Getting references from the references will help you dig deeper and find out if all the results were good.

THE RIGHT CONTRACTOR FOR EACH DISIPLINE

As we noted, architects are rarely experts in acoustics, however many people and firms who are very good at acoustics, are not always good for radio facilities.

A typical radio facility has control rooms and studios that are often in the 200 to 400 square foot range. In the world of acoustics these are considered "small rooms" and many of the "large room" rules just do not apply.

For instance, the typical radio studio does not have any dimension large enough to establish a good acoustic field. In fact, the typical dimen-

sions are smaller than a wavelength of audio, unlike a large auditorium which may be several wavelengths in at least two dimensions.

That is why you should be sure your acoustic person has experience with radio facilities.

CONTROL THE PROCESS

The same can be said for HVAC consultants and electrical contractors. Many of these people have no experience in the special needs of radio studios, and may need to be guided through the special needs of radio.

Some companies claim to provide "turn-key" systems, where they will design and build the entire facility for you. While this *may* work for you, be sure that it is made clear from the beginning that you are in charge and have the final say on *all* decisions.

Also, be careful of sales people who claim to be able to design the system for you. In many cases they will specify the equipment that gives them the greatest profit, not what is best for the situation.

DOCUMENT EVERYTHING!

Be sure that your consultants and contractors all understand that nothing is to be done without an authorized signature from you or others designated to be able to sign.

Verbal changes are not acceptable under any circumstances. Also, make sure that they all provide proper and complete documentation for everything.

You should receive all manuals that were provided with everything in the system. They may prove useful at a later time. Any changes from the plans should be documented and you should have a complete set of "as-built" plans. If anything requires special software to access, be sure to get a copy of the software that can be installed on your computers and be sure to get any passwords (both default and installed) for any equipment that uses them.

DIGITAL AUDIO TIP

If this is your first venture into working with a digital audio system, I strongly suggest that you partner with someone who has done this sort of construction before.

Planning a digital system is vastly different from an analog system. In particular, everything needs an input or output, but digital systems do not use distribution amps to get more outputs. Failure to properly think through the system before ordering can be very costly as you try to add things you missed.

If you do not have someone you can work with, your equipment supplier should and can provide you with a list of approved partners who can work with you.

USE A HOLISTIC APPROACH

When undertaking a studio project, many things that may appear unrelated really are.

For instance, the amount of space in each room will affect the space available for other rooms, the HVAC planning and the electrical planning. The equipment you place in each area will also affect HVAC and electrical, as well as space.

You have to make decisions based on what you know, but be ready to change your mind as the plans progress. However, *now* is the time to change your mind, not after the building has started, as it is much more complicated and expensive to make changes at that point.

Check your plans many times, and have others whom you trust check them as well. As long as everything is on paper, it is easy to change.

Once materials have been ordered and construction has begun, changes are much more expensive.

DO NOT WAIT TO HANDLE ISSUES

Once construction has started some seemly little changes can destroy your budget as well as your schedule.

Consider how the entire planning phase of the project is a balancing act. You are constantly balancing the budget against the desires for the facility. Available space and materials availability become big factors as you plan your facility and the schedule. If you are up against a lease termination or other hard date, the schedule may partially define what you are able to do.

There is an old saying that any project can be cheap, good, or fast – pick two! If cost is no object, then you can build a superb facility very quickly. If you are watching every penny, then you can make a good facility if you have lots of time. The trade-offs go on and on.

HOW MANY STUDIOS/ROOMS?

When planning a studio facility, one of the first things you need to do is determine the real needs of the facility.

Do you need a performance studio? Do you need room for guests in the control room? Is the station fully automated on-air? Do you have a news staff? The better you can define what the station is and does, the more usable the space will be. This process is similar to that used for planning office space as mentioned in an earlier installment.

Once you have some idea of the use of each space in the facility (do not forget a staff lounge, or perhaps a "green room" for guests waiting to go on the air, and other non-tech spaces, unless you want people just "hanging around"), you can begin to get some idea of what equipment is needed in each room. In fact, the equipment needed will help define how much space you need in each room.

When thinking about space, do not forget to allow space for people to move around in the rooms and for maintenance of equipment. I have seen many stations where it is almost impossible to access equipment from the rear quickly. This can be a real hindrance to servicing the equipment in an emergency. While it may seem like wasted space to allow room behind the racks, it will save a lot of time in an emergency.

DO A ROUGH DIAGRAM

As you decide what spaces are needed, you can begin to place them within the footprint of the available space.

Sometimes, the available space will have support columns in the way which can restrict the placement of walls, doors, and windows.

Often these can be worked around by some creative placement of walls. Angled walls may be just the answer to make a room larger where some extra space is needed, and may also have the benefit of creating some extra space that can be used for storage.

When planning your space remember, that in many cases, rooms do not need to be contiguous (adjacent). Digital technology can greatly reduce the amount of wiring between rooms while making almost everything readily available everywhere.

EVERYWHERE IS "THERE"

This means that a server room or TOC (Technical Operations Center) no longer needs to be adjacent to your studios.

In fact, it could be on a different floor of the same building or possibly even in a different building. Just make sure it is readily accessible to those who need it when they need it. If you have several people doing voice-tracking, perhaps it may be useful to make their office double as a voice-tracking room (we will have more to say on the acoustics later).

In recent months, Covid has shown us that people can work remotely, and even on-air guests

and staff can work from home. This could help reduce the amount of space needed for the station, but some stations may not want to be too small.

Again, you need to know how the station operates.

SECURITY

Security is something that is often overlooked when planning a space.

I am not talking about digital equipment security (keeping the hackers out of the omputers), but people security. Radio stations can be the target of people who may not play by the normal rules of society.

This does not just apply to stations that broadcast political commentaries, but to all stations. I have heard of threats against classical music stations who played music someone did not like, or who did not play music that someone wanted. The same can apply to any music format. Religious stations can be the target of people who do not agree with their views, and news stations can be targets of people who just do not like the news of the day.

These threats do not apply to just big city stations, but even those in small towns. In some cases, a small town station may be more susceptible because everyone knows where the station is located.

In fact, I have been in stations that have been targeted, where there are bullet holes in desks and other furniture from a past intrusion. These are not just in the reception area, but deep inside the station, where you would normally think you are safe.

A HARDENED ENTRANCE

That is why when planning your station, be sure to include some means of preventing unwanted intruders.

This can take the form of remote access systems, card systems, and other types of access control systems. However, make sure that the doors and windows are strong enough to prevent or at least deter unwanted access. A card access system on a door that can be easily opened with a pocket knife or credit card is not much good for a determined intruder.

Also, have levels of access so that an intruder cannot get to anything important by just breaking in one door. Anything that will help delay an intruder's progress into the station will give extra time to alert the authorities and get help.

EQUIPMENT CONSIDERATIONS

Without doubt, the equipment you select will have a big affect on your budget, space, layout, HVAC, and electrical. And, depending on the use of the room the equipment may also have some affect on the acoustics within the room.

While my intent here is not to tell you what equipment you should use, I mention it here to help prevent some costly errors in planning. I have found that a spreadsheet is very helpful in determining the equipment and its effect.

Your spreadsheet should include the equipment, manufacturer, supplier, space required, heat loading, electrical needs, and other notations such as needs to be visible, requires surrounding air space, etc. When looking at space, remember that depth is part of the space, and weight may have some consideration when placing it.

While it is not needed at this point in the process, you may want to include connectors for each piece of equipment, as you will need them.

INCLUDE THE SMALL STUFF, TOO

When enumerating your equipment, be sure to include everything.

It is easy to overlook small items, such as headphone amplifiers, peripheral controls, and interface items such as relays, warning lights, and such. Also, do not forget such things as computer monitors, computers, extenders, and even monitor arms and mounts.

As you build your equipment list you can begin to determine what needs to go where, and what racks and furniture you will need. When looking at racks, be sure to allow space for ventilation, enough depth for what is being placed in the rack, electrical distribution, wire management, and possible room for expansion.

Also, be sure to allow enough space to route wires between equipment in a room, and a way to get it there. Wires that are just routed across the floor or draped under a table are just asking for someone to snag them and cause a lot of damage, usually more than it would have cost to put in proper wire management in the first place.

As you develop your plan, you will begin to have an idea of the electrical needs for each room and for each rack or equipment cluster in the room. You will also begin to see how much heat load all this equipment is producing, which will help the HVAC people properly size the system.

In our next installment, we will address HVAC more fully, as well as the studio acoustics and noise control.

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Now retired, Gordon is sharing his knowledge and experience with the industry. You can contact Gordon at: gordon@gcarter.us

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