hlw

Media Production Facility Cost Report

2023

Contents

Looking Backward to Look Ahead

This year, the Cost Index is looking backward to look ahead.

The 2023 Cost Index has been quite some time in development. We last issued this document at the beginning of 2019 and the intention was to make this something we would issue every two years. A little thing called COVID-19 got in the way...

Along with all the other uncertainties that the pandemic created, big questions developed around planning the future of media facilities. What would happen to the costs of building and renovating broadcast and long-form production facilities when COVID was over? No one could have predicted the rate of inflation, nor the major issues surrounding supply chain uncertainty that marked the last two years. Infrastructure elements, in both electronic technology and electrical/mechanical items, have had major delays and/or cost increases. The uncertainty around both fundamental equipment groups has had a significant effect on the budget and schedule equation of any facility build or upgrade, broadcast, or long form.

The second big question was: What would happen to the workflow and design of production facilities? Would remote production workflow, which was so important to keeping broadcast media on the air during the pandemic, permanently change the way existing production and broadcast facilities were thought about and used? Would the space required to support safety protocols on long-form sets require additional support areas? How would this affect the space and budget of production?

It did not make sense to start a new Cost Index until some of these issues became clearer. And while nothing is clear yet, some things are coming into focus.

Clearly the last few years of the pandemic made it seem as if everything was going to change in the world of media production. Many new technologies and techniques were implemented in order to allow production to continue. It was not certain at many points if things would ever return to normal—and it is hard to know exactly what is normal, even now. And of course, sometimes things seem to change on the surface only to remain the same in their structure. While the jury seems to still be out on the future, the new ways of doing things are starting to come into focus. It seems clearer that the curve of change is going to be slower than we thought but still fast enough to be confusing, even in this industry where change has been nearly continuous.

With these ideas in mind, we decided to ask a few friends to talk with us about their experience in the world of the technical side of media production. These three guys have close to 150 years of experience combined and they are still going. Our questions range from how things were done in their early days (the 1960-70s) to what they see happening in the future.

To help us learn more about the answers we did three things:

- We asked a few smart folks we know to speculate on the long-term effects of COVID on production workflow
- We interviewed three broadcast industry technology greats and asked them about the past, the present, and the future of media production
- We worked with two well-known construction firms with experience in the construction of media production facilities to get a set of reference budget costs, both for interior broadcast facilities and new building, long-form film and television facilities.

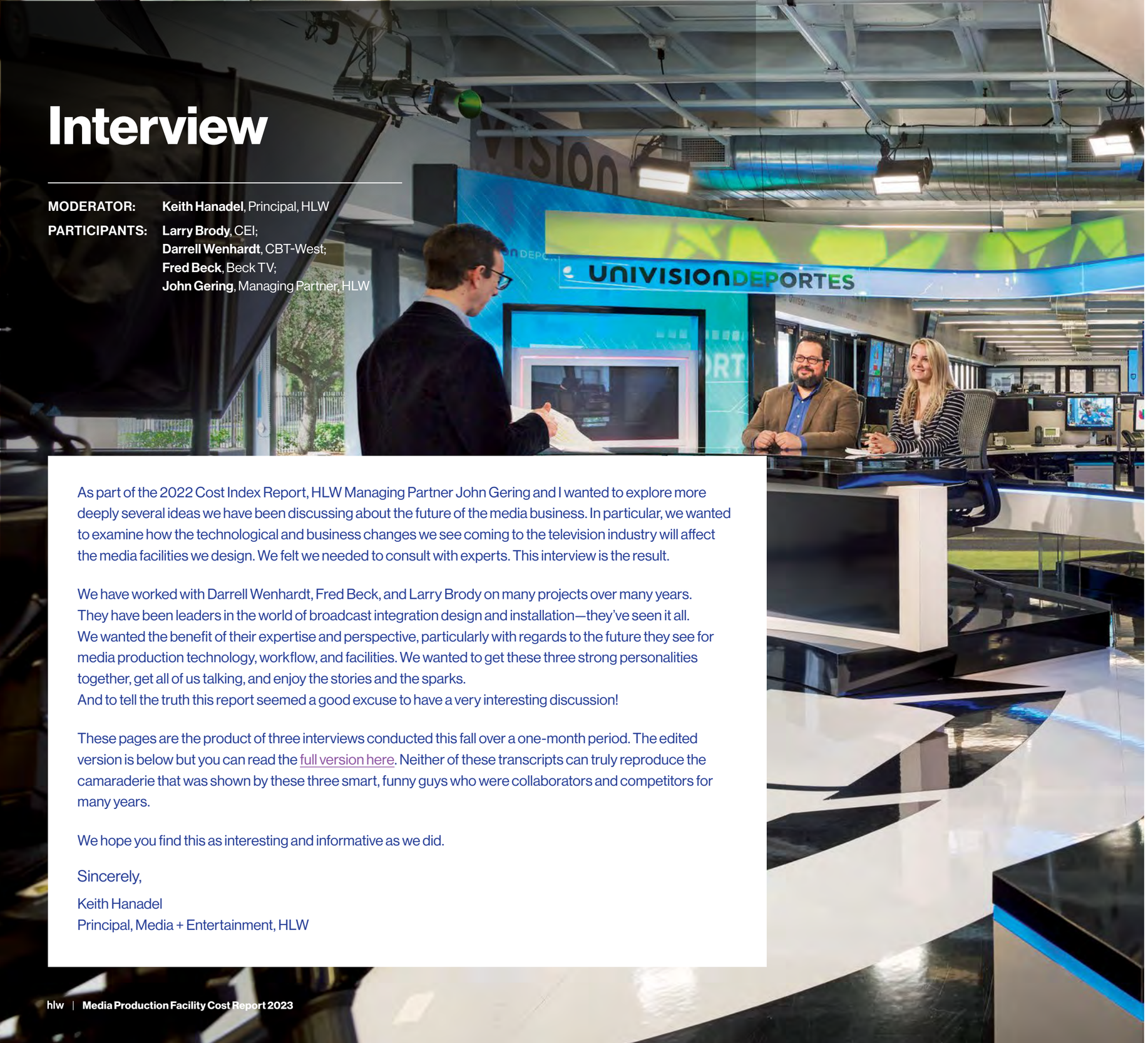
In the spirit of looking backward to look ahead, this year's report is illustrated with a combination of images of some of the most notable HLW projects of the past, as well as work that is currently underway, both in design and under construction.

COVID is not over, instead it is merely a new fact of life. It created an enormous amount of change in the world and many of those changes have been heartbreaking. One of the smallest things it affected was our ability to issue this report. We hope you are able to find some useful knowledge in this report, or at least find it an interesting read.

Interview

MODERATOR: **Keith Hanadel**, Principal, HLW

PARTICIPANTS: **Larry Brody**, CEI;
Darrell Wenhardt, CBT-West;
Fred Beck, Beck TV;
John Gering, Managing Partner, HLW



As part of the 2022 Cost Index Report, HLW Managing Partner John Gering and I wanted to explore more deeply several ideas we have been discussing about the future of the media business. In particular, we wanted to examine how the technological and business changes we see coming to the television industry will affect the media facilities we design. We felt we needed to consult with experts. This interview is the result.

We have worked with Darrell Wenhardt, Fred Beck, and Larry Brody on many projects over many years. They have been leaders in the world of broadcast integration design and installation—they've seen it all. We wanted the benefit of their expertise and perspective, particularly with regards to the future they see for media production technology, workflow, and facilities. We wanted to get these three strong personalities together, get all of us talking, and enjoy the stories and the sparks.
And to tell the truth this report seemed a good excuse to have a very interesting discussion!

These pages are the product of three interviews conducted this fall over a one-month period. The edited version is below but you can read the full version here. Neither of these transcripts can truly reproduce the camaraderie that was shown by these three smart, funny guys who were collaborators and competitors for many years.

We hope you find this as interesting and informative as we did.

Sincerely,

Keith Hanadel
Principal, Media + Entertainment, HLW

Keith Hanadel: Let's start at the beginning. All three of you entered the business around the same time, but I'm sure you entered in different ways. Why don't you each give us a brief rundown of your histories?

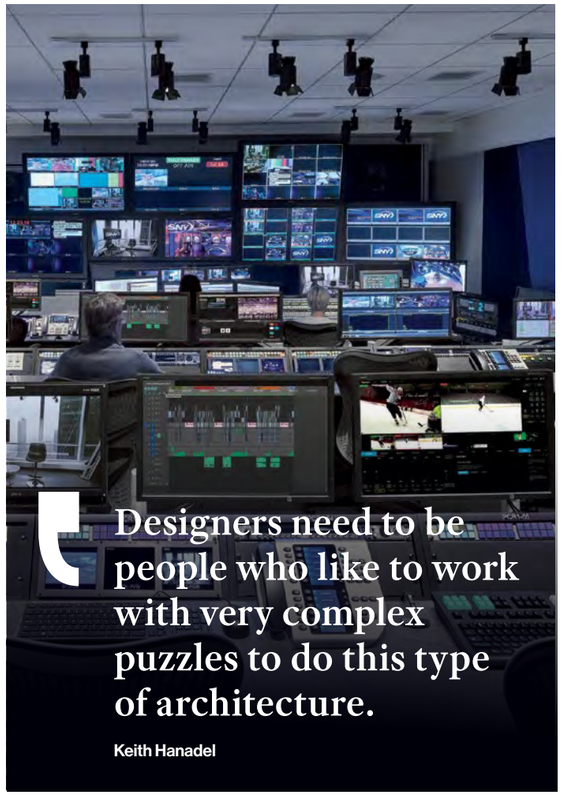
Larry Brody: How did I start? Like a lot of things—by accident. I went to New York University and was pretty bored by everything going on in college. I was fascinated by the college radio station, though. I became the chief engineer, helping them with the transition from AM to FM. That landed me a job in CBS' engineering department in 1975. Eventually I built up enough cred to get sent to the Masters Golf Tournament. I got to experiment with using slo-mo for the first time there. It was a wildly interesting time to be working as an engineer.

By about 1980, I decided to take a leap of faith and work for a company called Satellite Television Corporation, which had this insane, ridiculous idea that they were going to use satellites to broadcast television into the home. But they didn't have anybody on their team who actually knew about how television worked. So, they brought me on board, and I worked there for five years. Eventually, I started my own company, CEI. The rest is history.

KH: Thanks, Larry. Darrell, why don't you give us your story?

Darrell Wenhardt: By high school, I knew I was going to be an electrical engineer. I had a great electronics teacher. I loved his classes, but one day he just disappeared. Rumor around the school was that he was setting up some special, secret project. I got a phone call from him at my house one day and he asked me if I wanted to take a TV production class in a TV studio control room that he had built at a different high school about 20 miles away. I took that class for a whole year and really fell in love with the industry after that experience.

For college, I went to San Diego State University and pursued my degree in electrical engineering. My main interest was in circuit design. After college, I, along with two buddies, formed a corporation called CENTRO. In the very early 70s, a lot of money was being spent to upgrade libraries' electronic media archives. I bet we did 12 to 18 facilities like that in quick succession. Then things really blew up for us when we got into the mobile unit market. We had to fight for every eighth of an inch of space in those trucks and trailers. That kicked off a long-lasting love of facilities design. My career developed in a way that I do more architectural work than I do engineering work, and it's been that way for a long time.



KH: Thanks, Darrell. Fred, I think your story isn't too different from Darrell's?

Fred Beck: Yeah, not really. Started out with a nerdy interest in electronics in high school. Also, my father was an engineer.

I went to UT Austin's School of Architecture. I got drafted into the Vietnam War. I had a low, low draft number and the military gave me electronics work to do, which suited me just fine. So, for a couple of years, I repaired Pershing missile guidance systems. When the war ended, I repaired TVs and stereos for a couple years. I took a night job as an engineer at a TV station. I went back to school to pursue a dual degree in architecture and engineering. I worked for a couple of firms, then decided to go out on my own.

The building industry in Texas in the 1980s was brutal—interest rates were pushing 20 percent. I was in the middle of building my own house and houses for two clients when everything went to hell due to these high rates. I needed to find another job. My father called me up and asked if I wanted to help him build a TV station in Tallahassee. That was the first time I did anything related to television. But I realized, it's not anything different than what I'd tackled before. I did that and then I kept doing more. Eventually, my dad and I started Beck TV.

KH: That's great. So, the only blot on your resume, as far as I can tell, is the decision to go to architecture school, but we can look past that. John, you're up. Tell us your story.

JG: When I was growing up my next-door neighbor was my chemistry teacher. One day he asked me, What did I want to do with my life? I said, "Well I'm of two minds. I either want to be a musician or an architect." He looked at me and said, "Do you really want to find a new gig every weekend?"

KH: So basically, just like what you're doing now...

JG: Exactly. By 1980, I had arrived at HLW and was made a partner in 1990. My first decade at the firm, I was working on very complex technical projects—in fact, I started the firm's media studio that Keith now heads. I discovered that inside-out driven programs are wildly interesting to me. Media projects are driven from their insides, as opposed to an office building, which is simply a wrapper around a floor plate. These media projects have always been my true love. Architects get frustrated with these types of buildings because they want to get the solutions pretty quickly.

DW: And the biggest challenge is figuring out how to get there within the client's zero-dollar budget.

KH: Well, that too. I always tell designers that they need to be people that like to work with very complex puzzles to do this type of architecture.

Let's move on to some questions I've been eager to ask you guys. Here's a heavy hitter: Between the 1960s/70s and now, what has been lost?

DW: One of the biggest changes in the industry, and one of the reasons that the engineering staff population degraded over the years, is that the products became much more reliable. That took a chunk out of the engineering staff at most stations because, when the old guard retired, the higher-ups didn't replace them—or if they did, it was with a technician.

There's a lot of history and historical perspective that's lost with this shift. I think it's very important to impart the whole historical advancement of our industry going back to, you know, tube cameras and everything else. Back in the 60s and 70s, I'd have to show up at 3 a.m. for a 7 a.m. news show. There was no automation back then. Everyone had to understand what they were doing and why.

FB: That's a great insight, Darrell.

KH: Ok, let's get into some integration drama. I'm sure you guys have some thoughts on Sony. Remember, when they decided they wanted to be integrators and manufacturers, they changed the playing field. They wanted to compete with the people they were selling equipment to.

FB: Their decision didn't really change the way I did business, but it did make me angry. These people wanted us to install their equipment, but then they turned around and competed with us? I went out of my way to keep Sony out of client packages. It wasn't very long before Sony started whining about not being included. So, I capitulated. I hated it, but we needed the money. I had personnel to support.

Sony were not good bosses. I'll tell one story about the last job I ever did for Sony. We were asked to do a facility for a corporate client. In the very first meeting, the architects and engineers were talking about AC loads, and I could tell they were going to get screwed. The loads were way too high. It was crazy. They didn't listen. Fast forward a few months later: One of the client's guys comes into the tech core and asks, "When are you guys going to turn on all the equipment?"

DW: Let me guess: It's already been on.

FB: Yeah. The guy turned white as a sheet. It was totally untenable. That was my last experience with Sony's cuckoo stuff.

KH: Larry, what's your take on Sony?

LB: I remember very clearly when they first called to tell me they were going into the integration business. It wasn't exactly a pleasant phone call. I had to tell them straight out that they were choosing to become my competitor, and that I would do everything in my power to not use Sony equipment. I wouldn't even specify a set of headphones. Ultimately, I think they came to realize that going into integration was screwing their business and they put the kibosh on it. But their relationship with the rest of the industry was soured, it really messed them up.

KH: Let's get into the transition from tape-based to server-based workflow. In my experience, when we've renovated older stations it's obvious that they were originally designed for hundreds of tape machines and tape rooms. Well, that tech went extinct and now the clients are backed into using these crazy awkward rooms. With these kinds of projects, it's clear that a big workflow change has to happen each time. Are there workflow changes coming now?

FB: Oh yeah. Big, big changes are coming.

LB: Yeah, more than ever before.

DW: Keith, let me let me open this up because I'm going to take a different approach than what I think you're going for, and I'm going to use a past project as an example. We were more than half-way through the design when the union said, "We're not working with servers, only tape machines." ABC pushed back hard, but eventually lost. We were supposed to have only eight or nine legacy machines in the place. The final number was more than 100, plus the servers we wanted. It took six years to convince the union to let old broadcast machines go. And you know what? We still see some of that today. It's stupid because it's all going to be IP-based soon. The only solution for it is training.

LB: The sad thing about that is a lot of these engineers are going to go by the wayside because they're just not trainable. A lot of them are seniors, and they just can't understand the new IP tech. Unions have lost a lot of their power to this, too. This is a complete revolution, which is going to flip the whole production element on its head. It will require different people to do the job with a different mindset. It's going to involve cloud economies at a scale that people have never seen. It's going to be chaotic.

KH: So, as an architect, my question for you guys is: How is this going to change the facilities we are designing right now? How do I future-proof these things?

LB: First, they're all going to be smaller.

DW: COVID accelerated something here. The remote technology has really been a game-changer. Your footprints will have to accommodate transitory workers, people who only come in a few days a week.

LB: True, just look at how the Olympics was done. Even in the last few Olympics, there was much, much less happening on site.

KH: Yeah, the remote work thing. Architects have historically been an extremely collaborative bunch. Working and mentoring is best done face-to-face. How is remote going to affect that relationship? Do young people not actually need that anymore?

FB: A lot of it is simply technological change. The schools teach them how to use their machines super efficiently. I don't know how important mentoring is anymore, but I'd love to hear other opinions.

LB: There's an issue of culture clash, too, because a lot of young people don't want to go into the office. They want to do their work at home and have flexible schedules. There is a real dichotomy in our industry in that we need people in office seats, but the new generation doesn't want to be there.

KH: It's interesting as an outsider, seeing the tension in facilities during the transition to a digital workflow. There were IT guys and there were broadcast guys, and never the twain should meet. In fact, I did a number of rack rooms where we'd actually group IT and broadcast equipment together and then install a chain-link fence to separate them. That's clearly gone away. It seems to me like the IT guys won.

FB: I will say our single biggest issue, in terms of hiring at our company, is finding people that are skilled in IT and broadcasting. We call them purple squirrels and we're always on the lookout for them. I have station managers literally calling me, desperately asking if I know any engineers.

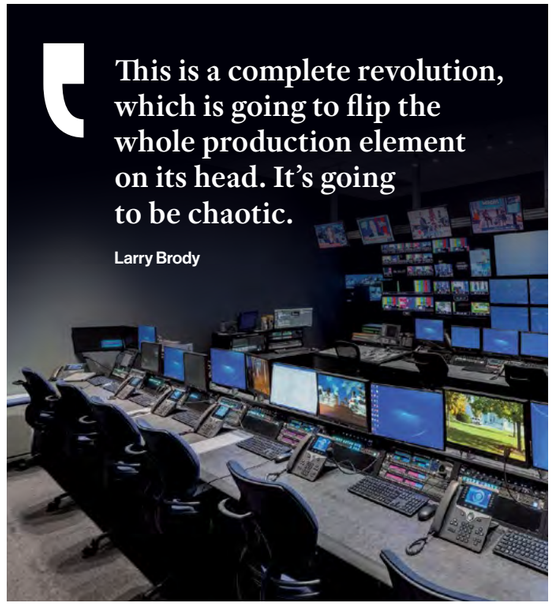
LB: There are none.

FB: The other issue is that kids entering the workforce today don't view TV as a hip industry to be in.

KH: Right, it always seemed to me that the other part of the tension was that broadcast engineers were, sorry to say, kind of cranky and particular. Which makes sense if you're responsible for getting the news on the air every day at 5 p.m. sharp. There's a tremendous amount of money and respect on the line. The IT guys had more slack. If 90-percent of the content got up there as it should, they'd feel that's ok.

DW: Yeah, they had a real "well the server's down" mentality about work back then.

LB: The thing that I'm seeing now is a whole division that works on the strategy of workflow. I mean, scores of people are working on that because no one really understands what the workflow should be. How many people do I need? What technology do I need to use? How do things get developed? It's extremely important, it may be the most important thing. Forget about buying equipment or anything else. If you don't know how your workflow is going to go then you're going to screw up. And that goes back to your question, Keith, about what kind of facility you're building. Until you know the workflow—who's going to be occupying the space, what they're going to be doing, how they're going to be doing it—the client doesn't know what to ask of the architect.



KH: Will low-cost stations define the technology and how things happen going forward? For example, we just designed a 25,000-square-foot regional news station. Our original design was two floors, 50,000 square feet. The client came back and slashed almost everything out of it.

LB: Nobody wants to spend the money if they don't have to.

KH: Agreed, the money that used to be there is not there.

DW: You know, the only network division that's growing right now is sports. And the largest growth on the streaming side is concentrated in sports, too. News departments and revenues are shrinking. Consumers are turning to their phones and the web for information. The whole model is changing and it's hard to predict where it's all going. The pace of change is just so fast.

I want to return to the post-COVID remote work question for a second. There's another perspective to consider: the quality of the work product. People editing at home don't typically have access to high quality tech for color correction, audio editing, etc. And you might think, well everybody's just lowering their standards, but I can tell you that Netflix, Amazon, and Apple have incredibly high standards. They are pouring millions of dollars into their color correction, audio mixing, and post-production rooms. You can't do that kind of work from home. The networks are doing the same thing for their sports divisions. Collaborative rooms are critical to them because they believe in delivering a quality product.

KH: Ok, but if I'm watching 90% of content on my phone, what do I care about all that finessing?

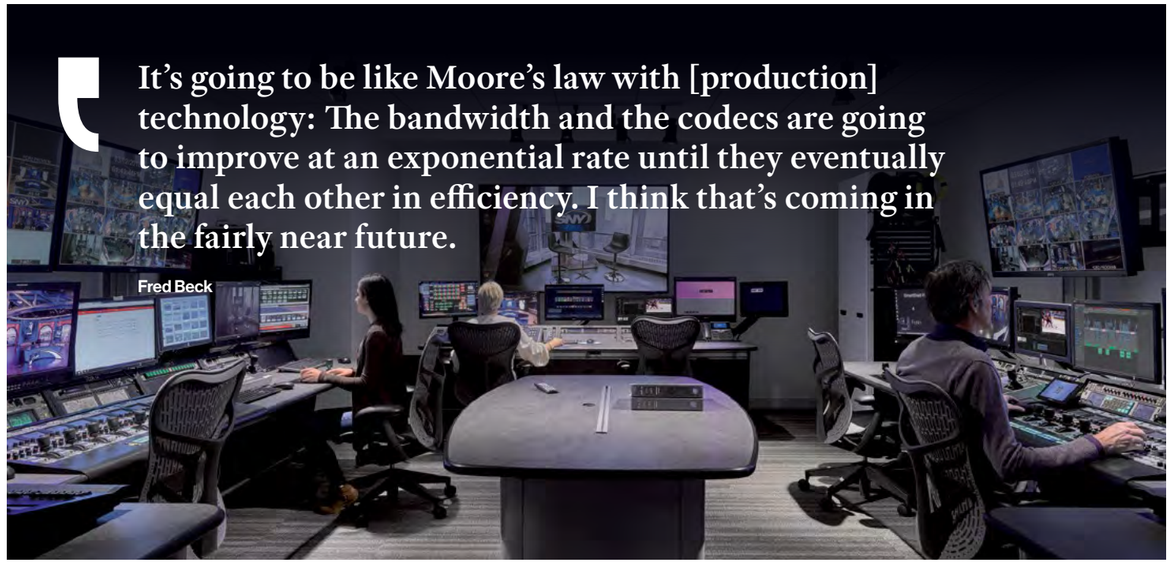
LB: That's just one market. The other market is the people who own big screen TVs capable of 4k, coupled with surround sound systems. Those people want quality. Same with the people who are watching things like the gazillion dollar Amazon Lord of the Rings show or Game of Thrones.

DW: With regards to broadcast news, the demographics skew old. Everyone else is getting it on their phones. But when it comes to things like the Super Bowl or World Series, people aren't going to watch that on their phones, in part because they miss out on all the ancillary info the TVs can display—statistics, odds, things like that. They'll use their phones to do their betting. It's a mixture of tech, and I think that's what we're going to keep using for a while.

KH: Here's another question: When do satellite antennas go away?

FB: Don't hold your breath.

LB: It's going to be a while. Fiber is great, but people are still using satellite.



KH: Alright, here's another one: Are news trucks going to be needed in the future?

LB: Bigger stations use them because they need to be able to cover stories at a certain quality level and they don't want the guy on the street with the iPhone to be their only option. But I think they'll transition away from trucks as phone cameras and laptop software gets better and better. Or people accept lower quality audio/visual content. But it's going to be awhile.

KH: Do you guys think there will be engineering shops in the future?

FB: I think there'll still be shops, but they're going to be different from the ones we worked in. TV stations still have to maintain shops because they're really rough with their news equipment. But for sports facilities, they're not needed.

LB: There might be shops, but they'll more likely have limited IT diagnostic equipment. Quite frankly the equipment is so complex and specialized nowadays, you can't repair it anyway. All you're doing is replacing circuit boards or letting the manufacturer's IT people run remote diagnostics.

DW: I think a lot of that space that used to be for shops is now going to be used for storage. FedEx and UPS used to ship you things overnight, but that isn't the case anymore with all these part shortages and shipping delays. To keep a studio running, you're going to have to have parts stored for quick fixes.

KH: Ok, let's talk COVID. As you guys know well, when COVID hit in spring 2020, everything sort of spun out of control with regards to remote production. REMI had started before COVID, but it really took off during the pandemic. It's come to light that there's been all sorts of workflow and technological issues with it. So, taking all that into account, what do you guys think is going to stick around?

DW: The question comes down to: Is the bandwidth there where you need it and is it reliable? COVID forced us to find an answer to that question quickly. The technology is there. Making TV remotely is very doable. I don't see us ever going back to a situation where you have to have 100% of your staff in the building to do a show.

That tech benefit mostly comes from fiber and how quickly it can transport signals. Fiber is the best way to get the lowest latency. But there are other options, too. We've been experimenting with Elon Musk's Starlink satellites. We can get a signal out and back in 22 milliseconds. I think with these tools we'll really be able to make TV anywhere. A station will be nice to have but not a technological necessity.

FB: I agree with everything Darrell said, and I would add a couple of things. There are so many different ways to get from point A to point B now: fiber, satellite, bonded cellular, Starlink. There's going to be more and more of those sorts of technologies coming in the future. The tools and equipment just keep getting better and better. It's going to be like Moore's law with this tech: The bandwidth and the codecs are going to improve at an exponential rate until they eventually equal each other in efficiency. I think that's coming in the fairly near future.

LB: I think you guys have hit the nail on the head. News production is almost always now bonded cellular. People are out with their iPhones doing local news and getting it back to the station through bonded cellular or even some crappy iPhone transmissions. All the big networks still have and use satellite dishes because they've got them and they're expensive pieces of machinery, but I predict in 10 years they're going to be relics.

JG: So, what do you guys think? What's the forecasted lifetime of broadcast relative to streaming?

LB: It's an interesting question. For years I heard that ATSC 3 was going to be the savior of local broadcasters, but I have seen miniscule returns. Darrell's right: Streaming is the coming thing. The local stations will still put out their content, but it's not going to be delivered via over-the-air broadcast to most people. It's going to come through streaming.

JG: I've noticed that shift. Some of the big networks have moved their programming to streaming entirely. Dancing With The Stars on ABC, for instance, is streaming only now. That's a big show.

LB: Even Amazon's got Thursday night football now. But look, I wouldn't discount local broadcasters entirely. They're going to have their place, but it's going to shrink.

FB: The one thing that won't change is content. The more channels you have, the more content you have to have. Sports are bigger than they've even been right now because they have fresh content, fresh meat, all the time.

LB: Content has always been king. I know personally I am overwhelmed by content right now. I've got a bunch of different ways of getting content into my home, but I never know where to go. There's no universal or accessible way of searching for the things you like and getting a reliable recommendation. I think the viewing public is overwhelmed by the pathways to and varieties of content.

FB: A lot of mediocre content out there, too, unfortunately.

DW: Let's take a look at where our conversation's gone here. We started talking about engineering and systems integration and all that stuff, and now we're talking about content. Content is king and it's where the dollars get made and where they get spent. Really, the thing that distinguishes Amazon, Netflix, and Apple from each other isn't the tech. It's content.

JG: What do you guys think about the life of cable? When will the demise of cable happen?

FB: I think the real key here is it's going to actually divide into those things that need over-the-air transmission and those that don't. Some things will always benefit from broadcast bandwidth. So, it's here to stay, but it will change.

LB: Well, your cable's going to become your Internet provider. They're not just the TV provider, they're also the internet provider. And that's how they'll keep everything else alive. That's what's going to save them. So, John, the answer to your question is we have no idea. Like Keith there, we have no idea what the heck is going to happen in 10 years.

By far the biggest cloudy area in my mind is what is entertainment going to look like? What are they going to try to sell to us that they're not selling to us now and how are they going to present it to the audience? That's going to be really interesting. And my bet is that we're going to see entities become powerhouses that aren't even in the business right now. When you have trillions of dollars in the bank, you have to figure out something to do with it. Entertainment and media are always good places to put your money, if you've got a good idea.

DW: So, here's a question for you on that one, and it will steer us back to the technology discussion. How much of a sell is the technological quality of the content? Is someone going to decide about watching a program based on how it's presented? Can you really tell the difference between a 1080P and a 4K that's been properly handled? Amazon, Netflix, Apple, all of them have 4k production and immersive sound as their standards.

KH: Do you think they're doing 4K for now, or are they doing that with a mind towards archiving?

FB: They want to archive 4K, even if they can only put 1080P over the air, because in the future they'll have all this 4K content.

LB: Every LCD TV that you buy right now is 4K capable. Eventually you'll be able to get everything in 4K. So, the real question is: If something a viewer wants to watch isn't in 4K are they going to forgo it? Probably not, in my opinion, because if the content is what they like, if it's important to them, they're going to watch it. They won't settle for poorer quality on a regular basis, but on occasion they'll go downstream in order to get what they want.

KH: I figured it was for the library aspect. You can convert a film to digital and you know the quality is still good cause 35 millimeters is high resolution. I figure the 4K is the TV analogy to that reasoning.

DW: You want a shock to your system? Go back and look at some NTSC content. Before that we had RGB and before that we had black and white. Everybody had a thousand lines of resolution in the black-and-white world and then we threw NTSC in there. Next thing you know you got 320 lines. It was ridiculous. Find a baseball game or a football game in NTSC and see if you can stomach it.

FB: Well, Darrell, remember: You're a very sophisticated watcher. Everybody on this call is very sophisticated watcher.

DW: That's why I asked the question: How important is that technology? That advancement?

LB: I don't know if you guys have been watching the Amazon presentation of the Lord of the Rings. It is stunning. There's no way you would ever watch that in NTSC. O LED 4K is the only way to go. It blows me away and I'm critical watcher.

DW: You know what that reminds me of? The planned obsolescence in the computer industry. Because computers and software just keep getting better, and you have to constantly upgrade or replace them to get the best performance. I think the TV industry is trying to follow the same path. Back in the 70s, 80s, and 90s, you bought a TV set and used it until it burned out. Nobody does that anymore. With NTSC, it was the same standard for all those years, and it was compatible with pretty much every model.

LB: I think the consumer industry has a real problem, actually. Back in the day, I was the guy who went out and liked to buy the latest and the greatest. But I'm done, you know? I've got my 4K TV, I've got my Dolby Atmos. I've got a room-optimized setup to do it. I'm not going out and buying anything for a long time. And that's a problem for the consumer industry because the people are saturated with technology.

KH: We're near the end here, gentlemen. Any final prognostications?

FB: Every time I try to predict how things will change, throughout my entire life, I always get it wrong. I think things are going to happen sooner or later than they actually do. I've never been right so far.

LB: Here's my prediction: Content drives the technology, not the other way around. So, as we go through the next decade, the kind of contract content that's produced and the way it's delivered is going to be driven by the content producers and what they want. And what do they always want? A cheap, quick, high-quality, blockbuster hit every time. There's going to be many, many more sources of content in the future, more ways of getting it in front of people's eyeballs. It's just the way of the world.

DW: I'm going to amend my last statement, Keith. Larry nailed it. It's content. When I sit down with a client, the first thing I always ask him is: "What are you trying to produce?" Then we get into questions about workflow, etc. The very last thing that I apply is technology.

KH: Well, I think this is a good place to end. John and I really appreciate you guys spending time with us to discuss these issues. Both of us love to be involved in the design of media production facilities but as folks trained as architects, we look at the technical issues as outsiders. It has been great to discuss the past, present, and future of this industry with three of the most accomplished guys we know. Thanks.

Other Voices

Another element of this years Index is a small survey with some of the people we know who have also worked hard in the trenches over the last few years of upheaval, asking them to tell us where the Media industry is headed. The question we asked was:

> **Given where we are today, what do you see as the three most important production or technical lessons learned during the recent pandemic events that will permanently change the way content is produced in the near future?**

"Content can be created anywhere, Content can be created nowhere... The key question is what quality of broadcast is deemed acceptable by each broadcast entity as this has varied wildly during the pandemic. Will it be an iPhone with a ring light from B&H in front of a bookcase or green sheet, OR will a higher quality picture and environment be desired?

In the early 2000's "VR" broadcasting environments were all the rage. The technology has matured and the building of VR broadcast environments (even with full video walls/floors/ceilings) is once again a very hot topic. Will the use of this technology have a greater impact on the built broadcast environment by replacing fixed realistic scenic environments with multiple virtual ones?"

Mark London, LDG

"Planning and organization meetings are going to be done via Zoom and similar meeting sites forever. Far less on-site meetings are needed. Decentralized production and remote production technology including new remote camera control tech will continue to improve and be used wherever possible. Newsrooms will be more and more like offices with IT at the core. Interlink recently rebuilt a News Room that we originally built 16 years ago. We removed a few thousand cables and replaced them with 60 Cat6 cables and a bunch of Wi-Fi access points."

Bruce Allen, Interlink Network Corporation

"The re-definition of remote production: The pandemic redefined remote production as working from home. Cloud production enabled a lot of the functions in the production workflow to be able to do their work from home. The pandemic forced us to break paradigms and showed the industry even large scale events can be accomplished this way without putting the quality at risk.

The flexibility / inflexibility of traditional production spaces will change: during the pandemic we realized how inflexible traditional production spaces were and how difficult it was when we had to provide 6 ft of separation when time came to go back to the office. I believe future production space designs need to be way more flexible in the configuration of space."

Olek Loewenstein, Univision

"The beginning of the pandemic created a pause, a reset of sorts that held up production while new methods needed to be created that could enable staff members to produce and report from their homes. Now that the pandemic has been extended for over two years, we're finding a myriad of approaches being used to enable remote production (VCC, hardware-based approaches, consumer applications) - and these are not going away. The cost savings are significant, the speed of production increased, and conveniences to staff are too favorable to go back to the old methods."

Larry Thaler, VCC

"Throughout the pandemic we lost a lot of the human connection and found many of our presenters were suffering to tell the story without seeing or hearing the audience. How do we make sure that the presenter can engage with their audience? When we have returned to in person events and I see a permanent shift in equalizing the in-room and remote audience engagement."

Ian Sellers, Google

"The three areas we see the greatest change from an integration and construction standpoint are:

- *Control rooms will continue to become segmented.*
- *The need for studios will continue to shrink*
- *Equipment rooms will be smaller and lighter.*

Copper is being replaced by glass. Virtualized machines are replacing big iron, and bandwidth costs continue to decline. All of this means that operators will be able to do more in less space."

Paul Kast, Beck TV

"Maintenance hurdles arrive fast when forced to scale back technical personnel and there are less people available to monitor for quality control. If the last two years have taught us anything, automating your production space is achievable but with it comes a new series and maintenance challenges. Today's most effective weapon against solving problems is knowing who to call and maintaining ample stock of spare parts. Manufacturers simply do not have the stock on hand to respond in a timely manner."

John Gebbie, Barbizon Lighting Company

Cost Index

Purpose of This Report

Cost Outlook

HLW, together, with supporting data from Turner Construction Company and Benchmark Builders LLC, has issued this report to assist anyone involved in the broadcast and media content production industry in determining probable costs for the creation or alternation of a content media production facility. The data contained within the report is designed to help with bracketing and benchmarking probable facility construction and project costs, including design, construction, renovation, and furnishing. This document is conceived as a benchmarking tool and is, therefore, not designed to replace a detailed cost estimate prepared during the course of a specific project. Rather, this document is intended to help you set a target and subsequently measure progress.

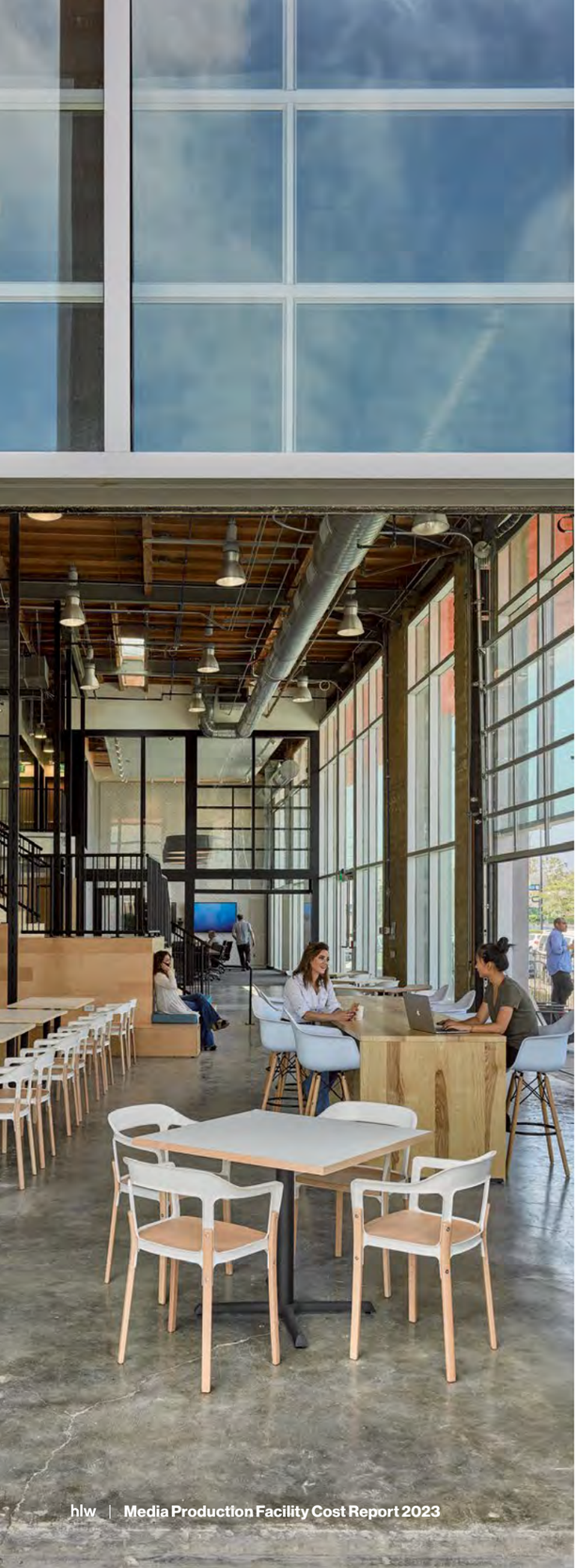
A NOTE ON HOW TO USE THIS INDEX

The ranges of cost provided in this report have been indexed to the average cost across the US.

The map of the US on Page 18 provides the City Cost Index for major cities (based on R.S.Means City Cost Index table for Q3-2022). Instructions on how to index the cost between cities are provided on that page. Note that indexing provides an approximate estimate of the cost. The actual costs for a particular location may vary greatly depending on the current marketplace, the type of construction, and the actual location and its relationship to major cities.

Methodology

The benchmarks shown in this document are derived from current market pricing and indexed for the average cost in the US. Accounting for future market fluctuations in each location is critical when benchmarking and budgeting new projects. The Turner Building Cost Index is a national building construction index based on the following factors; labor rates and productivity, material prices, and the competitive condition of the national marketplace. Since Q3 2021, annual building construction costs have escalated 8.6% while local markets have varied greatly. Historically, escalation ranges from 1.00-1.25% per quarter nationally. Some regions, especially in the past two years, have experienced unprecedented escalation two to three times this national average. When forecasting costs into the future, we suggest applying escalation to the mid-point of the project schedule.



Outlook 2023

As widely reported by the US commercial building construction media, construction costs have increased steadily in recent months when compared to previous years. As of the writing of this report, costs have increased approximately 8% – 12% overall from 2021 to 2022. Although some leveling off is expected, early indicators show construction costs may increase another 4% – 6% in the coming year.

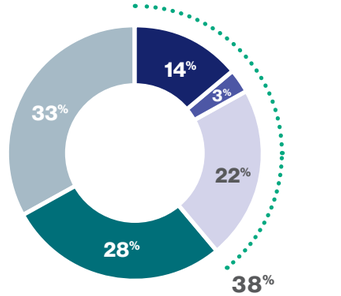
Due to a buoyant construction economy, we do still expect projects to commence in earnest, as interest rates are expected to continue to increase. We expect this to occur despite the fact that some locations are still experiencing elevated costs and the markets are only beginning to normalize after experiencing highs.

Because pricing is continually on the move, the short to medium term outlook suggests cost advantages in bidding a construction project now rather than waiting for the market to move higher.

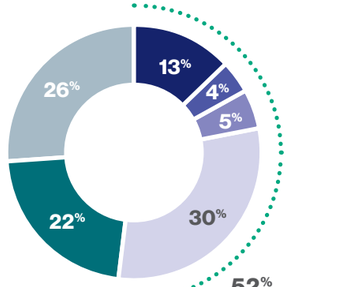
Read the Stage Benchmark Study

Broadcast Facility Benchmarking

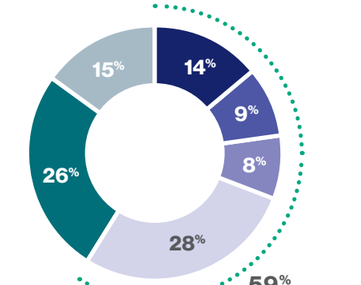
Regional Television Station
52,031* USF



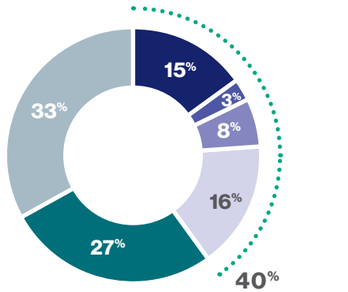
Major Market Television Station
92,611* USF



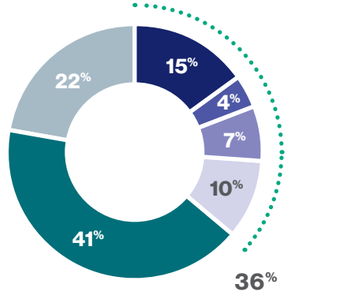
Network News Bureau
30,508* USF



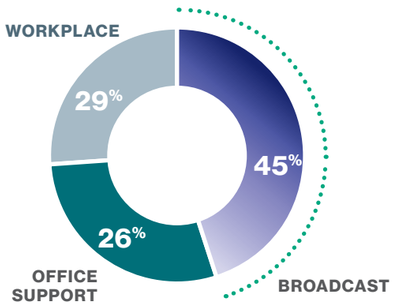
Media Content Production Network
68,960* USF



Regional Sports Network
51,465* USF



Space Type Average



Key

BROADCAST
- Content production
- Post production
- Distribution
- Production support

WORKPLACE

OFFICE SUPPORT

*Circulation distributed throughout total USF

Workplace + Broadcast Facilities

Construction Cost Ground Rules

Construction Costs

All hard construction. As a test, imagine raising your building into the air and turning it upside down. Whatever components don't fall out (or rattle around within the building) are considered part of the hard construction cost.

For the purposes of this report, when a broadcast and media production building is considered, construction costs also include the following aspects of a building.

- Walls and isolated wall assemblies
- Doors and acoustic doors
- Acoustic isolation and treatments systems
- Ceilings and isolated ceiling assemblies
- Mechanical systems and redundancy requirements
- Electrical power and distribution systems: service side transformers, backup generators, grounding systems, and UPS, PDU, and ATS systems
- Plumbing systems
- Fire protection systems: sprinklers and sprinkler booster pumps, pre-action systems, and clean agent systems
- Architectural lighting
- Raised and accessible floor systems
- Broadcast lighting: grids, trusses, transformers, and DMX cabling and circuiting (but dimmer systems and racks do not apply)
- Long span construction to create studios and other double height spaces
- Pathways, conduits, cable trays, and termination panels for broadcast, IT, and telecom systems are generally included. However, the actual cabling, racks, rack gear, servers, local interface devices, control surfaces, and computers are not included.
- Building management and automation systems
- Basic building commissioning
- Pantries or non cooking cafe; no cooking or kitchen/servery space

General Contractor's overhead/profit or construction manager's fee/general conditions vary dramatically by locale and contract type. These must be determined and added to any budget.

Finally, it is also customary and prudent to include a design contingency in the construction cost.

What do you get for interior spaces per square foot

$140 – $170 per square foot

- Carpet (material cost $20/square yard) VCT
- Flooring, vinyl base, ceramic tile
- No minimal millwork (plastic laminate finish)
- Basic drywall construction
- Standard 2ft x 2ft acoustical ceilings
- Standard hollow metal doors and frames
- Minimal lighting
- (2ft x 2ft, 2ft x 4ft or high hats)
- Minimal architectural finishes
- Standard paint finished
- Basic wall covering
- No exposed duct work
- No exposed structural elements
- No interconnecting stairs
- No slab openings
- Standard pantry appliances

$200 – $260 per square foot

- Custom carpet
- (material cost $40-$50/square yard)
- Carpet tiles
- Custom Millwork
- Detailed drywall construction
- Sheetrock or acoustical ceilings with soffit and fascias
- Custom doors and frames with sidelights
- Extensive array of lighting fixtures
- High End architectural finishes
- Specialized paint finishes
- Custom wall covering
- Exposed Duct work (round, oval)
- Exposed structural elements
- Interconnecting staircase
- Slab penetrations
- Ornamental metal
- Architectural glass
- Access Floor

Major Purchased Items

The following major purchased items are not included in the construction costs.

- General furniture. Items, such as desks, workstations, chairs, conference room furniture, furniture for common or break areas, file cabinets, coat hooks, artwork, etc., are considered "general furniture." In addition, we consider items generally referred to as "FF&E," or furniture, fixtures and equipment.
- Broadcast, IT, Telecom, and computer cabling
- Telephone system, paging, and security systems
- Desktop office computers
- Broadcast technical equipment: racks, rack gear, servers, local interface devices or control surfaces, consoles, and computers
- Broadcast lighting systems, including dmx systems, dimmer panels or racks and lighting instruments
- Audio visual equipment
- Moveable or benchtop testing and repair equipment
- ENG or microwave communication equipment
- Set construction or installation
- Antennas, antenna design and surveys, and satellite dish equipment
- Signage
- Artwork
- Expanded or extended commissioning

The Total Built Area
Construction cost measures are based on gross square feet, which constitutes the total built area. Net, or usable area, is only a portion of what you are building.

Total Project Costs

Total project costs include the sum of all of the costs necessary for an owner or client to build a project. These additional non-hard construction costs (listed below) are referred to as "soft costs." The predictable range of soft costs includes the following items.

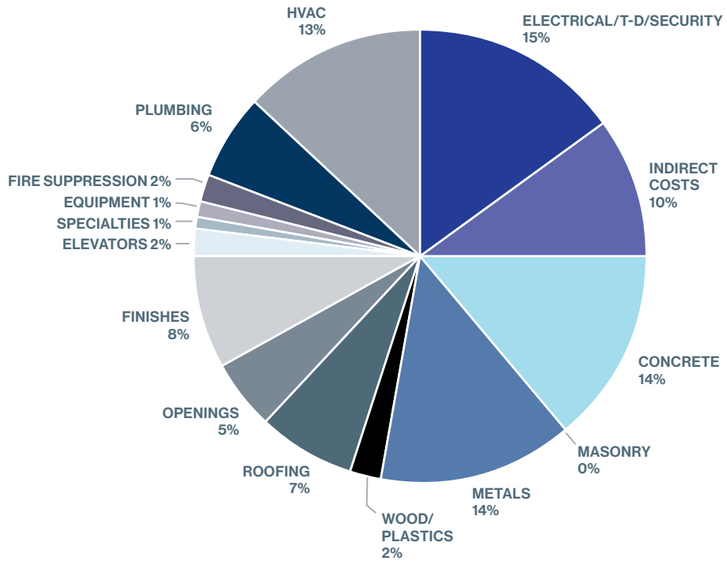
- Architectural and engineering design service fees Other consultant fees
- Project Manager fees
- Set design fees
- Broadcast technical design and integration fees
- FF&E (see items listed under "Major Purchased Items")
- Program Manager fees (if part of the project)
- Construction change orders and owner's contingency
- Legal fees
- Permits and filing fees
- Enhanced Commissioning
- Hard Construction Costs
- Antenna purchase, installation or filing fees

The unpredictable range of project soft costs can include land costs, financing costs, moving costs, and relocation and/or business interruption costs associated with renovations. Together, these expenses could exceed the cost of construction. Critically, these costs are not under the control of the consultants or construction professionals, hence the lack of predictability.

Construction Costs and Predictable Overall Project Costs

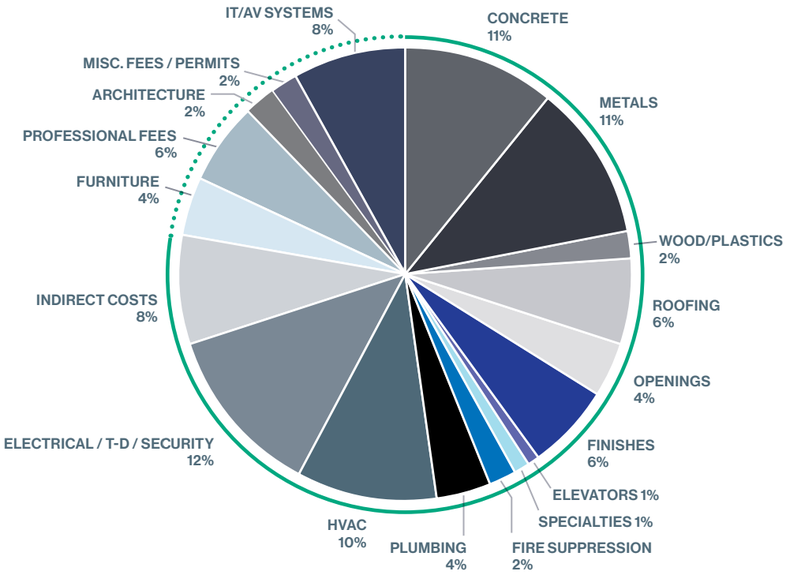
- New construction, excluding land and financing, ≈ 70% – 80% of project costs.
- Renovation construction cost ≈ 65% – 75% of project cost.

Rules of Thumb for General Technical Interior Construction



Total Construction Cost

22% SOFT COSTS



78% HARD COSTS

Total Project Cost

Workplace + Broadcast Facilities

WORKPLACE

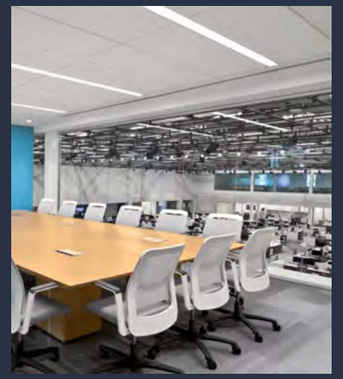
Cost per s/f
$303.50

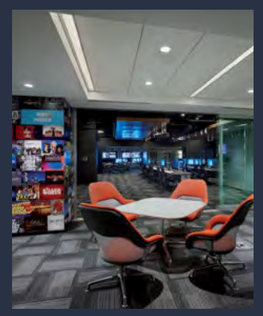
Workspaces

- Private Executive Offices
- Private Standard Offices
- Workstation standard
- Workstation touchdown
- Open Collaborative Areas

Amenities and Support

- Conference Rooms
- Board Rooms
- Meeting Rooms
- Team Rooms
- Rehearsal Hall/Lounge
- Third Place
- Huddle Room
- Focus Room
- Telepresence Room
- Reception
- Executive Reception
- Screening Room
- Pantry
- Cafeterias
- Vending Areas
- Coffee bar
- Training Room (35 Seats)
- Coat Closet
- Copy/Print Alcove
- File Room
- Mail Distribution
- Storage
- Security Room





PRODUCTION

Studios Cost per s/f
$450.00

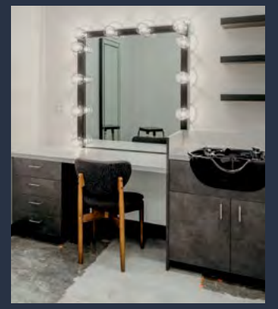
Studio Support Cost per s/f
$400.00

Studios

- Studio
- Photo Studio
- Insert Stage
- Flash Cam
- News Studio

Studio and Production Support

- Dressing Room
- Fitting Room
- Maintenance
- Rehearsal Hall/Lounge
- Studio Staging
- Storage
- Dressing Room
- Green Room
- Make Up
- Wardrobe Room
- Carpenter Shop
- Lighting Room
- Maintenance Shop
- Maintenance/Repair
- Spray Paint
- Staging
- Storage
- Audience Reception
- Audience Restrooms
- Audience holding
- VIP holding
- Prop storage
- Studio Loading Dock



Workplace + Broadcast Facilities

TECHNICAL OPERATIONS & SUPPORT

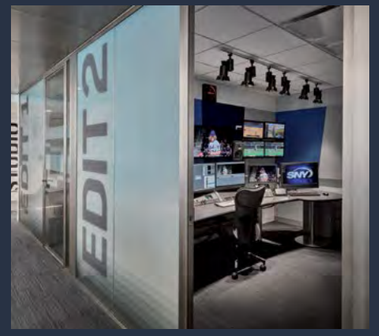
Cost per s/f
$502.50

Control Rooms

- Large Control Room
- Small Control Room
- Audio Control Room
- Video Control
- Video Shading
- Audio Sweetening
- Master Control

Post and Support

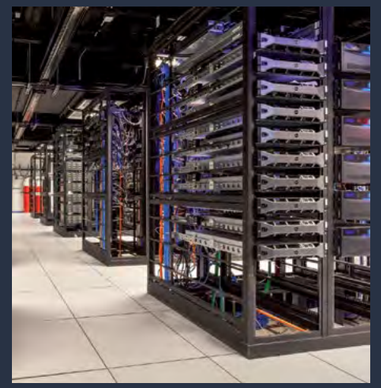
- Audio Control Room
- Audio Booth
- Edit - Typical
- Edit Room - DOM
- Edit Room - Enhanced
- Edit Kiosk
- Edit Room - Graphics
- Media Lab
- Media Library
- Media Room
- Media Storage
- Record Library
- Support
- Transmission
- News Digital Live Stream
- Rack Room
- Screening
- Data Room
- Dimmer Room
- LAN Room
- Radio Tech Space
- Server Room
- Telecommunications
- Transmission



BROADCAST TECHNICAL & MEP AREAS

Cost per s/f
$1,400.50

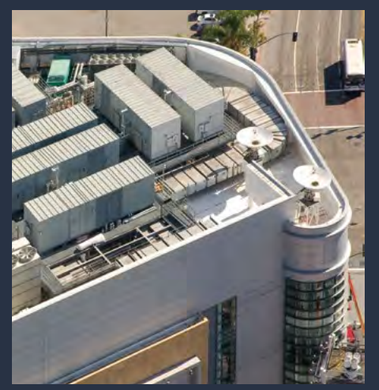
- Base Building Mech. Room
- Electrical Closet
- Tel/Data/Closet (IDF)
- MDF Room
- Electrical Closet
- Fire Command Room
- Studio MERs
- Central UPS Room
- Utility Service Space
- Electrical Room
- Life Safety Switch Gear
- Telephone Room



INFRASTRUCTURE UPGRADES

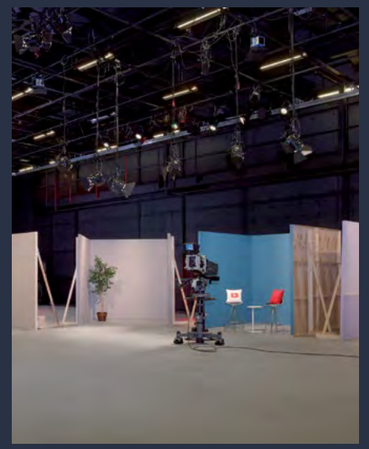
Cost per s/f
$125.00

- Base Building Mech. Room
- Electrical Closet
- Tel/Data/Closet (IDF)
- MDF Room
- Electrical Closet
- Studio MERs
- Central UPS Room
- Utility Service Space
- Electrical Room
- Life Safety Switch Gear



Large Scale Film Facilities

Large Scale Film Facilities



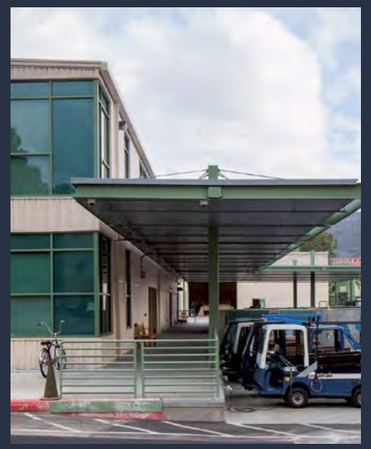
Stages:

$475/GSF – $575/GSF

Primary Variables:

HVAC Strategy / Capacity and Local versus Central Systems

- Stages will be constructed in buildings approximately 36,000 SF ea. and have 35-0' clear height.
- Stages are constructed using tilt-up concrete construction or precast concrete. The roof structure is assumed to be steel truss.
- Stages have wood framed catwalks, elephant stage doors, sound locks/ vestibules at the stages entries.
- Budget assumes construction of multiple Stages.



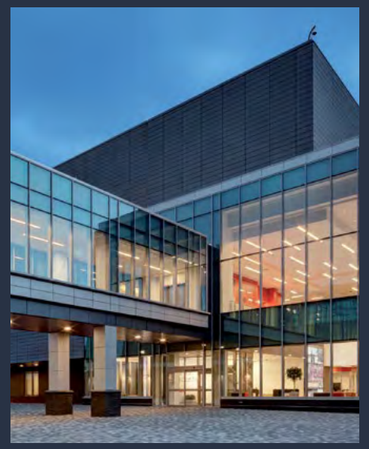
Production Support Buildings:

$430/GSF – $565/GSF

Primary Variables:

Fit-Out Level of Quality / Façade Design

- Production Flex Building budget assumes a 3-story structural steel building with punched windows and Plaster/articulation.
- Budget includes all the tenant improvements, including dressing rooms, showers, make up rooms, green rooms, open office space and some individual offices/conference rooms, and restrooms.
- Budget assumes a 30–40K GSF building.



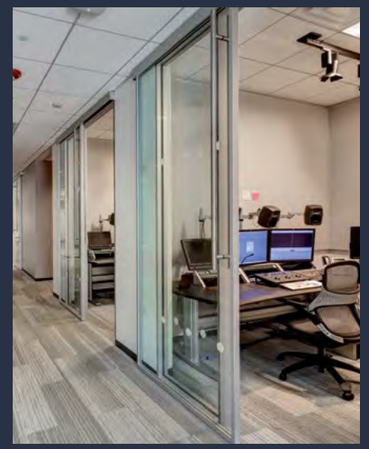
Production Office Base Building:

$275/GSF – $350/GSF

Primary Variables:

Fit-Out Level of Quality / Façade Design

- Budget based on a 4-story structural steel framed building with punched windows and plaster/articulation.



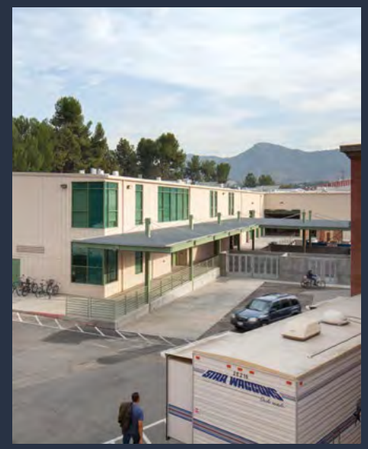
Production Office Interiors:

$125/USF – $175/USF

Primary Variables:

Fit-Out Level of Quality / Closed versus Open Office Plan / Office Fronts

- Budget includes open office space and some individual offices/ conference rooms, and restrooms.
- Level of finish and amenities along with proportion of open and closed workspace will affect final cost.



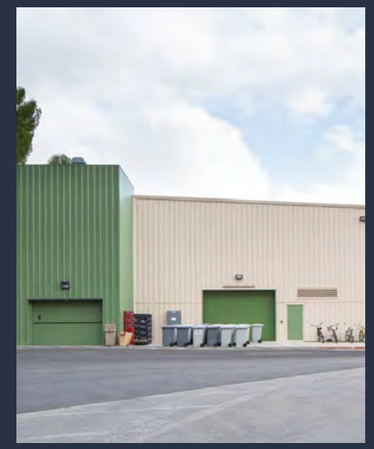
Onsite Parking:

$15/SF – $25/SF

Primary Variables:

Green Space / Storrmwater Requirements / Site Lighting and Power

- On grade parking, to allow for parking for the talent trailers/module buildings, including drainage & site lighting.
- Budget assumes a combined Basecamp and parking of approx. 200,000 sf.



Mill Building:

$125/SF – $200/SF

Primary Variables:

Interior Service Areas / Mezzanines / Façade Design

- Budget based on using Pre-Engineered Building (Butler type) for the building structure, exterior wall metal panels & Roof panels.

Read the Stage Benchmark Study

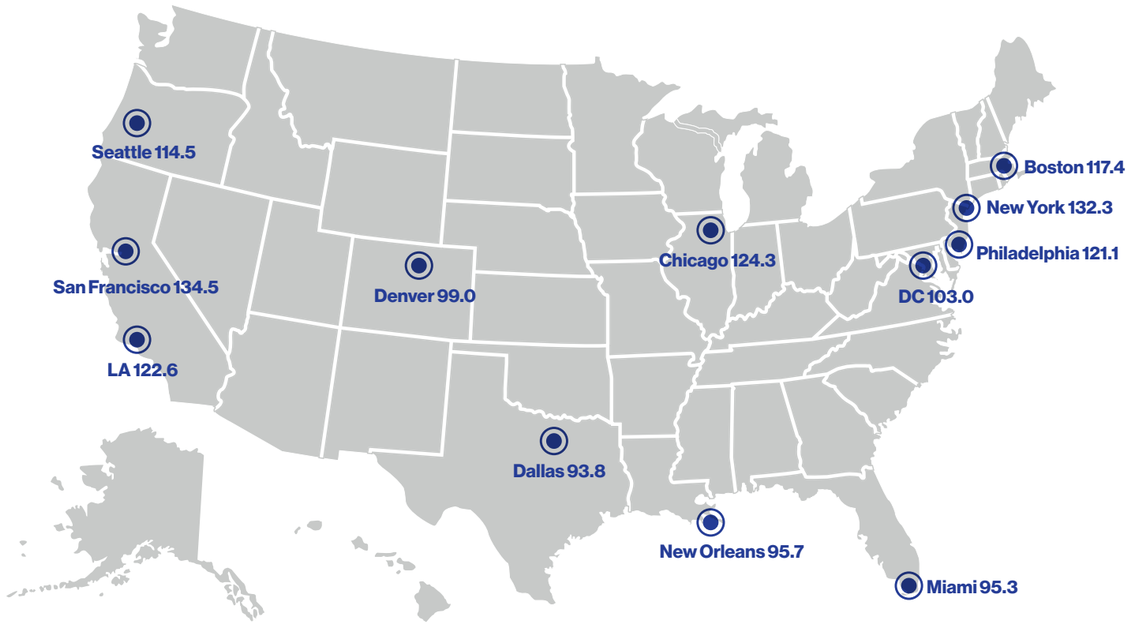
Outlook By Location

Baseline City Index: 100

Source: RSMeans City Cost Index Q4-2022

To index the estimated cost between cities, divide the current city index by the proposed city index.

For example; NYC to LA = 129.1/113.2 = 1.14. NYC Project Cost divided by 1.08 equals LA Project Cost.



MAJOR CONCLUSION

"A focused and strategic approach to procurement that engages designers, contractors, suppliers, manufacturers and clients reduces the risk of price escalation and produces the most competitive results for our clients."

Attilio Rivetti Vice President – Turner Construction Company

Contact Us

Written by Keith Hanadel, Principal Media and Entertainment and John Gering, Managing Director of HLW International LLP, with research by Gregory T. Smith, Vice President – Director of Preconstruction for Turner Construction Company and Jamie Cassara, Director of Estimating for Benchmark Builders.

HLW International, a 134-year-old design firm with practices in architecture, interior design, planning, and consulting, collaborated with Benchmark and Turner to develop our Media Production Facility Cost Report. This index has been created to assist decision-makers as they plan for the future. The index is an efficient tool for the assessment of cost options for facility changes under consideration.

The index takes into account the typical characteristics of the type of space needed, the level of infrastructure required, the estimated costs of individual components in the space, and what materials can be provided within various cost ranges.

A series of companion charts have been developed to guide broadcasters and production facility professional in the preparation of budgets as this work is considered.

Special Thanks To:

Brue Allen, Fred Beck, Larry Brody, Jamie Cassara, John Gebbie, Paul Kast, Olek Lowenstein, Mark London, Ian Sellers, Greg Smith, Mark Romanski, Larry Thayler, Fred Sacremone and Darrell Wenhardt.

Read the full interview here

Read the Stage Benchmark Study

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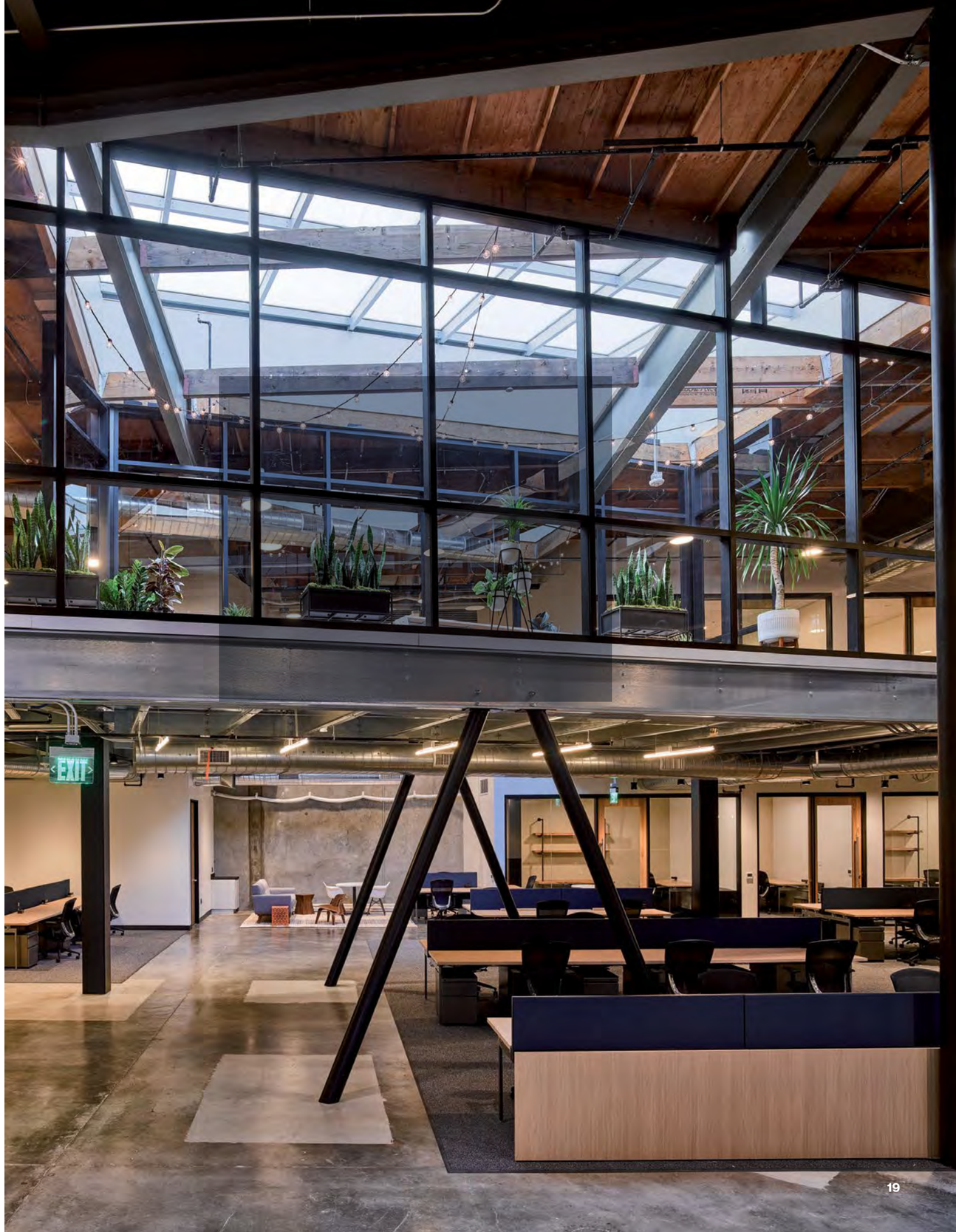

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