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This is the last time that I will write an article as President of ASPE. Needless to say, this has been one of the most trying years. Given all the restrictions imposed on us by COVID-19, I feel that we have weathered the storm. Many of the chapters have had success with Zoom meetings as well as all the regionals have used this format.

Many long and intense discussions have been made as to whether or not to conduct our Summit this year and the Board decided to hold a Hybrid Summit. We welcome all members who would like to travel to San Antonio to attend in person, however everyone will have the opportunity to attend virtually if they wish. Information and dates for the Summit are included in the publications as well as emails being sent out to the membership. We look forward to a great Summit and the production systems will provide a great presentation.

Great steps have been made by the Ad Hoc committee in developing the Learning Management System (LMS). Contracts have been developed for both the content developers as well as the presenters. The necessary software to make the systems work properly is being purchased and will be installed. Systems and procedures are in place to start the production of the programs and the final implementation of the LMS. Everyone involved in the LMS System feels that this will be a great asset for ASPE.

I would like to congratulate the incoming Board of Directors. This is a great team of individuals and they will lead the Society to the next level. Good luck to all.

To all the members of ASPE, I would like to thank you for your support during my time as President. We all must admit that the last year and a half has been trying. Going forward all hope is that things might get back to something close to normal. I look forward to the time that we can sit down and talk as well as rekindle old friendships as well as make new ones.

We will continue to strive to make this Society the construction industry’s leader and recognized authority in professional estimating. Communication between Board Members and Membership is a high priority. Your thoughts and feedback are extremely valued.

Please communicate with a Board Member.

Melvin D. Cowen, CPE
ASPE National President
2019-2021

Connect at:
Mel@Cowen-Est.com
Cowen Estimating & Construction Service
Chapter 7 – Chicago
Welcome to Our New Members (February + March)

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Membership Classification Count (as of 04/20/2021)

- Affiliate: 49
- AEP: 36
- CPE: 461
- Estimator: 608
- Fellow: 23
- Honorary Member: 7
- Member Emeritus: 49
- Student: 31
- Total: 1,264

Congratulations to New CPEs + AEPs (February + March)

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Estimating: Beyond Crisis
August 25 – August 28

The Westin Riverwalk – San Antonio
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Home of the Alamo

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Heavy Civil Estimate in the 1970's

This paper is intended to inform the reader of the method I used, prior to computerized estimating, to prepare the Government Estimate for one of the largest and most complex excavation projects ever proposed. The project was one of several projects for construction of the Tennessee Tombigbee Waterway, a 234-mile waterway built from 1972 to 1984, by the Nashville District and the Mobile District of the US Army Corps of Engineers. The Mobile District constructed the southern 195 miles of the waterway, including nine locks and dams. The Nashville District excavated the northern 29 miles of the project, including the massive 27-mile divide cut, which connected the waterway with Pickwick Lake on the Tennessee River.

This paper concentrates only on the excavation portion of the Divide Cut Section of the Tennessee Tombigbee Waterway, designed and constructed by the Nashville District. This contract consisted of the excavation of 95,000,000 cubic yards of earth, the placing of 1,000,000 tons of riprap, the construction of approximately 75 concrete drainage structures, and various other bid items. The total amount for this estimate was $242,857,000 in 1976 dollars, without profit (Government Estimates for Civil Works projects do not include profit and the award range is up to 125% of the Government Estimate). Using the Corps of Engineers Civil Works Cost Index System (Engineering Manual 1110-2-1304) the cost can be updated to 2020 cost as follows: For Channels and Canals – 3rd Qtr. 1976 = 230.14.; 3rd Qtr. 2020 = 931.46. Calculation = (931.46 / 230.14) x $242,857,000 = $982,930,000.00 in 2020 dollars.

During this time period there was concern about the availability and cost of crude oil. The contract period of performance was five years and did not allow for any escalation of the contract price due to the future price or availability of crude oil. Therefore, any diesel price escalation would need to be estimated by the bidders and included in the estimate. This required the calculation of the total amount of diesel fuel per year to be used by the construction equipment during the performance of the contract.

Quantity Takeoff

The Divide Cut Section was 27 miles long with a bottom width of 280 feet, side slopes of 1 on 2. The deepest cut was 175 feet at the divide. The bottom section slopes were to be covered with riprap for slope protection from waves generated by tug boats and barges. Berms were constructed every 50 feet vertical on the side slopes for access during and after construction.

My estimate divided the length of the cut into sections so that the volume of excavation in each section would match the volume of the disposal areas to be used by that section. Haul distances were calculated from the centroid of the excavation section to the centroid of the spoil area based on the estimator’s judgment as to the shortest haul route in order to obtain the best fleet productivity. The profile of each haul road was drawn on large sheets of graph paper and sections were then drawn through each change in alignment or major change in elevation. A planimeter was used to measure the area of each section. Using the average end area method, the amount of cut and fill required to construct the haul roads was calculated. The width of each haul road was determined to be 60 feet in order to allow two-way traffic of the equipment. The estimator determined that two feet of crushed stone would be required to support the equipment over the life of each haul road. The surface area of each disposal area was calculated by the estimator to arrive at the seeding quantity required after the disposal area was completed.

Estimated Cost of Excavation

A portion of the cut was a clay layer which presented a perched water issue. This portion of the cut was excavated with draglines and dump trucks. For the bulk of the excavation, the material consisted of a sandy/silt material and scrapers and push dozers were estimated for this material. The size of each fleet of equipment to be used was based on the productivity of each of the fleets for each haul road. The productivity varied for each section of each haul road due to the length and grade of the haul road and whether the equipment was just starting when entering the section or whether the equipment was already moving. The calculation included the effect of the grade, the tire...
friction, and the rolling resistance of the tires for each section of each haul road. Formulas used were taken from the equipment manufacturers' handbooks (Caterpillar, Terex, etc.).

Once these calculations were completed, the travel time for a scraper, including the load time in the cut and the dump time in the disposal area, was calculated. This was then compared to the load time for a push dozer to assist with loading the scraper, including backup time. From this calculation the number of scrapers per push dozer could be calculated to maximize productivity without idle time of the equipment. The size of each fleet was determined for each section of the cut and varied from five scrapers per dozer to seven scrapers per dozer. Each fleet productivity was used to determine the amount of time required for excavation of each section of the waterway. The total number of hours for a fleet, times the number of scrapers in the fleet, times the gallons of diesel fuel used per hour by a scraper, plus the hours for the push dozer times the fuel used by the dozer, would equal the total fuel required per fleet of equipment during the year the work was scheduled to be performed. Equipment ownership and operating cost per hour, including the fuel used per hour, for each piece of equipment was taken from the Corps of Engineers Manual EP-1110-1-8, Region 3 (Construction Equipment Ownership and Operating Expense Schedule).

I developed a construction schedule on graph paper for the five-year period of the contract showing excavation quantity, which fleets of equipment were used, and fuel used per year. The total scraper hours and dozer hours per fleet used times the cost per hour of operation would equal the equipment cost. Labor hours were calculated in the same manner for operators, oilers, and flagmen.

Based on an educated guess from reading published engineering and business articles, the price increase of diesel fuel for each year of the contract was estimated. Total diesel fuel required over the life of the contract was calculated to be in excess of 1,000,000 gallons. The equipment operating cost per hour included the fuel cost. To this was added the estimated increased cost due to fuel escalation over the life of the contract.

The total unit price per cubic yard of excavation was determined to be $1.555 which amounted to $147,725,000 for the 95,000,000 cubic yards in 1976 dollars. The unit price included the cost of haul road development and maintenance during the contract, the equipment and labor cost for excavation of the 95,000,000 cubic yards, the development and seeding of the disposal areas during the contract period, and the additional diesel fuel cost increase during the performance of the contract, plus overhead.

**Conclusion**

All of the above items were developed by myself as the project estimator. In addition, I estimated the Mobilization and Demobilization bid item and several other bid items not mentioned here. The total estimated amount for this contract was $245,000,000 without profit, which was 12% below the low bid of $272,000,000. The entire estimate was developed by hand using the old Victor calculators, which could only multiply, divide, add, and subtract. The preparation of the estimate took approximately 2 months and was the most rewarding experience of my career.

This was the days of old!

**Gilbert Patterson, CPE**
Southeast MAL
gmp6@comcast.net
2021 - 2023

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The **Certified Professional Estimator (CPE)** and **Associate Estimating Professional (AEP)** designations acknowledge that you have met, and continue to meet, the criteria established by the **American Society of Professional Estimators**, recognizing the estimating proficiency and ethical awareness of the individual. These nationally recognized Programs attest that a construction estimator has met the necessary education requirements and has the capabilities necessary of the profession.

The **Certified Professional Estimator (CPE)** designation is the highest form of professional recognition an estimator may earn and celebrates the years of experience needed to pass the rigorous requirements of this CESB accredited Program.

*5+ Years of Experience Required!*

The **Associate Estimating Professional (AEP)** designation offers recognition of the education and general estimating knowledge required to be part of this exciting and growing field of construction industry professionals.

*Education in a Construction Related Field is the Key!*

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* General Estimating Knowledge (GEK) Exam  
* Discipline Specific Test (DST) Exam  
* Submit a 2,500+ Word Technical Paper

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* General Estimating Knowledge (GEK) Exam

Both the **CPE** and **AEP** Programs require annual renewal, including the earning of Professional Development Unit (PDU) credits.

This ensures that the Estimator keeps abreast of construction industry changes and is motivated to personal growth through continuing education and interaction with others in the field.

Learn more at [ASPeNational.org / Certification](ASPeNational.org/Certification)
HTETCO Architectural Wood Ceilings

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SECTION 1: INTRODUCTION

The intent of this paper is to give the reader the tools required to estimate the cost associated with the installation of three different varieties of architectural wood ceilings. The three varieties of ceiling chosen by the author for the benefit of this paper are linear plank, grille, and channel tile. To demonstrate the process, the author will make use of approved construction drawings & specifications for all three varieties of architectural wood ceiling.

Description of Topics

Linear Plank Wood Ceiling

A linear plank wood ceiling has the design of individual wood members that are wider than they are deep. For solid wood, the standard panel width for this variety of architectural wood ceiling is 12”, with standard panel lengths being 4’ through 10’ and 8’ for veneer. The project budget would determine whether solid wood panels, or the lesser in quality veneer panels, would be specified in the project specification. The installation process for the linear plank system requires the worker initially installing a 15/16” heavy T-bar grid. The panels are directly fastened through the backer into 15/16” heavy duty T-Bar main runners. Linear planks use a pre-assembled panel fabrication process and can be used in areas where there is the possibility of seismic activity. The direct attaching system allows for easy removal of a plank for access purposes in, for example, an issue that might arise with lighting wiring or connections. Linear plank ceiling can enhance acoustics via sound absorption, it is common for batt insulation to be installed at reveals within the T-Bar grid. Both insulation and wood backing can be painted/pre-finished, or a fabric scrim can be applied to hide the insulation.

Grille Wood Ceiling

Similar in many ways to the linear plank type, the grille style wood ceiling has, in its design, individual wood members that are deeper than they are wider. For solid wood, the standard panel width for this variety of architectural wood ceiling is 12”, with standard panel lengths being 4’ through to 10’ or 8’ for veneer. Again, the project budget that would determine whether solid wood panels or the, lesser in quality, veneer panels would be specified. The installation process for the grille ceiling system requires the workers to firstly install a standard T-bar grid. The panels are directly fastened through the backer into the 15/16” heavy duty T-Bar main runners. Grille wood ceilings use...
HTETCO Architectural Wood Ceiling ... continued

a pre-assembled panel fabrication process and can be used in areas of seismic activity. Like linear plank wood ceilings, it lends itself easy access due to the direct attaching system.

The Figure 1B below shows installation sketch of a grille wood ceiling:

Channel Tile

Channel Tile, as in the example the author is specifying for this paper, is case large wood panels that give the effect of a floating tiled appearance. The common tile dimensions for this is 2' x 4' x ¾”. The standard reveal between each panel are 3/8” wide. Channel tiles are suspended from 15/16” heavy duty T-bar main runners. Main runners are usually installed 2’ O.C for this type of channel tile. The tiles, themselves, are real wood veneer on a fire rated core. Access to the ceiling void can be achieved by locating access panels, or from the ceiling perimeter. Channel Tile Wood ceilings are not considered the preferred choice for acoustics, as the tile and formation are considered acoustically reflective. However, tiles can be perforated to enhance acoustics. Unique to the Channel Tile from the varieties chosen for this paper, the design direction of the grain can also give a different look or feel.

The Figure 1C below shows installation sketch of a channel tile wood ceiling:

Other attributes for of all three varieties of wood ceiling can be pre-treated for fire retardation and pre-finished. There are a variety of trims that can be used at wall angles, such as floating open reveal, metal trim, & wood trim. The estimator will be expected to identify finishes required, or pre-treated, trims etc. from the project drawings or project specification.
SECTION 2: TYPES & METHODS OF MEASUREMENT

There are several methods in which to perform a quantity take-off. These include, manual take-offs direct from a printed set of plans with a scale ruler or digitizer, and computer based estimating software with a digital set of plans (usual PDF’s converted into TIF files). The author will be utilizing computer based estimating software, on-screen take-off (OST) to carry out their take-off. Primarily, the estimator will find out the amount of material needed to complete the projects by determining the size of the installation area, and locating openings for lighting, air registers, sprinkler heads etc. Architectural wood ceilings will usually be identified on reflective ceiling plans (RCP) and in more detail within the project specification. General architectural plans will identify architectural wood ceilings on a square foot (SF) basis; therefore, this will be the unit of measurement used by the estimator to determine the installation area. Insulation for architectural wood ceilings would also be identified in SF, with ceiling trims identified in linear footage (LF). As has been stated, all three varieties of wood ceilings utilize a T-Bar grid to give structural support and enable the hanging of the ceiling. T-bar grid components can be measured individually, but also the grid can be calculated on a SF basis. It is common that wood backers are pre-finished, therefore, are measured by LF rather than MBF as a rough carpentry item. Later in the paper the author will address what to bear in mind in terms of wastage when measuring, the shape and size of the ceiling, and the importance of an appropriate wastage factor. The sample take-off sheets show the typical SF of the installation area of all three varieties of architectural wood ceiling. For the purpose of this paper, the author will use one typical ceiling plan in terms of dimensions to demonstrate installation of all three varieties of architectural wood ceilings. The ideology behind using one typical ceiling is for the purpose of consistency as well as to give the reader the ability to compare all three estimates “like for like”. If the author were to use three different shape and size ceilings this would not be a fair comparison. See sample floor plan for reference (Figure 2A).

SECTION 3: SPECIFIC FACTORS AFFECTING TAKE OFF AND PRICING

Project Dimensions

It is paramount that the estimator considers the size, shape, and pitch of the area in which the architectural wood ceiling is going to be installed. A small sized room leading to small quantities can dramatically increase the material wastage, in addition, requiring more cutting, resulting in decreased labor production. Conversely, larger rooms can equate to less wastage and increased labor production. The shape of the room should be considered; a room with more corners or curves would also lead to more edging details, wastage, and less labor production. The estimator should consider the ceiling height as well. As ceiling heights increase, labor production suffers. The optimum ceiling height is between 8’-0” and 10’-0” above finished floor level, therefore the worker can benefit for the use of stilts. Above 10’-0” the use of scaffold and/ or lift equipment becomes necessary. The use of scaffold and or lifts restricts the workers mobility therefore resulting in slower production. Another factor to take into consideration are mechanical and electrical equipment above the ceiling. The larger the area and more equipment above the ceiling may result in the restriction of using hangers in specified locations, therefore, additional framing required, enabling the worker to install a hangar at the specified location. Working around equipment at ceiling level is called trapezing; and the estimator, if made aware, should take this into account when calculating labor hours for the project. Pitch or angle of ceiling is a factor the estimator should also take into consideration. If the ceiling is pitched, this will increase the number of angled cuts to the planks prior to installation, equating to more labor time.

Project Location

The project location can have a major bearing on costs, in terms of availability of labor and materials. The location must be considered by the estimator to identify any possible project limitations. For example, if a project location were to be situated at a busy downtown, we would expect to see premiums on travel time and parking due to congestion, which would be then reflected in the general contractor’s/ sub-contractor’s price. There is also the question of how accessible the construction site is. If it is not easily accessed, this could require additional handling of material. Another factor following on from the previous risk that the estimator should be aware of, generally, is labor and material costs increase beyond a 20-mile radius of a metropolitan area as a result of increased travel time. To summarize, there is a sweet spot in terms of location, and for the purpose of this paper the author will be assuming that the project site does not incur any premiums for the risk factors above.

Project Schedule

It is important the estimator reviews the construction schedule to determine if the time allocated for his work is reasonable and appropriate given the workload of the firm and available resources. Also, it is common on larger scale projects for phasing to occur. In that event the ceiling sub-contractor won’t be able to complete all ceilings within their scope sequential (another factor the estimator should consider when pricing the project). The estimator should be confirming that the time allocated to the project is achievable with a normally staffed team and will not require off-hours or weekend working. If the project was not to commence for a substantial amount of time, potential labor and material increases should be factored in. Some other risk factors the estimator should consider are the following:
SECTION 4: OVERVIEW OF LABOR, MATERIALS, EQUIPMENT & INDIRECT COSTS

There are two categories the estimator will consider when developing the cost estimate: direct cost, which includes material, labor, equipment, procurement, shipping, and tax; the second factor is the contractor’s indirect costs, which includes project overheads, the contractors fee/ profit, and bonding requirements.

Labor

Labor costs are calculated on an hourly basis and will include factors such as crew rates, crew sizes, and productivity. The project specification will advise the estimator whether the project requires union/prevailing wage or non-union rate will be appropriate. It is common for government funded projects to require prevailing wage. Once the estimator has established the appropriate labor rate, they will also have to determine the appropriate labor burden. Labor burden can be defined as the actual cost of a company to have an employee. Labor burden includes benefits that a company provides, liability insurance, employers taxes and workers compensation. For the purpose of this paper the author will be utilizing RS Means 2019 carpenters base rate with an appropriate employer’s mark-up rolled in.

Carpenters Hourly Rate Calculation

- Carpenter hourly base rate: $51.72 (RS Means 2019)
- Appropriate employer’s mark-up at 40%: $20.69
- Carpenter hourly rate: $72.41

Crew Size

Daily production rate, also known as daily output, is the amount of work that a crew can achieve in a normal 8-hour workday. This production rate also accounts for laying out, movement of materials and clean-up. Several factors can influence the production rate, such as size and location of the projects, which was mentioned in more detail earlier by the author.

Example of Daily Production

- Crew size: Two Carpenters
  - Carpenter Rate: ($72.41/HR x 2) = $144.82/HR (2 Carpenters hourly rate)
  - Production rate per 8-hour shift (daily output): Install 285 SF of linear plank wood ceiling (exc. supporting structure)
  - Total Crew Cost per 8-hour shift: ($103.44 x 8-Hours) = $827.52
  - Total labor cost per square foot: $4.07/SF

The estimator can utilize publications like RS Means to gather production rates, crew sizes, and crew rates or more typically use in-house data developed over several projects.

Material

After the estimator has reviewed the pricing documents (drawings, specification, cut sheets, etc.) for the installation of the variety of architectural wood ceiling, the estimator will need to estimate the following items:

- T-Bar Grid
- Insulation
- Wood Backers
- Architectural Wood ceiling
- Trim

The dimensions and specification of all the items above will be called out either on the drawings or in the specification. If information from the pricing documents is unclear or missing, the estimator should submit a request for information (RFI) to their client or appropriate individual. Often the specification will accept “Equal and Approved” and the contractor may be able to suggest and seek approval for an alternate. Shipping the materials from a vendor is a cost factor the estimator should consider when compiling their estimate. Materials can be proprietary and need to be shipped long distances.

Wastage

As mentioned earlier, the shape and size of the room will dictate the amount of wastage. Therefore the estimator should bear this in mind when applying a wastage factor. For instance, if the installation area were small, not square, and had many angles, the wastage factor could be as much as 20%. However, the normal amount of wastage factor expected on a wood ceiling installation should be between 5%-10%.
HTETCO Architectural Wood Ceiling ... continued

Sales Tax
Sales tax will be added to materials only. In some states sales tax is applied to full contract. For the benefit of the paper, the author has determined the location of the project being where the tax is applied to materials only and stands at 7.25%.

Project Overheads
Project overheads include all the management to effectively run projects, and in addition generally capture a contractor’s indirect costs in the form of all bonds & insurance, temporary scaffolding and platforms, equipment mobilization, demobilization, miscellaneous small tools, final clean etc. Also, overhead can capture site project management and safety. Depending on the many factors the overhead percentage can vary. Typically the range is between 10%-20%.

Fee
The fee is the amount of profit a company charges to complete the scope of work (and can include certain head office expenses). This is generally calculated in the form of a percent applied to the direct costs. The percentage of profit can vary depending on the project; however, it is common to see the percentage in the range of 5%-10%.

SECTION 5: SPECIAL RISK CONSIDERATIONS
There are many risks relating to the installation of an architectural wood ceiling that the estimator should be aware of when compiling their estimate. Whether the wood ceiling is installed for a new construction, or renovation construction in an existing building. If the installation is for a renovation project the building could be occupied. This may cause delays to the schedule and phasing may need to be accounted for, both resulting in a rise in labor costs. For the purpose of this paper, the author has assumed the building is a new build, and therefore unoccupied. Another risk the estimator should consider is if the building is a high-rise, this again would lead to extended time for the crew getting to the ceiling location. A factor of approximately 1% - 2% per floor over 4 floors. Should be applied a very prominent risk that the estimator should be aware of is the current market conditions. It is evident, at present, that market conditions can affect contractor’s bids, mainly in terms of profit margins and overhead rate. When the market is buoyant and with an abundance of new projects starting, the contractors have the freedom to pick and choose projects, reducing competition at bid stage. This heated market results generally higher bids for typical projects. It is important to note market conditions like this may not apply to all areas of the country. Labor increase and material price fluctuations need to be anticipated. (Buying out materials early may void the risk of spikes in material pricing). For projects bid in the next few months the estimator should consider the impact of COVID-19 and be aware of possible added costs associated with various safety protocol and supply chain issues. There is a myriad of issues which will impact productivity and added project overheads. The overall impact of COVID-19 will vary from job to job and will depend on specific project requirements.

SECTION 6: RATIOS & ANALYSIS
As a rule of thumb, the estimator should perform multiple checks and peer review along the different stages of compiling the estimate, from the take-off, to pricing each item that makes up the complete ceiling. Once the estimate has been completed and a total cost for the installation of the ceiling has been determined, the estimator should show the total cost of labor and materials and summarize as a dollars per square foot cost. ($/SF). Converting the total cost of the ceiling into $/SF will allow the estimator to compare $/SF with other ceiling types or other wood ceiling to see if the cost is within the normal range expected for the type of ceiling. Typically, depending on the specification of the wood ceiling the $/SF, should be in the range of $30-$60/SF. If the estimator is seeing a substantial delta from the anticipated range they would be advised to revisit and check through all aspect of the estimate, it would be safe to assume there could be an error. Another high level check the estimator can carry out is the ratio split between labor and materials. To calculate the material/ labor ratio the estimator must divide the full material cost including taxes by the total cost and the labor cost by the total cost.

Example of Labor & Material Ratio
- Labor: $25,000/ $100,000 = 25%
- Material: $75,000/ $100,000 = 75%

Therefore, the ratio would be three-parts material, one-part labor, 3:1 ratio. Typically for installation of architectural wood ceiling a 3:1 ratio would be within the normal parameters. However, this is specification dependent to some extent, but you would expect to see the material having a bigger percentage split.

SECTION 7: MISCELLANEOUS PERTINENT INFORMATION
All three varieties of architectural wood ceilings mentioned may qualify for LEED credits, however, as they are custom-fabricated, this may differ from project to project. This is something the architect should be conscious of when designing/ specifying the architectural wood ceiling. For LEED classified projects there may also be some additional administration and documentation.

SECTION 8: SAMPLE PROJECT DRAWINGS
HTETCO Architectural Wood Ceiling ... continued

Figure 2A: Shows the typical ceiling plan (auditorium) used for all three sample estimates from taken from a reflective ceiling plan

2A: Approximate Ceiling Dimensions
Width 44'-0” x Length 76'-0”

The reasoning behind why the author of the paper is utilizing a typical ceiling plan for all three varieties of architectural wood ceiling is for consistency factors and for the ability of comparison.

Figure 2B: Shows a section through liner plank wood ceiling installation:

Figure 2C: Shows a section through grille wood ceiling installation:
HTETCO Architectural Wood Ceiling ... continued

Figure 2D: Shows a section through channel tile wood ceiling installation:

Figure 2B, 2C & 2D all show the support structure to enable to hang the ceiling type. The section enables the estimator to see what items are needed to be estimated. Also, the sections show for the linear plank and grille ceilings, the wood backer fixes direct to the T-Bar girder at the same spacing of the T-bar runners (one way, see Figure 3B.)

Figure 2E: Detail showing trim options for linear plank and grille wood ceilings:

Figure 2F: Detail showing trim options for channel tile wood ceiling:
SECTION 9: SAMPLE TAKE-OFF & SAMPLE ESTIMATES

There are three separate sample estimates for the three varieties of architectural wood ceiling, all utilizing the table below and those quantities have been obtained from the figures 3A, 3B and 3C.

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<th>Wastage (5%)</th>
<th>Total Material</th>
<th>Drawing Reference</th>
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<tr>
<td>T- Bar Grid</td>
<td>3,332 SF</td>
<td></td>
<td>167</td>
<td>3,499</td>
<td>Figure 3A: Reflective Ceiling Plan</td>
</tr>
<tr>
<td>Insulation</td>
<td>3,332 SF</td>
<td></td>
<td>167</td>
<td>3,499</td>
<td>Figure 3A: Reflective Ceiling Plan</td>
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<tr>
<td>Wood Backers</td>
<td>1,748 LF</td>
<td></td>
<td>87</td>
<td>1,835</td>
<td>Figure 3B: Calculation</td>
</tr>
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<td>Architectural Wood Ceiling</td>
<td>3,332 SF</td>
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<td>167</td>
<td>3,499</td>
<td>Figure 3C: Reflective Ceiling Plan</td>
</tr>
<tr>
<td>Trim</td>
<td>240 LF</td>
<td></td>
<td>12</td>
<td>252</td>
<td>Figure 3C: Reflective Ceiling Plan</td>
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</tbody>
</table>

Figure 3A: Reflective Ceiling Plan: Showing typical T-Bar Grid & insulation area (SF). Note, insulation used only for linear plank and grille wood ceiling:

Figure 3B: Table to linear length (LF) of wood backers. Note, wood backers are only installed when installing linear plank and grille wood ceiling:

<table>
<thead>
<tr>
<th>Width (LF)</th>
<th>Spacing (LF)</th>
<th>Number (EA)</th>
<th>Length (LF)</th>
<th>Total Length (LF)</th>
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<tr>
<td>44</td>
<td>2</td>
<td>23</td>
<td>76</td>
<td>1,748</td>
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</table>

Calculation

- Ceiling Width + Wood Backers Spacing = Number of Wood Backers (plus one)
- Number of Wood Backers × Ceiling Length = Total Length of Wood Backers
Figure 3C: Reflective Ceiling Plan: Showing Ceiling area (SF) & Trim length (LF):

Linear Plank Wood Ceiling Sample Estimate

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Crew</th>
<th>Daily Output</th>
<th>Daily Crew Rate</th>
<th>Rate/Unit</th>
<th>Labor Cost</th>
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<tbody>
<tr>
<td>15/16&quot; Heavy duty T. Bar Grid</td>
<td>3,499</td>
<td>SF</td>
<td>2</td>
<td>800</td>
<td>$1,150.56</td>
<td>$1.45</td>
<td>$5,060.87</td>
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<tr>
<td>Batt Insulation</td>
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<td>SF</td>
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<td>700</td>
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<td>Linear Plank Ceiling</td>
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<td>285</td>
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Total Labor Cost: $25,466.67

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<tr>
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Sub-total: $86,628.06

Sales Tax: 7.25% $5,429.36

Total Material Cost: $92,066.03
HTETCO Architectural Wood Ceiling ... continued

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<td>Profit</td>
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<td>Total Estimate Cost</td>
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Grille Wood Ceiling Sample Estimate

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<th>LABOR COST - GRILLE</th>
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</tr>
<tr>
<td>15/16&quot; Heavy duty T- Bar Grid</td>
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<td>Batt Insulation</td>
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<td>Wood Backers</td>
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<td>Grille Ceiling</td>
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<td>Metal Trim</td>
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<td>Total Labor Cost</td>
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<table>
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<th>MATERIAL COST - GRILLE</th>
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<tr>
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<tr>
<td>Profit</td>
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HTETCO Architectural Wood Ceiling ... continued

Channel Tile Ceiling Sample Estimate

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<th>Quantity</th>
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Total Labor Cost: $23,612.34

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Sub-total: $112,544.25

Sales Tax 7.25%
Shipping Inc

Total Material Cost: $120,703.71

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Total Estimate Cost: $165,963.45
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2021 ASPE Critical Calendar: May - August

May
12 Deadline for Chapters to submit Chapters elections results form to Society Business Office
12 Certification Committee Virtual Meeting
14 All Award Nominations / Applications due to SBO
15 Board of Directors Virtual Meeting
17 Standards Committee Virtual Meeting
19 Joint Technical Committee Virtual Meeting
27 Committee and Technical Committee Chairs progress reports due to their respective Vice President and Society Business Office
29 Deadline: 2021 July/August Estimating Today articles to Society Business Office

June
4 Scholarship Winner(s) to be announced (to Winners only)
9 Certification Committee Virtual Meeting
15 Award Winners to be announced (to Winners only)
21 Standards Committee Virtual Meeting
25 Deadline for Chapters to identify their 2021 Summit Chapter Representative

July
10 Board of Directors Virtual Meeting
14 Certification Committee Virtual Meeting
19 Standards Committee Virtual Meeting
21 Joint Technical Committee Virtual Meeting
28 Last day for Chapter Reports to Governors for Annual Meeting reports
30 Committee and Technical Committee Chairs progress reports due to their respective Vice President and Society Business Office
30 2021-2022 Board of Directors take Office

August
5 Annual Board Reports due to Society Business Office for Annual Meeting Books
11 Certification Committee Virtual Meeting
16 Standards Committee Virtual Meeting
25 Board of Directors Meeting - San Antonio
25 Technical Committee Meetings - San Antonio
25-28 2021 Annual Meeting + Estimators’ Summit - San Antonio
ASPE CHAPTER MEETINGS

▲ ARIZONA
Arizona #6
Where: Aunt Chilada’s
7330 North Dreamy Draw Drive
Phoenix - 85020
Date: 2nd Tuesday; Time: 4:00 PM
Meeting Contact:
Gene Plum
gplum@mccarthy.com

Old Pueblo #53
Where: Varies
To Be Determined
Tucson
Date: Varies; Time: Varies
Meeting Contact:
Larry Lucero, CPE
llucero@redlineinsulation.com

▲ CALIFORNIA
Golden Gate #2
Where: To Be Determined
San Francisco - 94105
Date: TBD; Time: TBD
Meeting Contact:
Steve Watkins
steve.watkins@bnbuilders.com

Orange County #3
Where: Virtual Meeting
Costa Mesa - 92626
Date: TBD; Time: TBD
Meeting Contact:
Dan Schottlander, CPE
dpschottlander@cox.net

San Diego #4
Where: To Be Determined
San Diego
Date: TBD; Time: TBD
Meeting Contact:
Paul Chang
aspesd4.paul@gmail.com

Sacramento #11
Where: Rancho Cordova City Hall
2729 Prospect Park Drive
Rancho Cordova - 95670
Date: 2nd Friday; Time: 12:00 PM
Meeting Contact:
Bryan Hall
bryan.hall@vanir.com

Silicon Valley #55
Where: Varies
To Be Determined
Date: Varies; Time: Varies
Meeting Contact:
Spencer Gravelle
info@aspe55.org

▲ COLORADO
Denver #5
Where: Virtual Meeting
To Be Determined
Denver
Date: 2nd Tuesday; Time: 5:00 PM
Meeting Contact:
Paul Jonez
pjonez@gtc1.net

▲ CONNECTICUT
Nutmeg #60
Where: Back Nine Tavern
245 Hartford Road
New Britain - 06053
Date: Varies; Time: 6:00 PM
Meeting Contact:
Harrison Levy
klevy@petraconstruction.com

▲ DELAWARE
Delaware #75
Where: Varies
To Be Determined
Wilmington
Date: TBD; Time: TBD
Meeting Contact:
Gregory Williamson, CPE
gwilliamson@bondbrothers.com

▲ DISTRICT OF COLUMBIA
Greater D.C. #23
Where: Jacobs
1100 North Glebe Road, Suite #12
Arlington - 22201
Date: 3rd Thursday; Time: Varies
Meeting Contact:
Maurice Touzard, CPE
mtouzard@gmail.com
ASPE CHAPTER MEETINGS (CONTINUED)

**FLORIDA**
Tampa Bay #48
Where: Virtual Meeting
Tampa - 33609
Date: TBD Time: TBD
Meeting Contact:
Jim Cummings
jim.cummings@edunn.com

Gold Coast #49
Where: To Be Determined
West Palm Beach
Date: TBD Time: TBD
Meeting Contact:
Carri Morones, CPE
aspe.carri@gmail.com

Orlando #50
Where: To Be Determined
Orlando - 32801
Date: TBD Time: TBD
Meeting Contact:
Danny Chadwick, CPE
estimatorordan@gmail.com

**INDIANA**
Central Indiana #59
Where: To Be Determined
Indianapolis
Date: 3rd Thursday; Time: 5:30 PM
Meeting Contact:
Chris Neal
cNeal@summitconst.com

Old Fort #65
Where: To Be Determined
Fort Wayne
Date: Last Thursday; Time: Varies
Meeting Contact:
Thad Berkes
tberkes@designcollaborative.com

**GEORGIA**
Atlanta #14
Where: Sage Woodfire Tavern
4505 Ashford Dunwoody Road
Atlanta - 30346
Date: 2nd Monday; Time: 11:45 AM
Meeting Contact:
Clinton Aldridge
cal45@gatech.edu

**IOWA**
Quad Cities #71
Where: To Be Determined
Davenport
Date: Varies; Time: Varies
Meeting Contact:
Scott Robinson, CPE
scottt@bradyco.com

Greater Des Moines #73
Where: To Be Determined
Des Moines
Date: 1st Thursday; Time: Varies
Meeting Contact:
Andy Pullen
andy@hrtInd.us

**MAINE**
Maine #37
Where: Varies
To Be Determined
Portland
Date: 1st Wednesday; Time: Varies
Meeting Contact:
John Brockington, CPE
jbrockington@woodwardcuman.com

**MARYLAND**
Baltimore #21
Where: Varies
To Be Determined
Baltimore
Date: Varies; Time: Varies
Meeting Contact:
Clint Townshend
ctownshend@phoenix-eng.com

**MASSACHUSETTS**
Boston #25
Where: Virtual Cup of Coffee
To Be Determined
Boston - 02116
Date: 3rd Wednesday; Time: 8:30 AM
Meeting Contact:
Eric Rennell
erircrnnell@aspe25boston.com

**MICHIGAN**
Detroit #17
Where: Auch Construction
65 University Drive
Pontiac- 48342
Date: 3rd Tuesday; Time: 5:15 PM
Meeting Contact:
Gerald McClelland
gmcclelland@suchconstruction.com

Western Michigan #70
Where: Varies
To Be Determined
Grand Rapids
Date: Varies; Time: Varies
Meeting Contact:
Mike Alsgaard, CPE
maalsgaard@fishbeck.com

**LOUISIANA**
New Orleans #9
Where: To Be Determined
New Orleans
Date: TBD; Time: TBD
Meeting Contact:
Carri Morones, CPE
aspe.carri@gmail.com

**ILLINOIS**
Chicago #7
Where: Varies
Downers Grove - 60515
Date: 3rd Thursday; Time: 6:00 PM
Meeting Contact:
Bryan Mixer, CPE
bmixer_rvc@msn.com

**GEORGIA**
Greater Des Moines #73
Where: To Be Determined
Des Moines
Date: 1st Thursday; Time: Varies
Meeting Contact:
Andy Pullen
andy@hrtInd.us

**MARYLAND**
Baltimore #21
Where: Varies
To Be Determined
Baltimore
Date: Varies; Time: Varies
Meeting Contact:
Clint Townshend
ctownshend@phoenix-eng.com

**MASSACHUSETTS**
Boston #25
Where: Virtual Cup of Coffee
To Be Determined
Boston - 02116
Date: 3rd Wednesday; Time: 8:30 AM
Meeting Contact:
Eric Rennell
erircrnnell@aspe25boston.com

**MICHIGAN**
Detroit #17
Where: Auch Construction
65 University Drive
Pontiac- 48342
Date: 3rd Tuesday; Time: 5:15 PM
Meeting Contact:
Gerald McClelland
gmcclelland@suchconstruction.com

Western Michigan #70
Where: Varies
To Be Determined
Grand Rapids
Date: Varies; Time: Varies
Meeting Contact:
Mike Alsgaard, CPE
maalsgaard@fishbeck.com
**Minnesota**

Viking #39
Where: Varies
To Be Determined
St. Paul
Date: Varies; Time: Varies
Meeting Contact:
Matt Burress, CPE
mburress@performanceservices.com

**Nevada (continued)**

Las Vegas #72
Where: Varies
To Be Determined
Las Vegas
Date: TBD; Time: TBD
Meeting Contact:
Chuck James, CPE
wjames2@cox.net

**Missouri**

St. Louis Metro #19
Where: Virtual
To Be Determined
St. Louis - 63139
Date: TBD; Time: TBD
Meeting Contact:
John Smith
john.smith@thelawrencegroup.com

**New Jersey**

Heartland #32
Where: Virtual
To Be Determined
See Meeting Contact
Date: 3rd Thursday; Time: 5:30 PM
Meeting Contact:
Lonny Mills
lonny.mills@flynncompanies.com

**New Mexico**

Roadrunner #47
Where: Fiestas Restaurant
4400 Carlise Boulevard NE
Albuquerque - 87107
Date: 1st Wednesday; Time: 5:30 PM
Meeting Contact:
Jimmy Sample, CPE
jimmy.sample@bixbyelectric.com

**New York (continued)**

Western NY #77
Where: To Be Determined
To Be Determined
Rochester
Date: TBD; Time: TBD
Meeting Contact:
Gregory Williamson, CPE
gwilliamson@bondbrothers.com

**Ohio**

Buckeye #27
Where: Varies
To Be Determined
Columbus
Date: Varies; Time: Varies
Meeting Contact:
Matt Burress, CPE
mburress@performanceservices.com

**Oregon**

Columbia-Pacific #54
Where: Varies
To Be Determined
Portland - 97201
Date: 3rd Tuesday; Time: Varies
Meeting Contact:
Steve Watkins
steve.watkins@bnbuilders.com

**Oklahoma**

Landrun-OK City #80
Where: Ingrid’s Kitchen
3701 North Young Boulevard
Oklahoma City - 73112
Date: 1st Wednesday; Time: 11:30 AM
Meeting Contact:
Mike Phillips, CPE
mphilips@flemingconstructiongroup.com

**Nebraska**

Great Plains #35
Where: To Be Determined
To Be Determined
Omaha
Date: Varies; Time: Varies
Meeting Contact:
Matt Burress, CPE
mburress@performanceservices.com

**Nevada**

Reno #12
Where: To Be Determined
To Be Determined
Reno
Date: Varies; Time: Varies
Meeting Contact:
TBD

Empire State #42
Where: Virtual
To Be Determined
Albany - 12203
Date: 1st Monday; Time: 5:00 PM
Meeting Contact:
Michael Briggs, CPE
mbriggs405@gmail.com
ASPE CHAPTER MEETINGS (CONTINUED)

▶ PENNSYLVANIA
Greater Lehigh Valley #41
Where: D’Huy Engineering Office
1 E. Broad Street
Bethlehem
Date: Varies; Time: Varies
Meeting Contact: Gregory Williamson, CPE
gwilliamson@bondbrothers.com

Three Rivers #44
Where: To Be Determined
To Be Determined
Pittsburgh
Date: TBD; Time: TBD
Meeting Contact: Gregory Williamson, CPE
gwilliamson@bondbrothers.com

Philadelphia #61
Where: Varies
To Be Determined
Philadelphia
Date: Varies; Time: Varies
Meeting Contact: Richard Baus
rlkb@bencardino.com

Central Pennsylvania #76
Where: Virtual
To Be Determined
Lancaster - 17601
Date: TBD; Time: TBD
Meeting Contact: Greg Roscoe
gcr817@gmail.com

▶ TEXAS
Houston #18
Where: To Be Determined
To Be Determined
Houston - 77007
Date: TBD; Time: TBD
Meeting Contact: Larry Lucero, CPE
llucero@redlineinsulation.com

Rio Grande #40
Where: Virtual
To Be Determined
El Paso - 79903
Date: TBD; Time: TBD
Meeting Contact: Rodolfo Barba, CPE
rodolfobarba1@gmail.com

Dallas/ Ft.Worth #43
Where: See Chapter Website
To Be Determined
Variies: N. Dallas/Mid-Cities/Grapevine
Date: Varies; Time: Varies
Meeting Contact: Rick Wyly, CPE
rick@buildcostcontrol.com

▶ WASHINGTON
Puget Sound #45
Where: Virtual
To Be Determined
Seattle - 98109
Date: 3rd Tuesday; Time: 6:00 PM
Meeting Contact: Eric Benton
Eric.benton@pmsvs.com

TENNESSEE
Middle Tennessee #34
Where: Adventure Science Center
800 Fort Negley Boulevard
Nashville - 37203
Date: 1st Friday; Time: 11:00 AM
Meeting Contact: Ricky Sanford
rsanford7159@gmail.com

▶ VIRGINIA
Richmond #82
Where: Baskervill
101 South 15th Street, Suite #200
Richmond - 23219
Date: 4th Wednesday; Time: 5:00 PM
Meeting Contact: Sid Bass, CPE
sbass@reynolds.edu

Please Note: Information is subject to change. Report changes in your Chapter’s information with an email to Tina@ASPEnational.org

WISCONSIN
Brew City #78
Where: To Be Determined
To Be Determined
Milwaukee
Date: TBD; Time: TBD
Meeting Contact: Matt Burress, CPE
mburress@performanceservices.com
ASPE CORE VALUES

EDUCATION:
ASPE educates and mentors professional estimators for the sustainability of the construction industry.

PROFESSIONALISM:
ASPE promotes the lifelong pursuit of excellence and credibility in professional estimating.

FELLOWSHIP:
ASPE develops a fellowship of professional estimators that connects and leads the construction industry.