HTETCO Floor and Wall Tile

TABLE OF CONTENTS

Section 1: Introduction
Section 2: Types and Methods of Measurements
Section 3: Project Specific Factors to Consider
Section 4: Overview of Costs
Section 5: Special Risk Considerations
Section 6: Ratios and Analysis
Section 7: Miscellaneous Pertinent Information
Section 8: Sample Sketch
Section 9: Sample Take-Off and Pricing Sheets
Section 10: References
SECTION 1: INTRODUCTION

The intent of this technical paper is to provide the reader with the information required to estimate the costs associated with furnishing and installing floor and wall tile in a bathroom. The paper will discuss the importance of understanding the plans and specifications in the preparation of a cost estimate. The author will discuss the process from the point of view of a subcontractor submitting a bid to a general contractor.

To illustrate the estimating process for floor and wall tile, the author will utilize plans and specifications from a multi-family residential project that were prepared to the Construction Document level and approved by the City of authority. For clarity in this technical paper, the author will focus on one bathroom within one unit plan and will refer to the project plans and specifications for tile type and installation guidelines.

Brief Description of Subject Matter

Tile is a versatile material that can be utilized in many areas of a home including floors, backsplashes and tub/shower surrounds. Tile comes in a variety of types and grades and can be laid in an assortment of patterns. The substrate to which tile is attached varies depending on the installation location. Some substrates may require additional backer boards, sheet membranes and/or underlayments to provide an adequate base for tile installation. During the preparation of the estimate, the estimator shall prepare a list of assumptions and clarification to include the substrate to be installed by others prior to the commencement of tile work.

For example in referencing Figure 4 in Section 8 of this technical paper, a detail illustrating tile installation at the tub/shower walls, the author finds that 5/8” cementious backer board is the required substrate. Tile installers will sometimes include cementious backer board in their scope; this typically occurs on smaller jobs. On larger jobs it will likely be more cost and time efficient for the drywall subcontractor to perform this scope. The sample project for this technical paper is a larger job so the estimator will qualify in the estimate that backer board shall be placed by others.

The timing of floor and wall tile installation is dependent on the completion of work by other trades/subcontractors. Prior to the installation of floor tile the bathtub and/or shower, the vanity and the rough plumbing for toilet shall be in place. Drywall shall be in place, finished and textured. Painting will typically not be complete prior to tile installation in new construction. Prior to the installation of bathtub tile surround, the bathtub and surrounding substrate will be in place. The type of surrounding substrate will be designated in the plans and specifications. Plumbing will be roughed in with appropriate cuts in the wall board made for future shower and tub control attachment.

The installation of tile is performed in multiple steps and various cure times are required depending on the product specified and environmental conditions.

1. Waterproof membrane – If specified in the design, the waterproof membrane will be applied in one or two coats to achieve the specified thickness. The cure time will vary depending on the specified product and ambient temperature; the product specified in the sample project has a 2-3 hour cure time prior to tile installation.

2. Mortar and Tile – Cure time for mortar can range from 24-48 hours.

3. Grout – Cure time for most products and application conditions is 72 hours.

4. Grout Sealer – If specified, the grout sealer would be applied after the grout has cured for the specified amount of time and would be the final step in the installation process.

Due to the required steps and varying cure times required, scheduling and coordination can have significant impact on pricing. Project schedule impacts are discussed further in Section 3.

SECTION 2: TYPES AND METHODS OF MEASUREMENTS

There are various methods utilized in performing quantity take-offs. These include manual take-offs from a printed set of plans or the use of computer-based estimating software with a digital set of plans. In the use of both take-off methods the estimator shall stay aware of the scale of the drawings. Architectural plans will often have a variety of details that define the bathtub/shower area that may or may not have consistent scales.
Performing quantity take-offs for tile requires different units of measure depending on the scope of work.

- Field tile, the primary tile used to cover a wall or floor, is measured by square foot (SF).
- Trim tile and base, the edge tile at the perimeter of the tub/shower or floor, is measured by linear foot (LF).

In calculating the amount of tile necessary for a project, the estimator must factor in a certain amount of wasted tile and associate material. Tile waste will occur as tile is cut down to accommodate the dimensions of a given area. Additionally, there will be excess mortar and grout that will need to be accounted for. The amount of waste can vary depending on the complexity of the tile pattern, the layout and dimensions of the space, as well as the size of the tile. A good rule of thumb is to add ten percent (10%) extra tile and material for waste. For example, if the estimator's take-off shows 200 SF of floor tile will be needed the estimator should include 20 SF extra for waste (200 SF x 10% = 20 SF waste). Tile pattern and layout dimensions will also have an impact on labor time.

Some examples of patterns the estimator may encounter include:

- Straight or Stack Bond: Tiles are laid in straight lines with the grout lines lining up with one another giving a grid appearance. A modification of this pattern is a Diagonal pattern where the tiles are laid at a forty-five degree angle.
- Running or Stretcher Bond: Tiles are laid to look like bricks in a wall. Each tile is set to start at the center of the tile below it.
- Herringbone: Tiles are laid at a ninety degree angle to one another in a zig-zag pattern giving the appearance of ‘V’ shape.
- Windmill and Pinwheel: A combination of tile sizes are utilized to create these similar patterns. In the Windmill pattern, four rectangular tiles are arranged around a smaller square tile. In the Pinwheel pattern, for square tiles are arranged around a smaller square tile.

As the tile layout pattern gets more intricate, the estimator should factor in additional labor time and a higher amount of waste. Of the above listed pattern layouts, the Herringbone, Windmill and Pinwheel patterns would require more labor and likely have more waste than the Straight/Stack Bond and the Running/Stretcher Bond.

SECTION 3: PROJECT SPECIFIC FACTORS TO CONSIDER

Tile installation costs can be affected by a number of project specific factors including product selection, size of the project, and the overall project schedule.

Product Selection and Associated Criteria

The plans and/or specifications will generally callout the specific type of tile to be included in the project. On occasion, there will be a list of alternates or a note to the bidder that an approved equal will be considered. When considering product selection it will be important to note the lead times for products. If a comparable product is utilized in the bid it is critical that the estimator note the alternative product in his/her list of qualification submitted with the bid.

In projects of all sizes it is a good practice to provide a certain amount of extra tile stock to the customer. In the project utilized for this estimate, extra stock is a requirement. Per Specification Section 093013 of the sample project, the contractor is to provide extra tile, trim and grout for the project.

1.7 Maintenance Material Submittals

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

In addition to the request/requirement to provide extra stock to the customer, some customers will require mockups of the various installations prior to the start of work. A thorough understanding of the project specifications will tell the estimator if extra materials should be included for these mockups or if the mockup can ultimately become part of the completed project scope.

Project Size and Schedule

The estimator shall have a thorough understanding of the project schedule to ensure products can be acquired on time and that the project team is adequately staffed to complete the job in the allotted time frame. On a larger project it is likely that the tile work will be phased, typically by floor, so it will be necessary to factor in material storage and mobilization costs. Multiple deliveries on a project can start to add up as the estimator factors in gas, mileage and labor. In addition, multiple mobilizations can result in lost productivity of the crew as the tile layers re-familiarize themselves with the project.

As discussed in Section 1, tile installation occurs in a number of steps and there is required lag time between each stage. In a well-staged project a tile subcontractor could progress their crew(s) throughout the building without lag time. For example, the estimator could plan for one crew to lay tile progressing from one floor to another while a second crew comes in behind them to install grout after the specified cure time. This increases efficiency as the crews stay familiar with their task and the project conditions which can translate into lower labor costs.

If the overall project schedule is organized in an inefficient manner it may cause the subcontractor crews to make multiple trips to the project or have only partial days of work leading to higher labor costs overall.
SECTION 4: OVERVIEW OF COSTS

The costs to be considered in the estimate include labor, material, overhead and fee/profit.

Labor

Labor cost are calculated on an hourly basis and will include factors such as company labor rates, makeup of the crew needed for each project task and labor productivity.

The project specifications will advise the estimator if the project will require prevailing wage rates or if open shop rates will suffice. Prevailing wage rates are typically required when government funding is involved in a project. Once the estimator has determined what labor rates are applicable, he/she will need to add the appropriate labor burden into the cost estimate. Labor burden is the actual cost of an employee to a company. In addition to the wage paid to an employee, a company will pay employer taxes, workers’ compensation, liability insurance and benefits (vacation and health care). These costs can vary depending on project location. For the purpose of this technical paper, the author will utilize the labor rates provided in the 2018 Residential Labor Rates document published by RS Means which identifies the average Tile Layer and Tile Layer Helper base wages rate along with average employer markups.

The size of crew needed will depend on the task at hand and the magnitude of a project. In the sample project used for this technical paper, a single bathroom, the crew size is limited by the small workspace whereas the tiling of a large amenity space could accommodate a larger crew. The production rate is the amount of time it will take to produce any given amount of work with a given crew make-up. Below is an example of how to determine a production rate.

Example of Daily Production

- Crew Size: One Tile Layer & One Tile Layer Helper
- Tile Layer Rate: $43.40/hour
- Tile Layer Helper Rate: $33.50/hour
- Work Performed per 8 hour shift: Layout and Place 270 SF of Tile on Floor
- Total Crew cost per 8 hour shift: ($43.40 x 8 hours) + ($33.50 x 8) = $615.20/day
- Total Labor cost per SF: $615.20 / 270 SF = $2.28/SF

A tile subcontractor will likely have a database that identifies standard production rates based on past projects. There are also estimating software/databases such as RS Means that can provide direction on crew size and crew make-up. The estimator can utilize these databases as a starting point and make adjustments based on project specific factors (i.e. accelerated schedule or tight work spaces).

Material

The estimator shall rely on the data provided in the plans and specifications when preparing the estimate. To properly estimate floor and tub/shower surround tile, the estimator will need to know the following:

- Substrate material
- Moisture barrier material
- Mortar type
- Grout type
- Tile type and layout

A thorough review of the plans will be necessary in estimate preparation as detail references are not always fully identified. Architectural floor plans ought to indicate the dimensions of each space and provide references for interior elevations and details. Interior elevations show the views of the walls within a given space. Sections and details should provide additional necessary information on wall layers and components. Project Specifications will provide material requirements and installation practices that will be key in estimating project costs. If data is unclear or not provided, the prudent action to take is the submission of a Request for Information (RFI). Refer to Section 8 Sample Sketch for additional information regarding product identification.

Sales tax will need to be included on all purchased material. In some locations it will be required to apply sales tax to the entire contract amount. The estimator should refer to local regulations for guidance.

Overhead

Overhead captures a contractor’s indirect costs to include insurance, bonds and miscellaneous small tools required for project completion. This line item can also capture costs related to project management and accounting that is not specifically identified in the labor costs.

Fee

Fee is the amount of profit a company will charge for the work. This is calculated as a percentage of the hard costs (labor and material). Companies will often have a standard rate charged, however, it can vary depending on miscellaneous factors such as the subcontractor’s need for work and/or the complexity of the project.

SECTION 5: SPECIAL RISK CONSIDERATIONS

The main risk for tile installation is project schedule changes as scheduling of tile installation is dependent on the timely completion of other trades. Another risk is a delay in material acquisition. It is important for an estimator and the project team to be aware of product lead times and factor in ample time for submittal review and approval.
SECTION 6: RATIOS AND ANALYSIS

Due to the fact that most residential tiling projects are relatively similar in nature, a subcontractor can benefit by keeping an internal database tracking past project costs. For use in comparison it would be useful to note the following:

- Bid date and completion date
- Number of residential units in the project
- Location of project
- Change orders that significantly modified the bid price
- Project specific features (i.e. a large amenity space with custom tile work)

If a company maintains an up to date log of project costs, the estimator can compare a current bid and identify any cost abnormalities. An abnormality may be due to an estimating error or it may be the result of a particular project consideration (i.e. product selection).

SECTION 7: MISCELLANEOUS

There are many resources available related to tile installation. One source is the Tile Council of North America (TCNA) Handbook for Ceramic, Glass, and Stone Tile Installation. This book provides clarification and guidance regarding the installation of tile taking into a variety of conditions and factors that an installer may come across.

The TCNA Handbook references American National Standard Institute (ANSI) installation standards which is another excellent source of information. ANSI Section A108 is the, “American National Standard Specifications for the Installation of Ceramic Tile.” This publication provides detailed and technical guidance for the installation of ceramic tile in a variety of settings.

SECTION 8: SAMPLE SKETCH

Figure 1: Sample Floorplan showing the bathroom plan that will be utilized in the estimate.

In the plan set utilized for this technical paper, detail references are not provided on the Unit Plans. The estimator’s familiarity with the plan set will allow them to utilize the Sheet Index to find the pertinent details that will be used in their takeoff and estimate.

The floorplan provides a keynote PFT-4 that indicates the floor tile specified by the designer. With this information, the estimator shall refer to the project specifications to find the specified products associated with this keynote. The project specifications note the following:

- PFT-4 – 12” x 24” unglazed porcelain tile. Basis of Design Product is Stadium by Emser.
HTETCO Floor and Wall Tile ... continued

Figure 2A: Floor and Floor Base Detail

Detail 4D

Detail 4D informs the estimator what specification section they ought to refer to for the Ceramic Tile and Mortar. It also shows that the bullnose tile along the base of the wall will be installed on a drywall substrate.

This detail does not indicate the type of substrate the floor tile will be installed on so the estimator would be required to research the plans to find the appropriate detail.

Figure 2B: Floor Detail

Detail 4

Detail 4 indicates that the tile shall be placed on a Lightweight Concrete Topping that is over an Acoustical Underlayment Mat.

Figure 3: Bathtub Plan & Elevations

Detail 2C

Detail 3C

Detail 4C

Detail 2B

The above graphic shows an enlarged view of the bathtub (Detail 2B) and each elevation of the bathtub surround (Details 2C-4C). Detail 2B provides a reference to a cross section of the bathtub assembly (4A/A457) which is provided in Figure 5. The bathtub elevations provides keynotes indicating the types of tile specified by the designer:

- Bathtub surround tile – PWT3
- Floor baseboard tile – PTB4

With this information, the estimator shall refer to the project specifications to find the specified products associated with those keynotes. The project specifications note the following:

- PWT3 – 4” x 16” glazed porcelain wall tile. Basis of Design Product is Vogue by Emser.
- PTB4 – 3” x 13” unglazed porcelain tile. Basis of Design Product is Stadium by Emser.

Both products provide a list of alternate manufacturers and allow the contractor to offer a comparable product for review and consideration. The option to provide an alternate manufacturer and product can be a cost saving opportunity as discussed in Section 3.
Figure 4: Detail 3D/A458 as referenced in Typ. Tub – Elevation B (Figure 3)

Detail 3D

Detail 3D informs the estimator what specification section they ought to refer to for the Ceramic Tile and Mortar. It also shows that the bathtub wall tile will be installed over 5/8” cementious backer units and a continuous waterproofing membrane.

Figure 5: Detail 4A/A457 as referenced in Typ. Enlarged Tub Plan (Figure 3)

Detail 4A

Detail 4A shows the same substrate for the bathtub wall tile as Detail 3A but also indicates a waterproof sealant at the intersection of the tile and bathtub.
SECTION 9: SAMPLE TAKE-OFF AND PRICING SHEETS

The sample estimate is for one bathroom to include tile flooring and tub/shower surround. Materials used will be as noted on the sample plans and noted in Section 8. The estimate assumes that the floor substrate has been prepared and leveled and that the specified backer board has been installed at the tub/shower surround.

Take-offs

<table>
<thead>
<tr>
<th>Take-Off</th>
<th>Quantity</th>
<th>Unit</th>
<th>10% Waste</th>
<th>Total Material</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterproof Membrane</td>
<td>69</td>
<td>SF</td>
<td>6.9</td>
<td>75.9</td>
<td>Sample Sketch Figure 3: Typical Tub Elevations</td>
</tr>
<tr>
<td>Mortar</td>
<td>69</td>
<td>SF</td>
<td>6.9</td>
<td>75.9</td>
<td>Sample Sketch Figure 3: Typical Tub Elevations</td>
</tr>
<tr>
<td>Ceramic Tile - Field</td>
<td>65</td>
<td>SF</td>
<td>6.5</td>
<td>71.5</td>
<td>Sample Sketch Figure 3: Typical Tub Elevations</td>
</tr>
<tr>
<td>Ceramic Tile - Trim</td>
<td>26</td>
<td>LF</td>
<td>2.6</td>
<td>28.6</td>
<td>Sample Sketch Figure 3: Typical Tub Elevations</td>
</tr>
<tr>
<td>Grout</td>
<td>69</td>
<td>SF</td>
<td>6.9</td>
<td>75.9</td>
<td>Sample Sketch Figure 3: Typical Tub Elevations</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>10</td>
<td>LF</td>
<td>1</td>
<td>11.0</td>
<td>Sample Sketch Figure 3: Typical Tub Elevations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Take-Off</th>
<th>Quantity</th>
<th>Unit</th>
<th>10% Waste</th>
<th>Total Material</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortar - Field Tile</td>
<td>79</td>
<td>SF</td>
<td>7.9</td>
<td>86.9</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
<tr>
<td>Mortar - Base Tile (3&quot;)</td>
<td>7</td>
<td>SF</td>
<td>0.7</td>
<td>7.7</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
<tr>
<td>Ceramic Tile - Field</td>
<td>79</td>
<td>SF</td>
<td>7.9</td>
<td>86.9</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
<tr>
<td>Ceramic Tile - Base Trim</td>
<td>28</td>
<td>LF</td>
<td>2.8</td>
<td>30.8</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
<tr>
<td>Doorway Thresholds</td>
<td>2</td>
<td>EA</td>
<td>NA</td>
<td>2</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
<tr>
<td>Grout - Field Tile</td>
<td>79</td>
<td>SF</td>
<td>7.9</td>
<td>86.9</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
<tr>
<td>Grout - Base Tile (3&quot;)</td>
<td>7</td>
<td>SF</td>
<td>0.7</td>
<td>7.7</td>
<td>Sample Sketch Figure 1: Enlarged Unit Plan 1Q</td>
</tr>
</tbody>
</table>

![Floor Tile - 79 SF
Bullnose Base - 28 LF](image)
HTETCO Floor and Wall Tile ... continued
<table>
<thead>
<tr>
<th>Labor Costs</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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bath/Shower Surround</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterproof Membrane</td>
<td>75.9</td>
<td>SF</td>
<td>1 Laborer</td>
<td>400</td>
<td>$274.64</td>
<td>$0.69</td>
<td>$52.11</td>
</tr>
<tr>
<td>Layout &amp; Place Tile</td>
<td>75.9</td>
<td>SF</td>
<td>1 Tile Layer &amp; 1 Tile</td>
<td>160</td>
<td>$615.20</td>
<td>$3.85</td>
<td>$291.84</td>
</tr>
<tr>
<td>Grout</td>
<td>75.9</td>
<td>SF</td>
<td>1 Tile Layer</td>
<td>450</td>
<td>$347.20</td>
<td>$0.77</td>
<td>$58.56</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>11.0</td>
<td>LF</td>
<td>1 Laborer</td>
<td>285</td>
<td>$274.64</td>
<td>$0.96</td>
<td>$10.60</td>
</tr>
<tr>
<td><strong>Bathroom Flooring</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Layout &amp; Place Tile</td>
<td>94.6</td>
<td>SF</td>
<td>1 Tile Layer &amp; 1 Tile</td>
<td>270</td>
<td>$615.20</td>
<td>$2.28</td>
<td>$215.55</td>
</tr>
<tr>
<td>Doorway Thresholds</td>
<td>2</td>
<td>EA</td>
<td>1 Tile Layer &amp; 1 Tile</td>
<td>60</td>
<td>$615.20</td>
<td>$10.25</td>
<td>$20.51</td>
</tr>
<tr>
<td>Grout</td>
<td>94.6</td>
<td>SF</td>
<td>1 Tile Layer</td>
<td>450</td>
<td>$347.20</td>
<td>$0.77</td>
<td>$72.99</td>
</tr>
<tr>
<td><strong>Total Labor Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$722.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Costs</th>
<th>Total Material</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Material Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bath/Shower Surround</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backerboard</td>
<td>Installed by Others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterproof Membrane</td>
<td>75.9</td>
<td>SF</td>
<td>$1.24</td>
<td>$94.12</td>
</tr>
<tr>
<td>Mortar</td>
<td>75.9</td>
<td>SF</td>
<td>Included in Ceramic Tile Cost</td>
<td></td>
</tr>
<tr>
<td>Ceramic Tile - Field</td>
<td>71.5</td>
<td>SF</td>
<td>$5.60</td>
<td>$400.40</td>
</tr>
<tr>
<td>Ceramic Tile - Trim</td>
<td>28.6</td>
<td>LF</td>
<td>$8.17</td>
<td>$233.66</td>
</tr>
<tr>
<td>Grout</td>
<td>75.9</td>
<td>SF</td>
<td>$0.07</td>
<td>$5.31</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>11.0</td>
<td>LF</td>
<td>$0.42</td>
<td>$4.62</td>
</tr>
<tr>
<td><strong>Bathroom Flooring</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortar</td>
<td>94.6</td>
<td>SF</td>
<td>Included in Ceramic Tile Cost</td>
<td></td>
</tr>
<tr>
<td>Ceramic Tile - Field</td>
<td>86.9</td>
<td>SF</td>
<td>$2.20</td>
<td>$191.18</td>
</tr>
<tr>
<td>Ceramic Tile - Base Trim</td>
<td>30.8</td>
<td>LF</td>
<td>$5.80</td>
<td>$178.64</td>
</tr>
<tr>
<td>Doorway Thresholds</td>
<td>2</td>
<td>EA</td>
<td>$43.00</td>
<td>$86.00</td>
</tr>
<tr>
<td>Grout</td>
<td>94.6</td>
<td>SF</td>
<td>$0.07</td>
<td>$6.62</td>
</tr>
<tr>
<td><strong>Material Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$1,200.55</td>
</tr>
<tr>
<td>Sales Tax (6.00%)</td>
<td></td>
<td></td>
<td></td>
<td>$72.03</td>
</tr>
<tr>
<td><strong>Total Material Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>$1,272.59</td>
</tr>
</tbody>
</table>
SECTION 10: REFERENCES

The sample estimate is for one bathroom to include tile flooring and tub/shower surround. Materials used will be as noted on the sample plans and noted in Section 8. The estimate assumes that the floor substrate has been prepared and leveled and that the specified backer board has been installed at the tub/shower surround.