SPECIAL PROVISIONS

These Special Provisions are changes to or addition to the requirements of the Project Manual Section 7-29 and are a part of the Contract Documents.

PROJECT MANUAL, SECTION 8 – SPECIAL PROVISIONS are provided for reference only subject to verification by the contactor.

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  1. Waler wall Record Drawings (December 2016) (16 Pages)

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  1. Record flooring submittal from previous remodel project (14 pages)

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1. ALL TIMES OF WORK UNDER THIS CONTRACT SHALL BE IN strict accordance with the Code of
   Standards for the City of New Orleans, except in the case of emergency situations where
   the City has set a different time of work. The City shall not be responsible for any
   delays or extensions of time due to any cause not within its control.

2. THE CONTRACTOR SHALL NOTIFY ALL CITY-OWNED PROPERTIES WITHIN 30 DAYS OF COMPLETING
   THE CONTRACT FOR THE USE OF THE AREA WITHIN WHICH THE WORK IS TO BE PERFORMED. If any
   changes occur other than those specifically ordered on the plans and specifications,
   the CONTRACTOR SHALL NOTIFY THE CITY OF THE SAME WITHIN 30 DAYS OF COMPLETING
   THE CONTRACT.

3. ALL MATERIALS AND LABOR PROVIDED UNDER THIS CONTRACT SHALL BE IN strict accordance
   with the City's standards for quality and workmanship. The CONTRACTOR SHALL BE
   RESPONSIBLE FOR THE QUALITY OF WORK AND MATERIALS PROVIDED UNDER THIS
   CONTRACT. No claims for non-conformance to specifications shall be allowed.

4. THE CONTRACTOR SHALL NOTIFY THE CITY OF ANY PROBLEMS WITHIN 30 DAYS OF COMPLETING
   THE CONTRACT. The CONTRACTOR SHALL BE RESPONSIBLE FOR THE QUALITY OF WORK AND
   MATERIALS PROVIDED UNDER THIS CONTRACT. No claims for non-conformance to
   specifications shall be allowed.

5. THE CONTRACTOR SHALL NOTIFY THE CITY OF ANY PROBLEMS WITHIN 30 DAYS OF COMPLETING
   THE CONTRACT. The CONTRACTOR SHALL BE RESPONSIBLE FOR THE QUALITY OF WORK AND
   MATERIALS PROVIDED UNDER THIS CONTRACT. No claims for non-conformance to
   specifications shall be allowed.

6. THE CONTRACTOR SHALL NOTIFY THE CITY OF ANY PROBLEMS WITHIN 30 DAYS OF COMPLETING
   THE CONTRACT. The CONTRACTOR SHALL BE RESPONSIBLE FOR THE QUALITY OF WORK AND
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    MATERIALS PROVIDED UNDER THIS CONTRACT. No claims for non-conformance to
    specifications shall be allowed.
RECORD DRAWING

WEST SWALE PLAN

SCALE 1/10

WEST SWALE PROFILE

SCALE 1/10

EAST SWALE PROFILE

SCALE 1/10

TYPICAL SWALE SECTION

TYPICAL SWALE THROAT SECTION

NOTE: SWALE LIGHTENINGS SHOWN ARE APPROPRIATE COMMENT TO FIELD VERIFY LOCAL TOPOGRAPHY AND ADJUST SWALE ALIGNMENT FOR POSITIVE DRAINAGE.
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<table>
<thead>
<tr>
<th>MERR SECTION</th>
<th>APPROX AREA (SQ FT)</th>
<th>INVASIVE VEGETATION TYPE TO REMOVE</th>
<th>PROPOSED VEGETATION REPLANTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>270</td>
<td>Elephant Ear, Chinese Tallow</td>
<td>Acacia spp., Lippia nodiflora, Salix spp., Solidago spp.</td>
</tr>
<tr>
<td>2</td>
<td>650</td>
<td>Elephant Ear</td>
<td>Acacia spp., Lippia nodiflora, Salix spp., Solidago spp.</td>
</tr>
<tr>
<td>3</td>
<td>210</td>
<td>Elephant Ear</td>
<td>Justicia americana, Rumex obtusifolius, Coreopsis spp.</td>
</tr>
<tr>
<td>4</td>
<td>480</td>
<td>Elephant Ear</td>
<td>Rumex obtusifolius, Veronica spicata, Sambucus canadensis, Coreopsis spp.</td>
</tr>
<tr>
<td>5</td>
<td>7,280</td>
<td>Elephant Ear, Water Shield</td>
<td>Solidago spp., Justicia americana</td>
</tr>
<tr>
<td>6</td>
<td>490</td>
<td>Coreopsis</td>
<td>Veronica spicata, Michaelmas daisy, Phlox paniculata, Physostegia virginiana</td>
</tr>
<tr>
<td>7</td>
<td>170</td>
<td>Coreopsis</td>
<td>Veronica spicata, Michaelmas daisy, Phlox paniculata, Physostegia virginiana</td>
</tr>
<tr>
<td>8</td>
<td>90</td>
<td>Coreopsis</td>
<td>Justicia americana, Coreopsis spp.</td>
</tr>
<tr>
<td>9</td>
<td>70</td>
<td>Coreopsis</td>
<td>Justicia americana, Coreopsis spp.</td>
</tr>
<tr>
<td>10</td>
<td>460</td>
<td>Coreopsis</td>
<td>Justicia americana, Coreopsis spp.</td>
</tr>
<tr>
<td>11</td>
<td>450</td>
<td>Coreopsis</td>
<td>Justicia americana, Coreopsis spp.</td>
</tr>
<tr>
<td>12</td>
<td>5,590</td>
<td>Round Oak Tree</td>
<td>Microlaena spp., native grasses, weed clones only</td>
</tr>
<tr>
<td>13</td>
<td>2,830</td>
<td>Chinese Tallow</td>
<td>Veronica spicata, Rumex obtusifolius, Chamaeleochilus multiflorum</td>
</tr>
</tbody>
</table>
TOE PROTECTION PLAN

NOTES:
1. RETAIL CORR ROLLS IN FULL CONTACT WITH SOIL. REMOVE ROCK AS NECESSARY.
2. CORR ROLL ROLL SHALL BE 20' PER SPEC. SS 94-00

TYPICAL CORR ROLL SECTION

CORR ROLLS NOT INSTALLED
Bidding Requirements, Contract Forms and Conditions of the Contract
SPECIAL PROVISIONS
Golf Clubhouse Desk Addition.CSP24-002
Exhibit 6

SP-2 Geotechnical Engineering Study
Raba Kistner Geotechnical Engineering Study ANA21-031-00 (Following this page)
GEOTECHNICAL ENGINEERING STUDY

FOR

LANDA GOLF COURSE
CLUBHOUSE DECK REPLACEMENT
NEW BRAUNFELS, TEXAS
Project No. ANA21-031-00
July 29, 2021

Mr. Adam L. Michie, P.E.
Capital Project Manager
City of New Braunfels
550 Landa Street
New Braunfels, Texas 78130

RE: Geotechnical Engineering Study
Landa Golf Course
Clubhouse Deck Replacement
New Braunfels, Texas

Dear Mr. Michie:

RABA KISTNER Consultants Inc. (RKCI) is pleased to submit the report of our Geotechnical Engineering Study for the above-referenced project. This study was performed in accordance with RKCI Proposal No. PNA21-043-00, dated May 11, 2021. The purpose of this study was to drill borings within the proposed clubhouse deck, to perform laboratory testing to classify and characterize subsurface conditions, and to prepare an engineering report presenting foundation design and construction recommendations for the proposed club house deck.

The following report contains our design recommendations and considerations based on our current understanding of finished floor elevations, design tolerances and structural loads. There may be alternatives for value engineering of the foundation system, and RKCI recommends that a meeting be held with the Owner and design team to evaluate these alternatives.

We appreciate the opportunity to be of service to you on this project. Should you have any questions about the information presented in this report, or if we may be of additional assistance with value engineering or on the materials testing-quality control program during construction, please call.

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

Dylan A. Bünn, E.I.T.
Graduate Engineer

T. Ian Perez, P.E.
Associate

DAB/TIP/slh

Attachments

Copies Submitted: Above (1) – Email Only
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The following figures are attached and complete this report:

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Important Information About Your Geotechnical Engineering Report
INTRODUCTION

RABA KISTNER Consultants Inc. (RKCI) has completed the authorized subsurface exploration and foundation analysis for the proposed deck replacement located at the Landa Park Golf Course Clubhouse, 180 Golf Course Road, in New Braunfels, Texas, as illustrated on Figure 1. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendations for foundation design and construction considerations.

PROJECT DESCRIPTION

Under consideration in this study is a new deck to replace the existing deck located on the western side of the Landa Park Golf Course Clubhouse, overlooking Blieders Creek at 180 Golf Course Road in New Braunfels, Texas. It is our understanding that at the time of this study, site grading plans were not yet available. We understand that concentrated loads to be carried by the foundation system will range from 10 to 50 kips; that helical piers are being considered to support the proposed deck, and that there will be no ground supported foundation elements at grade.

LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of south/central Texas and for the use of the City of New Braunfels (CLIENT) and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses. This report is not intended for use in determining construction means and methods. The attachments and report text should not be used separately.

The recommendations submitted in this report are based on the data obtained from 2 borings drilled at this site and the project information provided to us. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions across the site. The nature and extent of variations across the site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report.
BORINGS AND LABORATORY TESTS

Subsurface conditions at the site were evaluated by 2 borings drilled at the locations shown on the Boring Location Map, Figure 1. These locations are approximate and distances were measured using a hand-held, recreational-grade GPS locator. Based on the USGS Comal County GIS database, ground surface elevations were estimated to be 610 and 628 ft at Borings B-1 and B-2, respectively. The borings were drilled to depths of 50 ft below the existing ground surface using a truck-mounted drilling rig. Texas Cone Penetrometer testing was conducted at 5 ft intervals. During drilling operations, grab samples of the subsurface materials were collected at 5 ft intervals with intermittent Shelby Tubes where possible.

Each sample was visually classified in the laboratory by a member of our geotechnical engineering staff. The geotechnical engineering properties of the strata were evaluated by natural moisture content testing, Atterberg limits determinations, grain size analyses (percent passing a No. 200 sieve), and unconfined compression of undisturbed soil samples.

The results of all laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 and 3. A key to classification terms and symbols used on the logs is presented on Figure 4. The results of the laboratory and field testing are also tabulated on Figure 5 for ease of reference.

Texas Cone Penetrometer (TCP) test results are noted as “blows per foot” on the boring log (divided into 6 in. increments) where “blows per ft” refers to the number of blows by a falling hammer required for 1 ft of penetration into soil/weak rock. Where hard or dense materials were encountered, each increment was terminated at 50 blows even if 6 in. of penetration had not been achieved in that increment.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the Client.

GENERAL SITE CONDITIONS

SITE DESCRIPTION

The project site is at the existing Landa Park Golf Course Clubhouse located at 180 Golf Course Road in New Braunfels, Texas. Existing structures include the golf course clubhouse, existing deck, and retaining wall, and the associated infrastructure to support access and service to the golf course. The golf course clubhouse is immediately adjacent to Bleders Creek and the proposed deck will overlook the creek. The topography generally slopes downward toward the south with vertical relief of about 30 ft across the site. Surface drainage is visually estimated to range from fair to good.

GEOLOGY

A review of the Geologic Atlas of Texas, San Antonio Sheet, indicates that this site is naturally underlain by fluviatile terrace deposits which are stream bed deposits typically consisting of clays, sands, silts, and gravels. Such deposits can contain point bars, cutbanks, oxbows, and abandoned channel segments associated with variations in stream bed activity. As a result, soil profiles in terrace deposit areas may vary greatly over relatively short distances. Key geotechnical engineering concerns for development supported on this
formation are the expansive nature of the clays, the consistency or relative density of the deposits, and the absence/presence as well as thickness of potentially water-bearing gravels.

**SEISMIC CONSIDERATIONS**

Based on the soil borings conducted for this investigation, the upper 100 feet of soil may be characterized as “very dense soil and soft rock” and a **Class C** Site Class Definition (Chapter 20 of ASCE 7) has been assigned to this site.

On the basis of the Structural Engineers Association of California/Office of Statewide Health Planning and Development (SEAOC/OSHPD) website\(^1\) which utilizes the International Building Code (IBC) and U.S. Seismic Design Maps to develop seismic design parameters, the following seismic considerations are associated with this site.

- \( S_s = 0.073 \) g
- \( S_1 = 0.031 \) g
- \( S_{ml} = 0.088 \) g
- \( S_{m1} = 0.053 \) g
- \( S_{DS} = 0.058 \) g
- \( S_{D1} = 0.035 \) g

Based on the parameters listed above as well as Tables 1613.3.5(1) and 1613.3.5(2) of the 2012 IBC, the Seismic Design Category for both short period and 1 second response accelerations is **A**. As part of the assumptions required to complete the calculations, a Risk Category of “III” was selected.

**STRATIGRAPHY**

The subsurface stratigraphy at this site can generally be described as plastic, dark brown to brown clay with gravel, overlying moderately plastic light brown to light tan silty clays. These silty clays overlie tan to gray gravelly clay which overlies very hard, gray shale. The gray shale extends to at least the termination depth of our borings. Each stratum has been designated by grouping soils that possess similar physical and engineering characteristics. The boring logs should be consulted for more specific stratigraphic information. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

**GROUNDWATER**

Groundwater was observed in both borings during drilling operations. The depths to water (post drill) and to the bottom of the borings, as well as the depth where groundwater was encountered is tabulated below.

---

\(^1\) [https://seismicmaps.org](https://seismicmaps.org)
It is possible for groundwater to exist beneath this site at shallow depths on a transient basis, particularly at strata interfaces, within granular soils, and following periods of precipitation. Fluctuations in groundwater levels occur due to variation in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater level.

**FOUNDATION ANALYSIS**

**EXPANSIVE SOIL-RELATED MOVEMENTS**

The anticipated ground movements due to swelling of the underlying soils at the site were estimated for slab-on-grade construction using the empirical procedure, Texas Department of Transportation (TxDOT) Tex-124-E, Method for Determining the Potential Vertical Rise (PVR). PVR values ranging from 1-1/2 to 2 in. were estimated for the stratigraphic conditions encountered in our borings. A surcharge load of 1 psi (concrete slab and sand layer), an active zone of 15 ft, and dry moisture conditions were assumed in estimating the above PVR values.

The TxDOT method of estimating expansive soil-related movements is based on empirical correlations utilizing the measured plasticity indices and assuming typical seasonal fluctuations in moisture content. If desired, other methods of estimating expansive soil-related movements are available, such as estimations based on swell tests and/or soil-suction analyses. However, the performance of these tests and the detailed analysis of expansive soil-related movements were beyond the scope of the current study. It should also be noted that actual movements can exceed the calculated PVR values due to isolated changes in moisture content (such as due to leaks, landscape watering, etc.) or if water seeps into the soils to greater depths than the assumed active zone depth due to deep trenching or excavations.

**Overexcavation and Select Fill Replacement**

To reduce expansive soil-related movements in at-grade construction, a portion of the upper highly expansive subgrade clays in the deck area can be removed by overexcavating and backfilling with a suitable select fill material. PVR values have been estimated for overexcavation and select fill replacement to various depths below the existing ground surface and are summarized in the table below. Recommendations for the selection and placement of select backfill materials are addressed in a subsequent section of this report.

<table>
<thead>
<tr>
<th>Boring No.</th>
<th>Depth Groundwater Encountered (ft)</th>
<th>Depth to Water (Upon Completion) (ft)</th>
<th>Depth to Bottom of Boring (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-1</td>
<td>3</td>
<td>2.0</td>
<td>50</td>
</tr>
<tr>
<td>B-2</td>
<td>25</td>
<td>19.9</td>
<td>50</td>
</tr>
</tbody>
</table>
FOUNDATION RECOMMENDATIONS

FOUNDATION OPTIONS

The following recommendations are based on the data obtained from our field and laboratory studies, our past experience with geotechnical conditions similar to those at this site, and our engineering design analyses.

The following alternatives are available to support the structures:

- Drilled, straight-shaft piers; or
- Helical piers.

The owner may select either one of these foundation systems depending on the performance criteria established for the structures. Cost analyses have not been conducted for any foundation system and are beyond the scope of this study. It is our understanding that helical piers are being considered for improvements.

SITE GRADING

We have prepared all foundation recommendations based on the existing ground surface and the stratigraphic conditions encountered at the time of our study. If site grading plans differ from existing grade by more than plus or minus 1 ft, RKCI must be retained to review the site grading plans prior to bidding the project for construction. This will enable RKCI to provide input for any changes in our original recommendations that may be required as a result of site grading operations or other considerations.

AREA FLATWORK

It should be noted that ground-supported flatwork such as walkways, courtyards, etc. will be subject to the same magnitude of potential soil-related movements as discussed previously (see Expansive Soil-Related Movement section). Thus, where these types of elements abut rigid building foundations or isolated/suspended structures, differential movements should be anticipated. As a minimum, we recommend that flexible joints be provided where such elements abut the main structure to allow for differential movement at these locations. Where the potential for differential movement is objectionable,

<table>
<thead>
<tr>
<th>Depth of Overexcavation and Select Fill Replacement (ft)*</th>
<th>Estimated PVR (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1-1/2</td>
</tr>
<tr>
<td>1</td>
<td>1-1/4</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>3/4</td>
</tr>
<tr>
<td>4</td>
<td>1/2 in. or less</td>
</tr>
</tbody>
</table>

*below the ground surface elevation existing at the time of our study.
it may be beneficial to consider methods of reducing anticipated movements or to consider structurally suspending critical areas to match the adjacent building performance.

**DRILLED, STRAIGHT-SHAFT PIERS**

**Axial Capacity**

We have computed allowable downward vertical capacities for 18, 24, 30, 36, and 42 in. diameter drilled piers. Straight-shaft piers should be designed as end bearing and friction units using the capacities presented graphically on the “Drilled Pier Axial Capacity Curves” on Figure 6. Side shear resistance was neglected to the elevations presented on the drilled pier capacity curves. If soft soils are encountered during drilling within the elevations that contribute to pier capacity, the piers should be extended by the length that the pier penetrates the soft soils to maintain the required capacity of the piers. RKCI will need to be present to observe that the excavated soils are consistent with the soils encountered near the termination depths of our borings.

Pier capacity curves were developed using the TxDOT Geotechnical Manual dated March 2018. The capacity curves are based on the TCP blow count data from the borings. The indicated capacities on these figures are for dead plus live loads. Dead loads should not exceed two-thirds of the computed capacities.

**Pier Shafts**

The pier shafts will be subject to potential uplift forces if the surrounding expansive soils within the active zone are subjected to alternate drying and wetting conditions. The maximum potential uplift force acting on the shaft may be estimated by:

\[ F_u = 50 \times D \]

where:

- \( F_u \) = uplift force in kips; and
- \( D \) = diameter of the shaft in feet.

**Uplift Resistance**

Resistance to uplift forces exerted on the drilled, straight-shaft piers will be provided by the sustained compressive axial force (dead load) plus the allowable uplift resistance provided by the soil. The resistance provided by the soil depends on the shear strength of the soils adjacent to the pier shaft and below the depth of the active zone. The allowable uplift resistance provided by the soils at this site may be estimated using the “Drilled Pier Uplift Capacity Curves” presented graphically on Figure 7. Side shear resistance was neglected to the elevations presented on the uplift capacity curves.

Reinforcing steel will be required in each pier shaft to withstand a net force equal to the uplift force minus the uplift resistive force and the sustained compressive load carried by that pier. We recommend that each
pier be reinforced to withstand this net force or an amount equal to 0.75 percent of the cross-sectional area of the shaft, whichever is greater.

To effectively reduce pier group effects and reduction in individual pier capacity, piers should be located with a minimum center-to-center spacing of three shaft diameters.

**Estimated Settlements**

Based on the maximum allowable loads for a single pier, we estimate total settlements on the order of 1/2 in. to 1 in. to mobilize allowable static capacities. Post-construction settlement will be dependent on the final structural loading, pier spacing, and group size. We recommend that RKCI be retained to review the final loads and pier group layouts, to review pier capacities and to check estimated foundation settlements.

**Pier Spacing**

Where possible, we recommend that the piers be spaced at a center to center distance of at least three shaft diameters on-center for straight-shaft piers. Such spacing will not require a reduction in the load carrying capacity of the individual piers.

If design and/or construction restraints require that piers be spaced closer than the recommended three shaft diameters, RKCI must re-evaluate the allowable bearing capacities presented above for the individual piers. Reductions in load carrying capacities may be required depending upon individual loading and spacing conditions.

**Lateral Resistance**

Resistance to lateral loads and the expected pier behavior under the applied loading conditions will depend not only on subsurface conditions, but also on loading conditions, the pier size, and the engineering properties of the pier. Once pier sizes, concrete strength, and reinforcement are finalized, piers should be analyzed to determine the resulting lateral deflection, maximum bending moment, and ultimate bending moment. This type of analysis is typically performed utilizing a computer analysis program and usually requires a trial and error procedure to appropriately size the piers and meet project tolerances.

To assist the design engineer in this procedure, we are providing the following soil parameters for use in analysis. These parameters are in accordance with the input requirements of one of the more commonly used computer programs for laterally loaded piles, the LPile program. If a different program is used for analysis, different parameters and limitations may be required than what were assumed in selecting the parameters given below. Thus, if a program other than LPile is used, RKCI must be notified of the analysis method, so that we can review and revise our recommendations if required. Evaluating the lateral resistance on different pier sizes is outside our scope of work at this time.

The soil-related parameters required for input into the LPile program are summarized in the tables below:
Assumed Behavior for Analysis  | Elevation (ft) | c (tsf) | k_s (pci) | k_c (pci) | \( \varepsilon_{50} \) | \( \gamma \) (pcf) \\
--- | --- | --- | --- | --- | --- | --- \\
Soft Clay (Matlock) | 628 to 597 | 0.25 | 30 | - | 0.02 | 100 \\
Stiff Clay without free water (Reese & Welch) | 597 to 560 | 4.00 | 2,000 | 800 | 0.004 | 135 \\

*Depth below the existing ground surface at the time of our study. Additional fill placed in the deck area to achieve the proposed FFE should be modeled as soft clay (matlock) as presented above.

Where:  
\[ c = \text{undrained cohesion} \]  
\[ k_s = \text{p-y modulus (static)} \]  
\[ k_c = \text{p-y modulus (cyclic)} \]  
\[ \varepsilon_{50} = \text{strain factor} \]  
\[ \gamma = \text{effective unit weight} \]

The parameters presented in the above table do not include factors of safety. Per the general procedures of Section 1810.3.3.2 of the IBC 2012 edition, the allowable lateral capacity shall not exceed one-half of the lateral load that produces a lateral movement of 1-inch at the ground surface.

It should be noted that where piers are spaced closer than three shaft diameters center to center, a modification factor should be applied to the p-y curves to account for a group effect. We recommend the following p-Multipliers for the corresponding center to center pier spacings:

<table>
<thead>
<tr>
<th>Spacing (in shaft diameters)</th>
<th>p-Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>0.75</td>
</tr>
<tr>
<td>1</td>
<td>0.50</td>
</tr>
</tbody>
</table>

HEICAL PIERS

It is our understanding that helical piers may be considered to support the structure. Helical pier capacity is achieved through end bearing on the helix plates and skin friction on the shaft. Helical piers are typically rotated into place until the required torque is achieved, utilizing a torque to capacity correlation. These correlations are dependent on the size, type, and configuration of the selected helical piers and are considered proprietary.

The boring logs included herein may be used by the selected contractor and structural engineer designing the foundation system to develop the required capacity. Key geotechnical considerations for helical piers at this site will be the ability to advance the piers through the gravel layers and the hard clay shale.
ADDITIONAL CONSIDERATIONS

As with any project where new additions are to be connected to an existing structure, differential movements between the existing structure and addition should be anticipated. To reduce possible differential movements, it is typically desirable to match the old and the new foundation types. However, this will not eliminate the potential for differential movements since the existing and new structures are constructed at different times. Therefore, the recommendations and options discussed in this report should be carefully considered by the design team to obtain the desired performance of the new structural system. As a minimum, control/expansion joints are recommended at connection points between the old and new structures and between architectural trim materials along walls/ceilings.

Should excavations adjacent to existing structures be required, precautions should be taken not to undermine or damage existing grade beams, footings, and/or utility lines.

FOUNDATION CONSTRUCTION CONSIDERATIONS

SITE DRAINAGE

Drainage is an important key to the successful performance of any foundation. Good surface drainage should be established prior to and maintained after construction to help prevent water from ponding within or adjacent to the deck foundation and to facilitate rapid drainage away from the foundation. Failure to provide positive drainage away from the structure can result in localized differential vertical movements in floor slabs.

Also to help control drainage in the vicinity of the structure, we recommend that roof/gutter downspouts and landscaping irrigation systems not be located adjacent to the deck foundation. Where a select fill overbuild is provided outside of the floor slab/foundation footprint, the surface should be sealed with an impermeable layer (pavement or clay cap) to reduce infiltration of both irrigation and surface waters. Careful consideration should also be given to the location of water bearing utilities, as well as to provisions for drainage in the event of leaks in water bearing utilities. All leaks should be immediately repaired.

Furthermore, as discussed in a previous section of this report, based on our past experience and findings in our test borings shallow groundwater seepage should be anticipated at the time of construction as a result of the proximity to the adjacent creek.

SELECT FILL

If needed, materials used as select fill for final site grading preferably should be crushed stone or gravel aggregate. We recommend that materials specified for use as select fill meet the TxDOT 2004 Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 247, Flexible Base, Type A, Grades 1-2 or 3.

Soils classified as CH, CL, MH, ML, SM, GM, OH, OL and Pt under the USCS are not considered suitable for use as select fill materials at this site. The native soils at this site are not considered suitable for use as select fill materials.
Select fill should be placed in loose lifts not exceeding 8 in. in thickness and compacted to at least 95 percent of maximum density as determined by TxDOT, Tex-113-E, Compaction Test. The moisture content of the fill should be maintained within the range of 2 percentage points below to 2 percentage points above the optimum moisture content until final compaction. Should fill be required resulting in thicknesses of 8 ft or greater, we should be retained to evaluate the conditions and the placement recommendations.

**DRILLED PIERS**

Each drilled pier excavation must be examined by an RKCI representative who is familiar with the geotechnical aspects of the soil stratigraphy, the structural configuration, foundation design details and assumptions, prior to placing concrete. This is to observe that:

- The shaft has been excavated to the specified dimensions at the correct depth established by the previously mentioned criteria;
- The pier excavation remains dry prior to concrete placement, with less than 1 inch of water at the base of the excavation;
- The shaft has been drilled plumb within specified tolerances along its total length; and
- Excessive cuttings, buildup and soft, compressible materials have been removed from the bottom of the excavation.

If pier excavations are unable to be kept dry prior to placement of concrete, the tremie method should be used to place concrete. Utilization of the tremie method does not replace our recommendation of pier casing.

**Reinforcement and Concrete Placement**

Reinforcing steel should be checked for size and placement prior to concrete placement. Placement of concrete should be accomplished as soon as possible after excavation to reduce changes in the moisture content or the state of stress of the foundation materials. No foundation element should be left open overnight without concreting.

**Temporary Casing and Slurry Techniques**

Groundwater seepage was encountered during our field operations thus, groundwater seepage and/or side sloughing should be expected at the time of construction, depending on climatic conditions prevalent at the time of construction. Additionally, gravel and gravelly soils were encountered in our borings which may cause sidewall sloughing of the pier excavations. Therefore, we recommend that the bid documents require the foundation contractor to specify unit costs for different lengths of casing and unit costs for slurry drilling techniques that may be required. Temporary casing and slurry techniques should be conducted in accordance with TxDOT 2014 Standard Specifications for Construction of Highways, Streets and Bridges, Item 416, *Drilled Shaft Foundations.*
EXCAVATION SLOPING AND BENCHING

If utility trenches or other excavations extend to or below a depth of 5 ft below construction grade, the contractor or others shall be required to develop a trench safety plan to protect personnel entering the trench or trench vicinity. The collection of specific geotechnical data and the development of such a plan, which could include designs for sloping and benching or various types of temporary shoring, are beyond the scope of the current study. Any such designs and safety plans shall be developed in accordance with current OSHA guidelines and other applicable industry standards.

As discussed previously, we estimate that groundwater seepage may be encountered at an approximate elevation of 608 ft. Provisions must be made to handle groundwater seepage and all necessary precautions must be taken to protect employees against the hazards posed by water accumulation. According to the OSHA regulations, any soil/rock from which water is seeping is classified as a Type “C” soil and should be sloped no steeper than 1-1/2:1 (horizontal/vertical).

EXCAVATION EQUIPMENT

Hard to very hard shale was encountered in our borings. Thus, the need of rock excavation equipment should be anticipated for construction of the drilled piers at this site and should be considered should helical piers be utilized to support the proposed deck. Our boring logs are not intended for use in determining construction means and methods and may therefore be misleading if used for that purpose. We recommend that earth-work and utility contractors interested in bidding on the work perform their own tests in the form of test pits to determine the quantities of the different materials to be excavated, as well as the preferred excavation methods and equipment for this site.

CONSTRUCTION RELATED SERVICES

CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES

As presented in the attachment to this report, Important Information About Your Geotechnical Engineering Report, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, RKCI is retained to perform construction observation and testing services during the construction of the project. This is because:

- RKCI has an intimate understanding of the geotechnical engineering report’s findings and recommendations. RKCI understands how the report should be interpreted and can provide such interpretations on site, on the client’s behalf.
- RKCI knows what subsurface conditions are anticipated at the site.
RKCI is familiar with the goals of the owner and project design professionals, having worked with them in the development of the geotechnical workscope. This enables RKCI to suggest remedial measures (when needed) which help meet the owner’s and the design teams’ requirements.

RKCI has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in which contractors’ work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.

RKCI cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.

BUDGETING FOR CONSTRUCTION TESTING

Appropriate budgets need to be developed for the required construction testing and observation activities. At the appropriate time before construction, we advise that RKCI and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. RKCI looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.
ATTACHMENTS
THE ELEVATIONS ON THIS MAP DO NOT REPRESENT SURVEYED LOCATIONS AND WERE TAKEN FROM THE USGS COMAL COUNTY GIS DATABASE

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes
LOG OF BORING NO. B-1
Landa Golf Course
Clubhouse Deck Replacement
New Braunfels, Texas

DEEP DRILLED: 50.0 ft
DATE DRILLED: 6/28/2021
DEPTH TO WATER: 2 ft
DATE MEASURED: 6/28/2021
PROJ. No.: ANA21-031-00
FIGURE: 2a

DRILLING METHOD: Straight Flight Auger
LOCATION: 129.71119; W 98.13202

SURFACE ELEVATION: 610 ft

DEEP OF MATERIAL

CLAY, Very Soft, Dark Brown, with gravel
-groundwater encountered at 3 ft

CLAY, Gravelly (River Gravel), Stiff, Gray

SHALE, Very Hard, Gray

SHEAR STRENGTH, TONS/FT²

PLASTICITY INDEX

% 0 20 40 60 80

UNIT DRY WEIGHT, pcf

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

DEEP, FT

50.0 ft

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

TBPE Firm Registration No. F-3257
LOG OF BORING NO. B-1
Landa Golf Course
Clubhouse Deck Replacement
New Braunfels, Texas

DRILLING METHOD: Straight Flight Auger

LOCATION: N 29.71119; W 98.13202

DEPTH DRILLED: 50.0 ft
DATE DRILLED: 6/28/2021

DEPTH TO WATER: 2 ft
DATE MEASURED: 6/28/2021
PROJ. No.: ANA21-031-00
FIGURE: 2b

SHALE, Very Hard, Gray (continued)

SURFACE ELEVATION: 610 ft

DESCRIPTION OF MATERIAL

UNIT DRYWEIGHT,pcf

SHEAR STRENGTH, TONS/FT²

PLASTICITY INDEX

% -200

BLOWS PER FT

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

PLASTIC LIMIT
WATER CONTENT
LIQUID LIMIT

DEPHT, FT

SYMBOL SAMPLES

100/1.5"

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

TBPE Firm Registration No. F-3257
**LOG OF BORING NO. B-2**

Landa Golf Course  
Clubhouse Deck Replacement  
New Braunfels, Texas

**DRILLING METHOD:** Straight Flight Auger

**LOCATION:** N 29.71152; W 98.13179

### DESCRIPTION OF MATERIAL

**SURFACE ELEVATION:** 628 ft

**SHALE, Very Hard, Gray (continued)**

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<th>SAMPLES</th>
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<table>
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<th>UNIT DRY WEIGHT,pcf</th>
<th>BLOWS PER FT</th>
<th>PLASTICITY INDEX</th>
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<td>100/1.75&quot;</td>
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<td>80</td>
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**SHEAR STRENGTH, TONS/FT**

- **10**
- **20**
- **30**
- **40**
- **50**
- **60**
- **70**
- **80**

**NOTE:** THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

**DEPTH DRILLED:** 50.0 ft  
**DATE DRILLED:** 6/28/2021  
**DEPTH TO WATER:** 19.9 ft  
**DATE MEASURED:** 6/28/2021  
**PROJ. No.:** ANA21-031-00  
**FIGURE:** 3b
### Key to Terms and Symbols

#### Material Types

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<th>Soil Terms</th>
<th>Rock Terms</th>
<th>Other</th>
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<tr>
<td>Calcareous</td>
<td>Chalk</td>
<td>Asphalt</td>
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<tr>
<td>Caliche</td>
<td>Claystone</td>
<td>Base</td>
</tr>
<tr>
<td>Clay</td>
<td>Clay-shale</td>
<td>Concrete/Cement</td>
</tr>
<tr>
<td>Clayey</td>
<td>Conglomerate</td>
<td>Brick/Pavers</td>
</tr>
<tr>
<td>Gravel</td>
<td>Dolomite</td>
<td>Waste</td>
</tr>
<tr>
<td>Gravelly</td>
<td>Fill</td>
<td>No Information</td>
</tr>
<tr>
<td>Peat</td>
<td>Clastic</td>
<td>No Information</td>
</tr>
</tbody>
</table>

#### Well Construction and Plugging Materials

| Blank Pipe | Bentonite | Bentonite & Cuttings | Cuttings | Sand |
| Screen | Cement Grout | Concrete/Cement | Gravel | Volclay |

#### Sample Types

| Air Rotary | Mud Rotary | Shelby Tube | Pocket Penetrometer | Rotosonic Damaged |
| Grab Sample | No Recovery | Split Barrel | Torvane | Rotosonic Intact |
| Core | Nx Core | Split Spoon | Unconfined Compression | DISTURBED |
| Geoprobe Sampler | Pitcher | Texas Cone Penetrometer | Triaxial Compression Unconsolidated-Undrained | |

#### Strength Test Types

- Pocket Penetrometer
- Torvane
- Unconfined Compression
- Triaxial Compression Unconsolidated-Undrained
- Triaxial Compression Consolidated-Undrained

Note: Values symbolized on boring logs represent shear strengths unless otherwise noted.

---

**Figure 4**

*REVISED 04/2012*
### RESULTS OF SOIL SAMPLE ANALYSES

**PROJECT NAME:** Landa Golf Course  
Clubhouse Deck Replacement  
New Braunfels, Texas

**FILE NAME:** ANA21-031-00.GPJ  
7/21/2021

<table>
<thead>
<tr>
<th>Boring No.</th>
<th>Sample Depth (ft)</th>
<th>Blows per ft</th>
<th>Water Content (%)</th>
<th>Liquid Limit</th>
<th>Plastic Limit</th>
<th>Plasticity Index</th>
<th>USCS</th>
<th>Dry Unit Weight (pcf)</th>
<th>% -200 Sieve</th>
<th>Shear Strength (lbf)</th>
<th>Strength Test</th>
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PP = Pocket Penetrometer  
TV = Torvane  
UC = Unconfined Compression  
FV = Field Vane  
UU = Unconsolidated Undrained Triaxial  
CU = Consolidated Undrained Triaxial

FIGURE 5a
# RESULTS OF SOIL SAMPLE ANALYSES

**PROJECT NAME:** Landa Golf Course  
Clubhouse Deck Replacement  
New Braunfels, Texas

**FILE NAME:** ANA21-031-00.GPJ  
7/21/2021

## RESULTS OF SOIL SAMPLE ANALYSES

<table>
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<th>Boring No.</th>
<th>Sample Depth (ft)</th>
<th>Blows per ft</th>
<th>Water Content (%)</th>
<th>Liquid Limit</th>
<th>Plastic Limit</th>
<th>Plasticity Index</th>
<th>USCS</th>
<th>Dry Unit Weight (pcf)</th>
<th>% -200 Sieve</th>
<th>Shear Strength (tsf)</th>
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</table>

**PP** = Pocket Penetrometer  
**TV** = Torvane  
**UC** = Unconfined Compression  
**FV** = Field Vane  
**UU** = Unconsolidated Undrained Triaxial  
**CU** = Consolidated Undrained Triaxial

---

**PROJECT NO.** ANA21-031-00
NOTES: The elevations presented on this figure are arbitrary and do not represent surveyed elevations.
NOTES: The elevations presented on this figure are arbitrary and do not represent surveyed elevations.
Shaft Diameter = 18 in.
Shaft Diameter = 24 in.
Shaft Diameter = 30 in.
Shaft Diameter = 36 in.
Shaft Diameter = 42 in.

NOTES: The elevations presented on this figure are arbitrary and do not represent surveyed elevations.
NOTES: The elevations presented on this figure are arbitrary and do not represent surveyed elevations.
Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects
Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And no one—not even you—should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report
Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors
Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client’s goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:
• not prepared for you,
• not prepared for your project,
• not prepared for the specific site explored, or
• completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:
• the function of the proposed structure, as when it’s changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
• elevation, configuration, location, orientation, or weight of the proposed structure,
• composition of the design team, or
• project ownership.

As a general rule, always inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.

Subsurface Conditions Can Change
A geotechnical engineering report is based on conditions that existed at the time the study was performed. Do not rely on a geotechnical engineering report whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions
Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report’s Recommendations Are Not Final
Do not over rely on the construction recommendations included in your report. Those recommendations are not final, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual
subsurface conditions revealed during construction. The geotechnical
engineer who developed your report cannot assume responsibility or
liability for the report’s recommendations if that engineer does not perform
construction observation.

A Geotechnical Engineering Report Is Subject to
Misinterpretation

Other design team members’ misinterpretation of geotechnical engineering
reports has resulted in costly problems. Lower that risk by having your geo-
technical engineer confer with appropriate members of the design team after
submitting the report. Also retain your geotechnical engineer to review perti-
nent elements of the design team's plans and specifications. Contractors can
also misinterpret a geotechnical engineering report. Reduce that risk by
having your geotechnical engineer participate in prebid and preconstruction
conferences, and by providing construction observation.

Do Not Redraw the Engineer’s Logs

Geotechnical engineers prepare final boring and testing logs based upon
their interpretation of field logs and laboratory data. To prevent errors or
omissions, the logs included in a geotechnical engineering report should
never be redrawn for inclusion in architectural or other design drawings.
Only photographic or electronic reproduction is acceptable, but recognize
that separating logs from the report can elevate risk.

Give Contractors a Complete Report and
Guidance

Some owners and design professionals mistakenly believe they can make
contractors liable for unanticipated subsurface conditions by limiting what
they provide for bid preparation. To help prevent costly problems, give con-
tractors the complete geotechnical engineering report, but preface it with a
clearly written letter of transmittal. In that letter, advise contractors that the
report was not prepared for purposes of bid development and that the
report's accuracy is limited; encourage them to confer with the geotechnical
engineer who prepared the report (a modest fee may be required) and/or to
conduct additional study to obtain the specific types of information they
need or prefer. A prebid conference can also be valuable. Be sure contrac-
tors have sufficient time to perform additional study. Only then might you
be in a position to give contractors the best information available to you,
while requiring them to at least share some of the financial responsibilities
stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that
geotechnical engineering is far less exact than other engineering disci-
plines. This lack of understanding has created unrealistic expectations that
have led to disappointments, claims, and disputes. To help reduce the risk
of such outcomes, geotechnical engineers commonly include a variety of
explanatory provisions in their reports. Sometimes labeled “limitations”
many of these provisions indicate where geotechnical engineers’ responsi-
bilities begin and end, to help others recognize their own responsibilities
and risks. Read these provisions closely. Ask questions. Your geotechnical
engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a geoenviron-
mental study differ significantly from those used to perform a geotechnical
study. For that reason, a geotechnical engineering report does not usually
relate any geoenvironmental findings, conclusions, or recommendations;
e.g., about the likelihood of encountering underground storage tanks or
regulated contaminants. Unanticipated environmental problems have led
to numerous project failures. If you have not yet obtained your own geoen-
vironmental information, ask your geotechnical consultant for risk man-
agement guidance. Do not rely on an environmental report prepared for
someone else.

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction,
operation, and maintenance to prevent significant amounts of mold from
growing on indoor surfaces. To be effective, all such strategies should be
devised for the express purpose of mold prevention, integrated into a com-
prehensive plan, and executed with diligent oversight by a professional
mold prevention consultant. Because just a small amount of water or
moisture can lead to the development of severe mold infestations, a num-
ber of mold prevention strategies focus on keeping building surfaces dry.
While groundwater, water infiltration, and similar issues may have been
addressed as part of the geotechnical engineering study whose findings
are conveyed in this report, the geotechnical engineer in charge of this
project is not a mold prevention consultant; none of the services per-
formed in connection with the geotechnical engineer’s study
were designed or conducted for the purpose of mold prevention.
Proper implementation of the recommendations conveyed
in this report will not of itself be sufficient to prevent mold
from growing in or on the structure involved.

Rely, on Your ASFE-Member Geotechnical
Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical
engineers to a wide array of risk management techniques that can be of
genuine benefit for everyone involved with a construction project. Confer
with you ASFE-member geotechnical engineer for more information.
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<th>City, TX</th>
<th>City, TX</th>
<th>City, TX</th>
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SP-3 Existing Floor Material
Record flooring submittal from previous remodel project (Following this page)
**Submittal Transmittal**

**Detailed, Grouped by Each Number**

**NB Golf Clubhouse Remodel (NB-028)**
180 Golf course Rd.
New Braunfels, TX 78130

**Project # 1412**
Tel: 830-221-4389  Fax: 830-608-2112

**City of New Braunfels**

**Date:** 7/29/2014  **Reference Number:** 0020

**Transmitted To:** Jennifer Cain
City of New Braunfels
New Braunfels, TX 78130
Tel: 830.221.4646
Fax: 2922 Pan Am Expressway
San Antonio, TX 78208
Tel: 210-277-7070
Fax: 210-277-7072

**Transmitted By:** Catherine Jaquez
F. A. Nunnelly Co.

**Submittal Package No** | **Description** | **Qty** | **Due Date** | **Package Action**
--- | --- | --- | --- | ---
0014 - 09650 | Laminate Flooring | 1 |  | 

**Transmitted For**

**Delivered Via**

Approval

Email

**Tracking Number**

---

**Items** | **Qty** | **Description** | **Notes** | **Item Action**
--- | --- | --- | --- | ---
0001 | 1 | Laminate Flooring PD includes prep instructions, storage and handling and install methods |  | Sent
0002 | 0 | Laminate Flooring Sample Selection |  | Previously Approved
0003 | 0 | Laminate Flooring Verification Samples |  | Not Required
0004 | 0 | Laminate Flooring Manufacturers |  | Not Required
0005 | 0 | Laminate Flooring O&M Closeouts |  | To be submitted at a later date
0006 | 1 | Laminate Flooring 8 YEAR Warranty |  | Sent
0007 | 0 | Laminate Flooring EXTRA STOCK 10% Laminate; 2 full lengths of T-molding |  | To be submitted at a later date

**Cc:**
- CgM and Associates and Architects
- F. A. Nunnelly Co.

**Contact Name** | **Copies** | **Notes**
--- | --- | ---
Robert Bruce | 1 |  
Matthew Foyt | 1 |  

**Remarks**

**Signature**

**Signed Date**

**Prolog Converge**

Printed on: 7/29/2014
Submittal No.: 0014-09 6270
Date Submitted: 07.29.14
Engineer: 
General Contractor: F.A. Nunnelly, Co.
Subcontractor/Supplier: San Antonio Floor Finishers, Inc.
Specification Section No.: 096270
Specification Section Name: Laminate Flooring
Item Submitted: Artestick Vinyl Flooring
Remarks:

Please submit to: City of New Braunfels
Attn: Jennifer Cain
424 S. Castell Ave.
New Braunfels, TX 78130
**Submittal Packages**

**Summary, Grouped by Package Number with Register Items**

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*depending on pattern #
INSTALLATION
and
TECHNICAL GUIDE

Note: This document supersedes all printed and electronic Installation and Technical Guides previously distributed for Metroflor®.
IMPORTANT NOTES

MOISTURE: Metroflor® Corp. recommends all concrete subfloors (new and old) be tested using Calcium Chloride Test ASTM F1869 or Relative Humidity Test ASTM F 2170. New concrete slabs must cure for a minimum of 90 days. Even existing concrete slabs can have moisture problems. Never install Artistek® Floors where surface or subfloor moisture is present. Excessive moisture will cause failure. The installer is responsible for conducting a moisture test several days prior to installation to be sure that moisture is at recommended levels, since moisture will directly affect the cure, set and bond of adhesives. See applicable regulations.

pH LEVELS: Perform pH tests before installing Artistek® Floors. Follow the Prevail™ adhesive instructions located on the label for further information.

PRODUCT ACCLIMATION: The HVAC system should be operating at least one week before installation. Artistek® Floors, Prevail™ adhesive, and the subfloor must be acclimated at a temperature between 65° and 85°F for 48 hours before, during and after installation. Do not open Artistek® Floors cartons during acclimation. Spread the cartons no more than three high and at least 4 inches apart, positioning them away from heating and cooling ducts and direct sunlight. After installation, maintain a constant room temperature between 55° and 85°F. These guidelines have been set in order to prevent excessive expansion and contraction of the product after installation.

ATTENTION

If Artistek® Floors luxury resilient tile and plank will be combined in a single installation, the products must be the same gauge and edge treatment. Carefully inspect Artistek® Floors luxury resilient tile and plank for visual defects prior to beginning the installation. Do not install Artistek® Floors with damage, visual defects or severe color variations.

Metroflor® Grab-Tak Tiles are NOT WARRANTED for use over radiant heat floors. Metroflor® Grab-Tak Tiles do not require additional adhesive. With the exception of recommendations for radiant heat floors and adhesive use and application, the installation instructions outlined in this guide apply to Metroflor® Grab-Tak Tiles.

WARNING

Various Federal, State and Local government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable regulations. Do not sand, dry sweep, dry scrape, drill, saw, bead blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalt “cut-back” adhesive, or other adhesive. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of bodily harm. Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content. RFCI™'s Recommended Work Practices for Removal of Resilient Floor Covering are a defined set of instructions addressed to the task of removing all resilient floor covering structures. For further information, contact the Resilient Floor Covering Institute website at www.rfci.com.
SUBFLOOR and INSTALLATION REQUIREMENTS

Approved Subfloors

A. CONCRETE: Concrete substrates must be clean and dry, smooth, and structurally sound. They must be free of dust, dirt, paint, varnish, oil, grease, solvent, wax, existing adhesives and other extraneous material including curing and parting compounds, sealers and surface hardeners that may interfere with the adhesive bond. Do not use on chemically cleaned substrates or those treated with silicate compounds. Even after old glued-down carpet has been removed and the subfloor has been scraped, it should not be assumed that the concrete is porous. Often, the old adhesive has sealed the floor. Be aware that porous subfloors may require a different trowel size for adhesive application than non-porous subfloors. See Prevail™ adhesive pail label for trowel size recommendations. If oil, grease or other contaminants have deeply penetrated the concrete and cannot be thoroughly removed, Artistek® Floors cannot be installed. If latex liquid has been used to seal off old cutback adhesives, the concrete should be considered non-porous. All concrete must have compression strength of 3,500 psi or greater.

B. LIGHTWEIGHT CONCRETE: The minimum density of the concrete should be greater than 90 lbs per cubic foot. The minimum compressive strength should be 2,500 psi or greater. Gypsum-based concretes are not recommended. If installing over gypsum or other forms of lightweight underlayment, apply an acrylic-based primer-sealer coat before troweling or rolling on the adhesive as specified by the underlayment manufacturer.

C. WOOD SUBFLOORS: Should be standard double-layer construction, with a finished thickness of at least 1” and should have 18” of well-ventilated air space underneath. Crawl spaces should be insulated and protected by a vapor barrier. Do not install vinyl flooring over a sleeper type subfloor, or over plywood that is directly over a concrete slab. All wood subfloors must meet national and local building code guidelines.

1) PLYWOOD: Use only American Plywood Association (APA) underlayment grade plywood, minimum ½” thickness. Allow expansion spacing between plywood butt joints of 1/32”-1/16”. When installing underlayment, stagger cross-joints 4’ on an 8’ panel (minimum 16”), lightly butt the panels, and set fasteners flush or slightly below the surface level of the underlayment. Fill underlayment seams, nail holes and any indentations with an approved Portland Cement-type floor patch, allow recommended drying time, and sand the patch smooth. All dust must be COMPLETELY removed to ensure a strong adhesive bond. Vacuum or sweep thoroughly, then apply adhesive. Manufacturer-certified poplar, birch and spruce plywood underlayment, with a fully sanded face and exterior glue can also be used.

2) LAUAN PLYWOOD: Use only Type 1 lauan exterior grade “BB” or “CC” for underlayment. The use of lesser grades of lauan plywood is unacceptable and may cause severe problems including discoloration, indentation, loss of bond and delamination when used as an underlayment.

NOTE: The use of underlaments such as lauan and other extremely porous wood or particleboard underlaments will reduce the flash and working time of adhesives. It is best to apply an acrylic-based primer-sealer to any porous underlayment prior to installing Artistek® Floors. A manufacturer’s certification of lauan grade must accompany any claim involving the use of a lauan underlayment.

D. RADIANT HEAT: Radiant heat components must be cast at least 1/2” below the concrete slab. The heating system must operate for at least two weeks prior to installation. Radiant heat floors should be turned off 3 days prior to installation and remain off for at least 6 days after installation to allow the adhesive to fully cure. After 6 days, turn the radiant heating system back on beginning at 65°F, and gradually increase the temperature every 24 hours in 5° increments to a maximum operating temperature 85°F. Consult the radiant heat system manufacturer for further information.

E. QUARRY TILE, TERRAZZO and CERAMIC TILE: Skim coat grout lines with embossing floor leveler. Fill in dips and voids with cementitious leveling compounds to level the subfloor.

Non-Approved Subfloors

Non-approved subfloors include, but are not limited to: Oriented strand board (OSB), particleboard, hardboard, treated plywood, strip wood floors, chipboard, waferboard, Masonite, knotty plywood, glass mesh tile boards, cementitious tile backer boards, fire-retardant or preservative-treated plywood, asphalt tile, rubber tile, self-stick tile. NOTE: Any appearance or performance-related issues associated with the underlayment are the responsibility of the installer and/or underlayment manufacturer.
SUBFLOOR PREPARATION

CONCRETE SLABS: NOTE: All concrete, whether new or old, must be tested for moisture using either the calcium chloride test or a test for relative humidity. Concrete should also be tested for pH, porosity and bond prior to installing Artisteke® Floors. The installer is responsible for performing moisture tests. Moisture will retard and prevent adhesive from setting, resulting in installation failure. See Prevail™ adhesive pail labels for details. New concrete should cure under well-ventilated conditions for at least 90 days and must be tested for moisture and pH before installing Artisteke® Floors. Do not install if excessive moisture, hydrostatic pressure, or alkaline conditions are evident. Concrete substrates must be clean and dry, smooth, and structurally sound. They must be free of dust, dirt, paint, varnish, oil, grease, solvent, wax, existing adhesives and other extraneous material including curing and parting compounds, sealers and surface hardeners that may interfere with the adhesive bond. Remove any curing agents from concrete surfaces. Level any high spots and fill in all cracks, holes and minor depressions with a Portland Cement-based filler, then sand smooth. Installation failures due to the above issues are not the responsibility of Metroflor® Corp. and warranties will not apply. Whenever questionable surfaces are involved, Metroflor® Corp. recommends a bond test as described later in this section.

PATCHING & LEVELING: Use only Portland-Cement based patching and leveling compounds. Allow at least 24 hours for underlayment drying before installing Artisteke® Floors. Self-leveling underlayments may have very high moisture content requiring longer curing times, up to 10 days. Check with a moisture meter before starting installation. Note: Adding latex to levelers will normally make the floor NON-POROUS. Test for porosity and follow non-porous adhesive recommendations if necessary. Follow the manufacturer’s instructions, and do not over-water underlayments. The installer is responsible for observing cure times, moisture content, adhesive bonding and the structural integrity of any leveling or patch compound used.

EMBOSSING LEVELERS: Embossing levelers are for use on sheet goods with textures that could telegraph through Artisteke® Floors. If self-leveling underlayments are used they must fully cure before installing Artisteke® Floors. Test self-leveling compounds for moisture before installing. The installer is fully responsible for moisture and leveler-related issues. Note: The use of levelers on sheet goods will not create a porous subfloor.

SEALERS: Metroflor® Corp. does not endorse the use of any concrete or floor sealers against moisture. If moisture is present, DO NOT INSTALL Artisteke® Floors. Encapsulator compounds will protect the installation against alkalinity. Some also serve as a barrier between old and new adhesives to deaden old adhesive tack, prevent plasticizer migration and seal over dust and old adhesive residues, including cutback. Most latex and acrylic-based encapsulator compounds are compatible with Prevail™ adhesives. Existing adhesives must be mechanically scraped down to a bare minimum residue flat with the substrate before applying the encapsulator compound. Apply the compound evenly across the entire surface of the floor according to the manufacturer’s instructions. There must be no gaps in the application. Allow to dry completely before applying new adhesives.

NOTE: Metroflor® Corp. warrants Artisteke® Floors and Prevail™ adhesives to be free from defects. The condition of the subfloor and adhesion problems resulting from the use of non-recommended, improper, or incorrectly prepared sealers, embossing levelers, patches, concrete, gypsum-based products and other such items, are the sole responsibility of the installer and/or manufacturer of the particular sub-flooring product.

ADHESIVE BOND TEST: Use the following test to determine if a subfloor is compatible for use with Prevail™ adhesives, or to determine if the porous or non-porous adhesive application method is required: Using the flooring and adhesive suitable for the subfloor, install a 3” x 3” section following the recommended installation procedures. Tape the edges with duct tape to prevent the adhesive from drying prematurely. Select light traffic areas such as those located next to walls or columns. After 48 hours, the adhesive should be dry and the flooring should be difficult to remove. Note: the adhesive is dry at this point, but not cured. Full cure and maximum bond will not occur for 6-8 days. On large installations, tests should be performed every 50 linear feet. Bond testing may take some time to complete, but the cost and time involved in a floor failure are considerably more.
TILE INSTALLATION 12" X 12", 12" X 24", 16" X 16", 16" X 32" and 18" X 18"

Layout of the Room for Squarely Laid Fields
To square the area to be covered, first find the center of one end of the main rectangle. Locate the same point at the other end wall. Snap a chalk line between these points to mark the center line on the floor. Then measure along this center line to find the middle of the room.

**Figure 1**
At the center point, mark off a line across the room at exactly right angles to the first line. This may be accomplished by the 3-4-5 triangle method. (See Figure 1) Measure 4 feet toward each side wall from the center point. Then, measure exactly 5 feet from the center point along the longer line, and measure 3 feet from the 3-foot mark on the center line to the 4-foot mark on the crossline. If the 5-foot measurements do not come out exactly 5 feet, the center crossing lines are not at a true right angle. For large rooms, multiples of the above dimensions may be used to obtain greater accuracy. (6-8-10, 9-12-15, and so on.) Dry-lay a row of tiles from the center line to the side wall to determine the space left for the borders. If the resulting border is too small, move the starting point over a half tile width so that it straddles the center line. Repeat the same procedure lengthwise of the room. (This can readily be figured out from the room dimensions without putting down the tiles if desired.)

**Figure 2**
If the center row of tiles straddles one or both center lines, additional guidelines should be snapped on the floor one-half tiles' width on either one or both center lines, as required. (See Figure 2)

**Figure 3**
After the border widths have been determined and the center starting lines have been snapped, spread the recommended adhesive on the center lines leaving portions of the lines at center and near each wall uncovered. (See Figure 3) Do not apply more adhesive than can be worked. Follow the adhesive manufacturer's recommendations. Lay the tiles from the center of the room, working towards the walls as shown. Position tiles without sliding them through the adhesive.

**IMPORTANT:** All flooring must be rolled with a minimum 100-lb roller after installation. Use a hand roller in areas not reached with a 100-lb. roller.

PLANK INSTALLATION 3" X 36", 4" X 36", 6" X 36", 6" X 48" and 9" X 36"

**Figure A**
At the center point, mark off a line across the room at exactly right angles to the first line. This may be accomplished by the 3-4-5 triangle method. (See Figure A) Measure 4 feet toward each side wall from the center point. Then, measure exactly 5 feet from the center point along the longer line, and measure exactly 5 feet from the 3-foot mark on the center line to the 4-foot mark on the crossline. If the 5-foot measurements do not come out exactly 5 feet, the center crossing lines are not at a true right angle. For large rooms, multiples of the above dimensions may be used to obtain greater accuracy. (6-8-10, 9-12-15, and so on.)
Spread the adhesive over one-half the area and after it is ready, start laying the planks from the right angle formed in the center of the room by center lines. Carefully place the first piece of plank at the junction of the chalk lines. Continue to lay the plank, making sure each plank flush against the chalk line and tight against the adjoining plank. Make sure the plank is well seated into the adhesive paying special attention, to the edges. Lay row by row, or in a pyramid fashion as shown below.

(Figure B and C)

Lay the material from the center of the room, working towards the walls as shown. It is imperative that the first row is placed precisely and accurately against the reference line as you begin installation. Position planks without sliding them through the adhesive.

IMPORTANT: All flooring must be rolled with a minimum 100-lb roller after installation. Use a hand roller in areas not reached with a 100-lb. roller.

Note: All warranties and guarantees pertaining to the suitability and performance of any product not recommended by Metroflor® Corp. rests with the material manufacturer or the installation contractor and NOT with Metroflor® Corp.

To register and activate your product warranty, please visit www.artistekfloor.com and click on the Warranty/Maintenance tab. The registration information you provide will be used only to register your purchase and for no other purpose.

For further information, inquiries and troubleshooting please contact:

Metroflor® Corp.
119 Thomas Street
Calhoun GA 30701
888-235-6672
www.Metroflorcorp.com
## PREVAIL™ ADHESIVE RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Product</th>
<th>Adhesive Type</th>
<th>Usage</th>
<th>pH Tolerance</th>
<th>RH Limits</th>
<th>Spread Rate (Porous)</th>
<th>Spread Rate (Non-Porous)</th>
<th>LEED Qualified</th>
<th>FloorScore Certified</th>
<th>Commercially Rated</th>
<th>Residentially Rated</th>
<th>Plywood</th>
<th>Radiant Floors</th>
</tr>
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<tbody>
<tr>
<td>PR-30-GS</td>
<td>Cyanoacrylate</td>
<td>Grip Strip Adhesive</td>
<td>N/A</td>
<td>N/A</td>
<td>150 sf per tube</td>
<td>150 sf per tube</td>
<td>NO</td>
<td>NO</td>
<td>√</td>
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<tr>
<td>PR-100-U</td>
<td>Hard-Set Acrylic</td>
<td>Double Glue Down over Prevail™ Pad</td>
<td>10</td>
<td>80%</td>
<td>900 sf-rolled per 4 gal pail</td>
<td>900 sf-rolled per 4 gal pail</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>PR-3100</td>
<td>Spray Acrylic</td>
<td>Sheet, LVT</td>
<td>10</td>
<td>90%</td>
<td>140-160 sf per 22 oz can</td>
<td>150-200 sf per 22 oz can</td>
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<tr>
<td>PR-3500</td>
<td>Wet Set</td>
<td>LVT</td>
<td>9</td>
<td>80%</td>
<td>100-125 sf per gal</td>
<td>150-180 sf per gal</td>
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<td>YES</td>
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<td>PR-4000</td>
<td>2-Part Epoxy</td>
<td>Sheet, LVT</td>
<td>9</td>
<td>75%</td>
<td>130-150 sf per gal</td>
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<td>PR-4500</td>
<td>Premium PSA</td>
<td>LVT</td>
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<td>87%</td>
<td>180-200 sf per gal</td>
<td>220-260 sf per gal</td>
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<td>PR-5000</td>
<td>PSA</td>
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<td>75%</td>
<td>100-125 sf per gal</td>
<td>150-180 sf per gal</td>
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<tr>
<td>PR-6000</td>
<td>PSA</td>
<td>Sheet, LVT</td>
<td>10</td>
<td>85%</td>
<td>160-180 sf per gal</td>
<td>200-220 sf per gal</td>
<td>YES</td>
<td>YES</td>
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</tbody>
</table>

1 year Shelf Life on ALL Adhesives in Unopened Properly Stored Containers

## PREVAIL™ FLOORCARE PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>UPC</th>
<th>Item #</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevail™ Neutral Cleaner</td>
<td>088969701275 (qt)</td>
<td>PR-VICL-QT</td>
<td>A concentrated cleaner for maintaining all Metroflor® vinyl products and finishes.</td>
</tr>
<tr>
<td>Prevail™ RTU Neutral Cleaner</td>
<td>088969701282 (gal)</td>
<td>PR-VICL-GL</td>
<td>A ready-to-use cleaner for maintaining all Metroflor® vinyl products and finishes.</td>
</tr>
<tr>
<td>Prevail™ Matte Finish</td>
<td>088969701251 (qt)</td>
<td>PR-MAFN-QT</td>
<td>Apply to Artistek® Floors to protect and renew the look of the flooring.</td>
</tr>
<tr>
<td>Prevail™ Gloss Finish</td>
<td>088969701244 (gal)</td>
<td>PR-GLFN-QT</td>
<td>Apply to Artistek® Floors to protect and renew the look of the flooring.</td>
</tr>
<tr>
<td>Prevail™ Vinyl Stripper</td>
<td>088969701299 (qt)</td>
<td>PR-VIST-QT</td>
<td>Concentrated stripper. Removes most detergent-resistant waxes and acrylic finishes.</td>
</tr>
<tr>
<td>Prevail™ Black Scuff &amp; Adhesive Remover</td>
<td>088969701305 (22 oz)</td>
<td>PR-BSAR-22</td>
<td>Emulsifies adhesives, removes black scuffs and soil. Effective on grease, crayon, and lipstick.</td>
</tr>
<tr>
<td>Prevail™ Scratch Remover</td>
<td>088969701336 (22 oz)</td>
<td>PR-KSR-22</td>
<td>Conceals surface scratches and micro hazing caused by fine particle abrasion on vinyl flooring. Reduces the visibility of scratches under furniture, near entrances and other high traffic areas.</td>
</tr>
</tbody>
</table>

Visit [www.Metroflorprevail.com](http://www.Metroflorprevail.com) for more information about the entire PREVAIL™ line of adhesives and accessories.
LIMITED WARRANTY
Effective: April 15, 2014

Products & Coverage
Metroflor warrants that its Artistek Floors® will be free from manufacturing defects and, under normal use and maintenance, will not wear, fade or stain resulting in loss of original pattern and color, for a specified length of time from the date of purchase as set forth in the "Warranty Coverage/Periods" Chart on the right. This Limited Warranty only applies provided the flooring covered by this warranty is installed and maintained according to the Artistek Floors Installation & Maintenance Manual.

Pre-Installation
Metroflor warrants that its flooring is free of visual defects. You and/or your installer should carefully inspect each piece before installation. Any pieces that appear to have defects should not be installed. Metroflor will not be responsible for any claim for flooring installed with visual defects.

Installation
This Limited Warranty covers materials and fair market-value labor if professional installation was paid for when the flooring was originally installed, and only if the flooring was installed using Prevail™ Adhesive. The use of any other adhesive during installation will void the warranty if problems/issues arise as a result of the use of an adhesive other than Prevail™ Adhesive. Please refer to the current Artistek Floors Installation & Maintenance Manual for the type(s) of Prevail™ Adhesive(s) that should be used during installation. All other instructions contained in the current Installation Manual must be followed when installing Artistek Floors, or this warranty will be voided. Please check the Artistek Floors website for the current Manual.

Replacement/Repairs
Metroflor reserves the right to repair any flooring and/or to use its own source to obtain an installer for replacement flooring. If Metroflor repairs or replaces any flooring as a result of a warranty claim, you will be required to clear, at your own expense, any items placed over the affected areas subsequent to the original installation. In the event that Metroflor repairs or replaces any flooring covered under this Limited Warranty, this Limited Warranty shall remain in effect with respect to such flooring for a period limited to the remaining eligible duration of the original Limited Warranty.

Terms for Warranty
If a defect covered by this Limited Warranty is found within the warranty period and reported in writing to the merchant from which the flooring was purchased, Metroflor will supply new flooring material of similar color, pattern and quality to replace the defective area. Metroflor will also pay fair market-value labor if professional installation was paid for when the flooring was originally installed. Labor costs will not be covered if professional installation was not paid for when the flooring was originally installed. In case of questions regarding the terms of this Limited Warranty, contact customer service at (888) 235-6672. Metroflor reserves the right to inspect any flooring, request samples, secure photographs or any other information as may be required to ascertain the nature of any claim under this Limited Warranty.

Exclusions
The following are not covered by this Limited Warranty:
- Dissatisfaction or damage due to improper installation or maintenance
- Damage caused by fire or burns, intentional abuse, flooding, construction or installation
- Damage caused by vacuum cleaner beater bar, indentations or damage caused by improper rolling loads, caster wheels, chairs or other furniture without proper floor protectors and cuts from sharp objects
- Surface scratches or scuffing
- Changes in color or sheen from exposure to sunlight or due to use of rubber-backed mats

<table>
<thead>
<tr>
<th>Warranted Products</th>
<th>Warranty Coverage / Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Manufacturing Defect or Wear, Fade or Stain*</td>
</tr>
<tr>
<td>Residential</td>
<td>Commercial</td>
</tr>
<tr>
<td>Group A</td>
<td>Limited Lifetime</td>
</tr>
<tr>
<td>Group B</td>
<td>25 Years</td>
</tr>
<tr>
<td>Group C</td>
<td>15 Years</td>
</tr>
<tr>
<td>Group D</td>
<td>7 Years</td>
</tr>
<tr>
<td>Group E</td>
<td>7 Years</td>
</tr>
</tbody>
</table>

*DEFINITIONS / To Be Covered:
"Wear" must be through the wear layer to the degree that the printed pattern is affected or altered.
"Fade" must be to the degree that the floor is permanently discolored.
"Stain" must be from normal household cleaning agents, chemicals or routine care & maintenance.

DEFINITIONS / Groups:
"Group A" (Limited Lifetime Residential / 15-Years Commercial)
1. Forestwood & Forestwood II
2. Grand Stripwood & Grand Stripwood II
3. Natural Textures & Natural Textures II
4. Regency Plank and Tile

"Group B" (25-Years Residential / 8-Years Commercial)
1. Barnwood (12 mil wearlayer)
2. Centennial Plus
3. Rustico
4. English Slate with Ceramic Bead Finish
5. English Stone with Ceramic Bead Finish

"Group C" (15-Years Residential / 6-Years Commercial)
1. American Plank Plus
2. Centennial Plank and Tile
3. English Slate without Ceramic Bead Finish
4. English Stone without Ceramic Bead Finish

"Group D" (7-Years Residential / 3-Years Light Commercial*)
American Plank CB
*For light commercial environments such as private offices, common areas in multiunit dwellings, reception areas and public buildings or businesses which are not subject to frequent and harsh traffic.

"Group E" (7-Years Residential; NO Commercial Warranty**)
American Plank and Tile
**With respect to American Plank and Tile products, this warranty applies only to a resident homeowner of a single-family home.

All Products Sold via the Internet Come with a 1-Year Warranty against Manufacturing Defect & "Wear, Fade or Stain" as defined above.
LIMITED WARRANTY (Continued)

- This Limited Warranty is void if, prior to installation, this flooring is not acclimated to room temperature (between 65°F and 85°F) at job site between 24 and 48 hours and, if post-installation, such flooring is not continuously maintained at such temperature
- Flooring sold via the internet after the 1-year warranty period as set forth in the chart within this Limited Warranty
- Loss due to loss of time, inconvenience, incidental expenses (such as telephone calls, labor and/or materials) incurred in the removal or reinstallation of the affected material, and any other incidental or consequential damages

Some states do not allow the exclusion or limitation of incidental or consequential damages so that the above limitations and exclusions may not apply. Your Limited Warranty gives you specific legal rights, and you may have other legal rights, which vary from state to state.

This Limited Warranty is in lieu of any other warranties, expressed or implied. Please keep your receipt or obtain it from the original purchaser. Metroflor requires the receipt in order to verify date of purchase to help resolve any problems.

Warranty Owner

This Limited Warranty applies only to the original purchaser and the original installation site and is not transferable and, with respect to the residential warranty, applies only to a resident homeowner.

GENERAL CARE & MAINTENANCE

Although ARTISTEK FLOORS are durable, all floor coverings require some care to look their best and many problems can be prevented before they occur. The type and frequency of traffic on your floor will determine the frequency of maintenance needed. The type of floor and even the color will also have some bearing on how much care may be necessary. For example, solid color floors will visually show scuffs, scratches, dirt and general wear to a greater degree than multi-colors of chips or patterns. Of course, white or light colors will visually show staining to a greater degree than darker colors. For this reason, solid color and white floors should receive special attention in regard to preventative maintenance and the amount of care provided. Good judgment when choosing the type and style of floor will help prevent maintenance problems before the floor is even installed!

Here are the proper steps for protecting and maintaining your ARTISTEK FLOORS:

In order to prevent indentations and scratches, provide glass, plastic or other non-staining cups with flat under surfaces not less than 2” in width for the legs of heavy furniture or appliances. Equip swiveled-type office chairs and other rolling furniture with broad surface non-staining casters at least 2” in diameter. Remove small diameter buttons from the legs of straight chairs and replace with metal glides that have bearing surfaces no less than 1” in diameter. Protect your floor against burns. Burns from the glowing end of a cigarette, matches, or other extremely hot items can damage ARTISTEK FLOORS. Do not flood floor or subject to frequent standing water. Problems associated with excessive moisture can affect the job site and should be addressed. ARTISTEK FLOORS plank and tile should not be used as a Moisture Reduction System. Protect your floor from tracked-in-dirt and grit particles by using walk-off mats at all outside entrances. Take time to remove any imbedded grit particles from shoe soles before entering the room. Avoid the use of rubber-backed mats, as certain rubber compounds can permanently stain vinyl. Avoid tracking in tar or asphalt from driveways, as this can also discolor vinyl. Do not use vinegar, one-step cleaner/polishes or oil soaps on ARTISTEK FLOORS products. All ARTISTEK FLOORS have a good resistance to stains. They are not affected by most common household spills; however, any spill should be cleaned up immediately. The longer the spilled materials are left on the floor, the greater the risk of permanently staining the floor. For information regarding the proper method or solution to use on a specific stain, contact Metrolflor’s Technical Service at (888) 235-6672.

Avoid exposure to direct sunlight for prolonged periods. During peak sunlight hours, the use of the drapes or blinds is recommended. Prolonged direct sunlight can result in discoloration, and excessive temperatures might cause tile / plank expansion or delamination. Do not use vinegar as a cleaning agent on ARTISTEK FLOORS vinyl Products. The volume of vinegar as a cleaning agent on ARTISTEK FLOORS will determine the frequency of maintenance needed. The type of floor, and even the color, will have some bearing on how much care may be necessary.

Regular adherence to an effective maintenance program should include:

Thorough dirt and grit regulation, prompt removal of spills and stains and taking measures as noted above for heavy furniture or casters to protect the floor’s surface.

The most effective part of any floor maintenance program is the simplest: sweep, dust mop or vacuum ARTISTEK FLOORS DAILY, or more frequently if needed.

Initial Maintenance Upon Completion of the Installation:

Sweep or vacuum without using the “beater bar” to thoroughly remove dust and debris. Lightly damp mop with Prevail Neutral Cleaner following instructions on the bottle. Remove any scuffs and excessive soil by careful scrubbing. Certain types of rubber heel marks may be removed by rubbing with a cloth dampened in Prevail Black Scuff and Adhesive Remover.

Stain Removal:

To remove stubborn spots or stains from ARTISTEK FLOORS Luxury Vinyl floors, always begin with mild cleaners such as Prevail Neutral Cleaner. If this fails to remove stain, use mineral spirits. Do not use harsh solvents such as lacquer thinner or straight acetone, as these can permanently soften and damage the vinyl surface.

For extreme staining (paints, permanent markers, dyes) try applying fingernail polish remover containing acetone (not straight acetone) applied to a soft cloth and rubbing. Subsequent to this cleaning procedure for stubborn spots, please clean the affected area with clear water to remove any residue. Any damage resulting from use of pure solvents IS NOT covered by warranty. Always test stronger cleaning agents on sample pieces or in unnoticeable areas first.
GENERAL CARE & MAINTENANCE (Continued)

MAINTENANCE FOR ARTISTEK COMMERCIAL FLOORS

Routine Commercial Maintenance:
ARTISTEK FLOORS vinyl plank and tile has excellent durability and a history of performing well in commercial installations as long as a sound maintenance program is followed. Light daily sweeping, dust mopping or vacuuming without the “beater bar” will prevent dirt and grit particles from being ground into the surface of the plank or tile. Non-rubber, walk-off mats should be used to control the amount of dirt and grit reaching the floor. The mats should be as wide as the doorway and thick enough to trap dirt. Frequent light mopping will prevent the floor from becoming heavily soiled and will remove most spills and stains. The amount and type of traffic will dictate the frequency of washing. Wash the floor by damp mopping with Prevail Neutral Cleaner diluted with warm water following instructions on the bottle.

If the floor receives hard use and becomes extremely dirty, as in heavy-traffic commercial installations, an occasional scrubbing may be necessary. This can be accomplished by using a low speed buffer with a red scrubbing-polyester or nylon pad. Spray the floor with diluted Prevail Neutral Cleaner and work the solution over the floor using the buffer and the scrubbing pad. Once this is accomplished, remove the dirty residue by damp mopping with clear water or with a wet-vacuum.

Thank you for purchasing ARTISTEK FLOORS. If you have further questions, please call us at (888) 235-6672.

For further information, please call Metroflor® Technical Support Services at (888) 235-6672, or visit our website at www.metroflorcorp.com.
SP-4 Existing Ceiling Insulation
Record insulation submittal from previous remodel project (Following this page)
<table>
<thead>
<tr>
<th><strong>Submittal Cover Sheet</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submittal No.:</strong> 0004-07210-0</td>
</tr>
<tr>
<td><strong>Date Submitted:</strong> 08/19/14</td>
</tr>
<tr>
<td><strong>Engineer:</strong></td>
</tr>
<tr>
<td><strong>General Contractor:</strong> F.A. Nunnelly, Co.</td>
</tr>
<tr>
<td><strong>Subcontractor/Supplier:</strong> MASCO – Williams Insulation</td>
</tr>
<tr>
<td><strong>Specification Section No.:</strong> 072119</td>
</tr>
<tr>
<td><strong>Specification Section Name:</strong> Foamed in Place Insulation</td>
</tr>
<tr>
<td><strong>Item Submitted:</strong> Icynene LD-C-50 Polyurethane Foam</td>
</tr>
<tr>
<td><strong>Remarks:</strong></td>
</tr>
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</table>

Please submit to: City of New Braunfels
Attn: Jennifer Cain
424 S. Castell Ave.
New Braunfels, TX 78130
**Submittal Transmittal**

**Detailed, Grouped by Each Number**

---

**NB Golf Clubhouse Remodel (NB-028)**

180 Golf course Rd.
New Braunfels, TX 78130

| Project # | 1412 |
|-----------|

**City of New Braunfels**

Tel: 830-221-4389  Fax: 830-608-2112

---

**Date:** 8/19/2014  **Reference Number:** 0030

**Transmitted To:**  Catherine Jaquez  
F. A. Nunnelly Co.  
2922 Pan Am Expressway  
San Antonio, TX 78208  
Tel: 210-277-7070  
Fax: 210-277-7072

**Transmitted By:**  Jennifer Cain  
City of New Braunfels  
New Braunfels, TX 78130  
Tel: 830.221.4646  
Fax:

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<table>
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<th>Description</th>
<th>Due Date</th>
<th>Package Action</th>
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<td>Foamed-In-Place Insulation</td>
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**Transmitted For**

**Delivered Via**

**Tracking Number**

Approval  Email

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<td>Foamed in Place insulation PD</td>
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<td></td>
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<tr>
<td>0002</td>
<td>1</td>
<td>Foamed in Place insulation Manufacturer's Instructions</td>
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<td>0003</td>
<td>1</td>
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**Cc:**  
CgM and Associates and Architects  
Robert Bruce  1  
F. A. Nunnelly Co.  
Matthew Foyt  1

**Remarks**

---

**Signature**

**Signed Date**

---

**Prolog Converge**  
Printed on: 8/19/2014  
FANunnelly_Production  
Page 1 of 1
## Submittal Packages

**Summary, Grouped by Package Number with Register Items**

### NB Golf Clubhouse Remodel (NB-028)

**Project # 1412**

City of New Braunfels

180 Golf Course Rd.

New Braunfels, TX 78130

Tel: 830-221-4389  Fax: 830-608-2112

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<th>Sub Section</th>
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<td>0</td>
<td>072119</td>
<td>1.03A</td>
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<td>8/19/2014</td>
<td>No</td>
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<td></td>
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<td>07219</td>
<td>1.03C</td>
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<td>8/19/2014</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**F.A. Nunnelly Company**

This submittal has been reviewed for compliance with the requirements of the work and of the contract documents. F.A. Nunnelly is not responsible for any discrepancies between these drawings and/or materials and the contract plans and specifications. These drawings and/or materials are subject to strict compliance with plans and specifications and no deviations are authorized unless specifically authorized by F.A. Nunnelly in writing.

Submittal No.: 0004-07210-0 Foamed in Place Insulation

Reviewed By: C. Jaquez  Date: 08/19/2014:13:26 PM
**Customer Notice and Acknowledgement Concerning the Application of Spray Foam Products**

I have been given and understand the following documents concerning the Spray Foam Product(s) being applied in my building (initial applicable items):

<table>
<thead>
<tr>
<th>Initials</th>
<th>(Circle one)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes No</td>
</tr>
<tr>
<td>_____</td>
<td>Material Safety Data Sheet (MSDS/SDS) for the finished Spray Foam Product(s).</td>
</tr>
<tr>
<td>_____</td>
<td>MSDS/SDS for intumescent coating.</td>
</tr>
<tr>
<td>_____</td>
<td>ICC-ES Evaluation Report — Supplier and Product Specific</td>
</tr>
</tbody>
</table>

I have been advised as follows:

<table>
<thead>
<tr>
<th>Yes No</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____</td>
<td>The attic is not to be used for storage.</td>
</tr>
<tr>
<td>_____</td>
<td>The attic access is only to be used to maintain mechanical equipment.</td>
</tr>
<tr>
<td>_____</td>
<td>All people and pets must vacate the building prior to the application of the Spray Foam Product(s) and not reenter the building for a period of time which is the longer of the manufacturer recommended waiting period or 24 hours after spraying has been completed.</td>
</tr>
<tr>
<td>_____</td>
<td>The HVAC must be shut off and/or sealed prior to the application of the Spray Foam Product(s) and not turned on and/or opened for a period of time which is the longer of the manufacturer recommended waiting period or 24 hours after spraying has been completed.</td>
</tr>
<tr>
<td>_____</td>
<td>All portable personal belongings in the spray area must be removed or covered to avoid accidental overspray of the Spray Foam Product(s) insulation and coatings.</td>
</tr>
<tr>
<td>_____</td>
<td>Other trades cannot occupy the facility unless proper PPE is used for (fill in #) hours after application.</td>
</tr>
<tr>
<td>_____</td>
<td>Ventilation will be required for (fill in #) hours after spraying application.</td>
</tr>
<tr>
<td>_____</td>
<td>The Contractor is not responsible for damage to portable or uncovered personal belongings left in the Work Zone during spraying.</td>
</tr>
<tr>
<td>_____</td>
<td>This Notice and Acknowledgement form does not alter, change, or amend any terms and conditions agreed upon by the parties and expressly set forth in the Work Agreement or other contract documents which govern this project.</td>
</tr>
<tr>
<td>_____</td>
<td>The Contractor is not responsible for moving portable articles in the way of Spray Foam application.</td>
</tr>
<tr>
<td>_____</td>
<td>The Contractor is not responsible for shutting off and/or sealing the HVAC unit.</td>
</tr>
</tbody>
</table>

**Signatures:**
I affix my signature as proof of the statements made above.

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Building Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date**

**Tenant (if applicable)**

**Comments / Additional Points of Consideration:**
International Fireproof Technology, Inc.
17528 Von Karman Avenue, Irvine CA 92614

Material Safety Data Sheet - DC315

Emergency Telephone Number: CHEMTREC 1-800-424-9300

1. Product and Company Identification

<table>
<thead>
<tr>
<th>Product:</th>
<th>Water Based Fire Retardant Paint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Code:</td>
<td>DC315</td>
</tr>
<tr>
<td>Company:</td>
<td>International Fireproof Technology Inc.</td>
</tr>
<tr>
<td>Address:</td>
<td>17528 Von Karman Avenue</td>
</tr>
<tr>
<td></td>
<td>Irvine, CA 92614</td>
</tr>
<tr>
<td>Phone:</td>
<td>949-975-8588</td>
</tr>
<tr>
<td>MSDS Creation Date:</td>
<td>February 20, 2012</td>
</tr>
</tbody>
</table>

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
<th>Percent (by weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Polyphosphate</td>
<td>68333-79-9</td>
<td>25-45 %</td>
</tr>
<tr>
<td>Melamine</td>
<td>108-78-1</td>
<td>10-25 %</td>
</tr>
<tr>
<td>Pentaerythritol</td>
<td>115-77-5</td>
<td>10-25 %</td>
</tr>
<tr>
<td>PVAC Resin</td>
<td>9003-20-7</td>
<td>5-30 %</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>13463-67-7</td>
<td>5-10%</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td>20-40%</td>
</tr>
</tbody>
</table>

3. Hazards Identification

<table>
<thead>
<tr>
<th>Hazard Type</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>1</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>E</td>
</tr>
</tbody>
</table>

Emergency Overview: None

Potential Health Effects:

General: No Danger

Inhalation: Spray application may create aerosols which may result in irritation of the upper respiratory track, throat and nose.

Ingestion: If ingested, may cause irritation to the mouth, esophagus and stomach.

Skin Contact: Prolonged or repeated exposure may irritate skin.

Eye Contact: May cause irritation upon direct contact.

4. First Aid Measures

Inhalation: If inhaled, leave the area to obtain fresh air. Seek medical attention.

Ingestion: If swallowed, do NOT induce vomiting. Drink large amounts of water and seek medical attention immediately. Never give anything by mouth to an unconscious person.

Skin Contact: Wash thoroughly with soap and water. Seek medical attention if irritation develops or persists.

Eye Contact: In case of eye contact, flush with plenty of water for 15 minutes. Seek medical attention if irritation or symptoms of overexposure persists.
5. Fire Fighting Measures

Flash Point: No Data
Lower Flammability Limit: Not Applicable
Upper Flammability Limit: Not Applicable
Fire Hazard: Nonflammable
Explosion Hazard: Not considered an explosion hazard.
Fire Extinguishing Media: As in any fire, wear Self Contained Breathing Apparatus (SCBA).
Protection of fire fighter: MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Steps to be taken in case of spill or leak: Maintain adequate ventilation. Prevent runoff into sewers, ditches and waterways. Use sand or other material to dam or contain spill. Soak up with an inert absorbent. Store in a closed container until disposal.

7. Handling and Storage

Handling: Use with adequate ventilation. Avoid breathing vapor and contact with eyes, skin and clothing. Wash hands thoroughly with soap and water after handling as a standard hygienic practice.
Storage: Period ≤ 12 months. Keep containers tightly closed. Avoid direct sunlight and protect from freezing.
Special Comments: Store between 50°F – 86°F (10°C - 30°C) in a closed container in a protected area.

8. Exposure Controls / Personal Protection

Engineering Control: Use appropriate engineering controls such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficient to control airborne levels. Where such systems are not effective, wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or recognized standards. Consult with local procedures for selection, training, inspection and maintenance of personal protective equipment.

Personal Respirators: Wear a NIOSH approved air purifying respirator during spray application.

Skin Protection: Wear chemical resistant gloves, face shield and synthetic apron or coveralls to prevent contact with eyes, skin and clothing.

Eye / Face Protection: Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation.

9. Physical and Chemical Properties

Appearance: White liquid
Odor: Mild latex odor
Data relevant to safety:
Flash point: Not applicable
Ignition temperature: Not applicable
Self-ignition temperature: Not applicable
Color: White
Particle size: < 90µm
Solid Content: 65 ± 3.0%
Density: 1.35 ± 0.10
pH: 7.0 ± 1.0
Thinner: Water
VOC Content: < 50 grams/liter

10. Stability and Reactivity
Stability: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products: Thermal decomposition products or combustion: Ammonia, inorganic acids, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Not reported.
Incompatibilities: Organic solvents
Conditions to Avoid: Heat, flames, high temperatures condition ( >113°F or >45°C), strong alkaline, strong acid and strong oxidizing agents.

11. Toxicological Information
Acute oral toxicity (LD50): None
Irritant effect on skin: Prolonged or repeated exposure may irritate skin.
Irritant effect on eyes: Slightly irritant

12. Ecological Information
Ecological effect: Fish toxicity (LC50): None
Environmental Fate: When released into the soil, this material is not expected to leach into groundwater. When released into water, this material is not expected to evaporate significantly.

13. Disposal Considerations
Waste Disposal: Dispose waste by sanitary landfill or incineration in accordance with appropriate regulations.

14. Transport Information
Shipping Name: Product Name: Fire Retardant Paint
Product Code: DC315
Road transport: Non-hazardous goods
Inland waterways transport: Non-hazardous goods
Marine transport: Non-hazardous goods
Air transport: Non-hazardous goods
Dispatch by post: Permitted

15. Regulatory Information
Health hazardous goods: Not Applicable
Environmental hazardous goods: Not Applicable
Fire hazardous goods: Not Applicable

16. Other Information
Hazard Warning: None
Cautions: Avoid contact with eyes and skin. Do not breathe vapors, dust or mist. Use with adequate ventilation. Wash thoroughly after handling.

Product Use: Fire Retardant Paint

Disclaimer: The information contained in this data sheet pertains to this product as it is currently formulated, and is based on present scientific and technical knowledge. This information is provided without warranty of any kind and should not, therefore, be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees.
MATERIAL SAFETY DATA SHEET

Product Name: ICYNENE LD-C-50™
Also known as The Icynene Insulation System®:
Gold Seal® and Base Seal®

MSDS (F) Spray ICYNENE LD-C-50™

Section 1: Chemical, Product and Company Information

Product Name: ICYNENE LD-C-50® Polyurethane Foam
Also known as The Icynene Insulation System®
ICYNENE LD-C-50™ is a trademark of Icynene Inc. The Icynene Insulation System®, Gold Seal® and Base Seal® are registered trademarks of Icynene Inc.

Product Use: SPRAY-ON CELLULAR PLASTIC INSULATION

Product Code: Not Applicable

Section 2: Ingredient Information

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No:</th>
<th>Wt.%:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyurethane Foam</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Section 3: PHYSICAL DATA

Appearance: Cream coloured cellular foam of “angel food cake” consistency and appearance (may become yellow to light brown if exposed to sunlight for extended period of time).

Solubility In Water: Insoluble.

Density: 0.5 lbs./cubic foot

Odour: None

Emissions: Safe for occupancy after 24 hrs, no emissions detectable after 30 days.

Section 4: FIRE & EXPLOSION HAZARD DATA

Flammability: Combustion occurs at 400°F (material will not sustain combustion on its own)

Flame Spread: Less than 25

Smoke Developed: Less than 450

Method Used: ASTM E84

Melting: Does not melt

Flammable Limits: LFL: - not determined
                 UFL: - not determined

Extinguishing Media: Water, carbon dioxide, dry chemical or foam.

Fire & Explosion Hazards: Prevent breathing of combustion fumes (smoke)
**Fire Fighting Equipment:** Firefighters must wear a self-contained breathing apparatus to avoid breathing smoke generated by combustion.

**Section 5:** REACTIVITY DATA

**Stability:** Stable under all normal conditions

**Incompatibility:** Compatible with all products

**Section 6:** ENVIRONMENTAL & DISPOSAL INFORMATION

**Disposal Method:** Follow all federal, provincial, state and local regulations.

**Section 7:** HEALTH HAZARD DATA

**Detectable Emissions:** No detectable emissions

**Systemic & Other Effects:** Material is completely inert and will not cause physiological harm when exposed to skin, accidentally ingested or through inhalation. VOC and toxicological tests indicate no detectable vapors 24 hours after installation.

**Ingestion:** The consequences of ingestion of large amounts are unknown

**Dust Inhalation:** May cause mechanical irritation to the respiratory system

**Eye Protection:** Use glasses when cutting foam

**Skin Protection:** Dust from foam cutting may cause irritation

**Section 8:** FIRST AID

**Ingestion:** Medical advice should be obtained

**Inhalation:** Remove to fresh air, consult a physician

**Eye Contact:** Flush with water to remove particles

**Skin Contact:** No special precautions required

**Section 9:** ADDITIONAL INFORMATION

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY EXPRESS OR IMPLIED, IS MADE. CONTACT ICYNENE INC. FOR FURTHER INFORMATION.

**Section 10:** PREPARATION INFORMATION

**Prepared by:** Stephanie Holborne, R&D Chemist

**Telephone:** 1-800-758-7325

**Date of Preparation:** Jan 17, 2013
HEALTH AND SAFETY STATEMENT FOR CERTIFIED ICYNENE SPRAYERS

Icynene products have an excellent health and safety record spanning more than 350,000 insulation projects over more than 25 years. Nonetheless, safe handling practices during and immediately following installation are required to eliminate the possibility of health effects from exposure to isocyanates. Asthma, other lung problems, and irritation of the nose and throat can result from inhalation of isocyanates. Direct contact with the skin and eyes can result in irritation. Different individuals will react differently to the same exposures; some will be more sensitive than others. Severe asthma attacks have been reported in some sensitized workers exposed repeatedly to isocyanates while not wearing proper protective equipment. Some reports indicate a reaction and sensitization can occur following a single, sustained occupational exposure to isocyanates without proper protective equipment above the OSHA permissible exposure limit. But sensitization might not occur immediately in some individuals. Consistent use of personal proper protective equipment to prevent exposure during spraying and within the 24 hour-period after spraying is completed is critical to eliminating the health hazard. Once sensitization has occurred, a worker might not be able work safely with spray foam insulation again.

Sprayers, sprayer helpers, and anyone else present during spraying or within 24 hours after spraying is complete: You must wear proper Personal Protective Equipment (PPE) at all times during spray, including full-body-coverage, chemical-protective clothing and a NIOSH-certified respirator with fresh air supply. While spraying and for 24 hours after spraying is completed, no one must be allowed within 50 feet of the sprayed foam without wearing this type of PPE at all times. Adequate active, negative pressure ventilation (exhaust fans) of the job site must be in place during spray and for 24 hours after spray is complete.

Independent studies indicate that with 24 hours’ active ventilation after spraying is completed, Icynene spray foam insulation is safely cured.
ICYNENE LD-C-50® is a trademark for light density, open celled, flexible, 100% water-blown polyurethane foam insulation manufactured by Icynene Inc. ICYNENE LD-C-50® spray formula is a nominal 0.5 lbs/ft³ density, free rise material.

2. MANUFACTURER
ICYNENE LD-C-50® is made on-site from liquid components manufactured by Icynene Inc. Installation and on-site manufacturing is supplied by independent Icynene Licensed Dealers.

3. PRODUCT DESCRIPTION
ICYNENE LD-C-50®, the “classic” light density formulation of Icynene has been installed in buildings since 1986. Icynene is the pioneer of high yield, 100% water-blown polyurethane foam technology for air-sealing and insulating buildings.

ICYNENE LD-C-50® insulates and air-seals in one step for maximum energy conservation while minimizing the environmental impact during manufacturing and construction. Significantly reducing air leakage means ICYNENE LD-C-50® contributes to a healthier, quieter and more comfortable indoor environment, while reducing energy consumption and related greenhouse gas emissions by as much as 50%.

ICYNENE LD-C-50® is an effective vapor permeable air barrier material that can move with the building to maintain the air barrier characteristic against energy-robbing air leakage for the life of the building. Convective air movement inside wall cavities is virtually eliminated, providing more uniform temperatures throughout the building.

The result is superior quality construction, with higher comfort levels and lower heating and/or cooling costs. Energy savings will vary depending on building design, location, etc.

ICYNENE LD-C-50® is applied by spraying liquid components onto an open wall, crawlspace, ceiling surface or cathedral ceiling. There it expands approximately 100:1 in seconds to provide a flexible foam blanket of millions of tiny air cells, filling building cavities, cracks and crevices in the process. It adheres to most construction materials, sealing out air infiltration.

Excess material is easily trimmed off, leaving a surface ready for drywall or other code-compliant finish.

4. TECHNICAL DATA
(Based on Core Samples)

Thermal Performance
Thermal resistance [ASTM C518]
- R/in = R3.7 hr. ft² °F/BTU
Average insulation contribution in a full fill stud wall:
- 2" x 4" = R13
- 2" x 6" = R20

ICYNENE LD-C-50® provides more effective performance than the equivalent R-value of air permeable insulation materials. ICYNENE LD-C-50® is not subject to loss of R-value due to aging, windy conditions, settling, convection or air infiltration; nor will it be prone to traditional moisture intrusion via air leakage.

A FACT SHEET with R-value data is available upon request.

Air Permeance/Air Barrier /Air-Seal
ICYNENE LD-C-50® fills any shaped cavity, and adheres most construction materials, creating assemblies with very low air permeance. Additional interior or exterior air infiltration protection is subject to applicable codes.

Air permeability of core foam:
ASTM E283 data
- 0.009 L/s.m² @ 75 Pa for 3.5"

Air permeability of a 2" x 6" wood framed wall assembly:
ASTM E 278 data
- 0.01 L/s.m² @ 75 Pa for 5.5"

All buildings insulated and air-sealed with ICYNENE LD-C-50® must be designed to include adequate mechanical ventilation/ outdoor air supply. See ASHRAE Standard 62 – Ventilation for Acceptable Indoor Air Quality.

Water Vapor Permeance
ICYNENE LD-C-50® is water vapor permeable and allows moisture to diffuse through the insulation and dissipate from the building envelope.

Water vapor transmission properties:
(ASTM E86 Desiccant Method)
- 0.1 perms @ 5.5"

In those situations that warrant a vapor retarder, a supplemental layer of polyethylene may be used.

Alternately, low vapor permeance paint either directly on the foam or as a primer for the interior drywall may be used.

Water Absorption Properties
Water can be forced into the foam under pressure because it is open celled. Water will drain by gravity, given favorable drying potential, and upon drying all chemical and physical properties are fully restored.

Acoustical Properties
Performance in a 2" x 4" wood stud wall:

STC Sound Transmission Class - 37
ASTM E90 19 30 42 46
NRC Noise Reduction Coefficient - 70
ASTM C423 .12 .43 .68 .72 .71 .67

Burn Characteristics
ICYNENE LD-C-50® is a combustible product and is therefore, consumed by flame, but will not sustain flame upon removal of the flame source. It leaves a charred foam residue. It will not melt or drip. ICYNENE LD-C-50® is subject to all applicable National/State and County building codes regarding fire prevention. Requirements for Thermal Barrier and Ignition Barrier coverings must be met as per the applicable building code having jurisdiction.

U.S. Fire Testing
Surface Burning Characteristics of (ASTM E84) @ 5” Thickness

Flame Spread ≤25
Smoke Development ≤450
*Flame spread rating not intended to reflect hazards under actual fire conditions.

Electrical Wiring
ICYNENE LD-C-50® has been evaluated with energized H/3 and I/2 residential wiring (max. 122°F). It is chemically compatible with typical electrical wiring coverings.

Note: For any insulation of knob and tube wiring, please reference local electrical code.

Corrosion
ICYNENE LD-C-50® did not cause corrosion when evaluated in contact with steel at 120°F and 85% relative humidity conditions.
Plastic Piping

ICYNENE LD-C-50® is compatible in direct contact with CPVC piping systems, as per Paschal Engineering Study for the Spray Polyurethane Foam Alliance (SPFA).

Bacterial or Fungal Growth and Food Value

Independent testing conducted by Texas Tech University has confirmed that ICYNENE LD-C-50® is not a source of food for mold; and as an air barrier material, it resists the airborne introduction of moisture, nutrients, and mold spores into the building envelope.

Environmental / Health / Safety

ICYNENE LD-C-50® is 100% water-blown and therefore contains no ozone-depleting blowing agents. It is also PBDE-free. It has been thoroughly evaluated for in-situ emissions by industry and government experts. VOC emissions are below 1/100th of the safe concentration level (TLV) within hours following the application of ICYNENE LD-C-50®.

Proper handling and use is required to avoid exposure to reactive chemicals in their unreacted state. For more information, contact the Spray Polyurethane Foam Alliance or the American Chemistry Council. Newly insulated areas have been shown to be safe for occupancy 24 hours after installation is complete.

The reaction used to create ICYNENE LD-C-50® generates Carbon Dioxide to expand the foam. Carbon Dioxide has a very low Global Warming Potential (GWP of 1).

Not intended for exterior use. Not to be installed within 3” of heat emitting devices or where the temperature is in excess of 200°F, as per ASTM C411 or in accordance with applicable codes.

5. INSTALLATION

ICYNENE LD-C-50® is installed by a network of Licensed Dealers, trained in the installation of ICYNENE LD-C-50®.

Installation is generally independent of environmental conditions. It can be installed in hot, humid or freezing conditions. Surface preparation is generally not necessary. Within seconds, the foaming process is complete.

For information on Health and Safety, refer to the Spray Polyurethane Foam Alliance Health and Safety guidance documents at www.spraypolyurethane.com

6. AVAILABILITY

Check regional Yellow Pages™ or contact Icynene Inc. at 800-758-7325 or our website at www.icynene.com for a local Icynene Licensed Dealer.

7. WARRANTY

WHEN INSTALLED PROPERLY IN ACCORDANCE WITH INSTRUCTIONS, THE COMPANY WARRANTS THAT THE PROPERTIES OF THE PRODUCT MEET PRODUCT SPECIFICATIONS AS OUTLINED IN THIS PRODUCT SPECIFICATION SHEET. SAVE AND EXCEPT ANY EXCLUSIONS REFERENCED IN THE WARRANTY.

8. TECHNICAL

Icynene Licensed Dealers and Icynene Inc. provide support on both technical and regulatory issues. Architectural specifications in CSI 3-Part format and design details are available upon request.

9. REGULATORY

ICYNENE LD-C-50® has been tested as per the requirements of the International Code Council – Evaluation Service’s AC377 Acceptance Criteria (June 2009).

The following evaluation reports apply to this product:
- ICC ESR-1826

Based on the 3rd party test evidence submitted, this product was found to comply with:
- IECC – 2006 – 2009

10. RELATED REFERENCES

All physical properties were determined through testing by accredited third-party agencies. Icynene Inc. reserves the right to change specifications in its effort of continuous improvement. Please confirm that technical data literature is current.

11. PACKAGING AND STORAGE

Packaging

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component A, Base Seal® MDI</td>
<td>550 lb. per drum</td>
</tr>
<tr>
<td>Component B, ICYNENE LD-C-50® (Gold Seal®) Resin</td>
<td>500 lb. per drum</td>
</tr>
</tbody>
</table>

Storage

Component A, Base Seal®, should be protected from freezing.

Component B, ICYNENE LD-C-50® (Gold Seal®) Resin, may separate during storage and should be mixed thoroughly prior to use.

12. INSTALLATION SPECIFICATIONS

Must be installed by Icynene Licensed Dealers. Refer to the Icynene Installer's Manual for expanded information.

Telephone: 905.363.4040
Toll Free: 800.758.7325
Facsimile: 905.363.0102
Website: www.icynene.com
E-mail: inquiry@icynene.com

SL-200-05 – October 2010
HEALTH AND SAFETY STATEMENT FOR HOMEOWNERS

Icynene products have an excellent health and safety record spanning more than 350,000 insulation projects over more than 25 years. Nonetheless, safe handling practices during and immediately following installation are required to eliminate the possibility of health effects from exposure to isocyanates. Asthma, other lung problems, and irritation of the nose and throat can result from inhalation of isocyanates. Direct contact with the skin and eyes can result in irritation. Different individuals will react differently to the same exposures; some will be more sensitive than others.

Everyone (other than Icynene-certified spray technicians) must vacate the job site, remaining completely out of the building and at least 50 feet away, while the spray is applied and for at least 24 hours after spraying is completed to allow active ventilation of the job site and to ensure the foam chemicals are completely cured. No exceptions.

Independent studies indicate that with 24 hours’ active ventilation after spraying is completed, Icynene spray foam insulation is safely cured.

![WARNING]

STAY OUT OF PREMISES WHILE FOAM IS SPRAYED AND FOR 24 HOURS AFTER SPRAYING IS COMPLETE
HEALTH AND SAFETY STATEMENT FOR CERTIFIED ICRYNENE SPRAYERS

Icynene products have an excellent health and safety record spanning more than 350,000 insulation projects over more than 25 years. Nonetheless, safe handling practices during and immediately following installation are required to eliminate the possibility of health effects from exposure to isocyanates. Asthma, other lung problems, and irritation of the nose and throat can result from inhalation of isocyanates. Direct contact with the skin and eyes can result in irritation. Different individuals will react differently to the same exposures; some will be more sensitive than others. Severe asthma attacks have been reported in some sensitized workers exposed repeatedly to isocyanates while not wearing proper protective equipment. Some reports indicate a reaction and sensitization can occur following a single, sustained occupational exposure to isocyanates without proper protective equipment above the OSHA permissible exposure limit. But sensitization might not occur immediately in some individuals. Consistent use of personal proper protective equipment to prevent exposure during spraying and within the 24 hour-period after spraying is completed is critical to eliminating the health hazard. Once sensitization has occurred, a worker might not be able work safely with spray foam insulation again.

Sprayers, sprayer helpers, and anyone else present during spraying or within 24 hours after spraying is complete: You must wear proper Personal Protective Equipment (PPE) at all times during spray, including full-body-coverage, chemical-protective clothing and a NIOSH-certified respirator with fresh air supply. While spraying and for 24 hours after spraying is completed, no one must be allowed within 50 feet of the sprayed foam without wearing this type of PPE at all times. Adequate active, negative pressure ventilation (exhaust fans) of the job site must be in place during spray and for 24 hours after spray is complete.

Independent studies indicate that with 24 hours’ active ventilation after spraying is completed, Icynene spray foam insulation is safely cured.
SP-5 Site Access and Staging

1. Staging and Access Map provided for reference (Following this page)
CSP24-002 Golf Course Clubhouse Deck Addition
Addendum #1 Staging and Access Map

Contractor Staging Area

Contractor Parking

Site Access - To be coordinated with golf course operations

Contractor to provide steel plates or cribbing as required on bridge structure during delivery of heavy loads
Bidding Requirements, Contract Forms and Conditions of the Contract
SPECIAL PROVISIONS
Golf Clubhouse Desk Addition.CSP24-002
Exhibit 6

END OF SECTION