SECTION 096516

POLYOLEFIN RESILIENT SHEET FLOORING

CSI 3-PART **LONG-FORM** GUIDE SPECIFICATION
USE FOR CONTRACT DOCUMENT (CD) SPECIFICATION ISSUES

EDIT TO SUIT PROJECT

PART 1 - GENERAL

1.1 SUMMARY

A. Work of this Section consists of polyolefin-based resilient sheet flooring, and includes but is not limited to the following:

1. CERES WELS™ Sheet, PVC-Free heterogeneous polyolefin heat-weldable resilient flooring with polyurethane wear surface.
2. Accessories
   a. Adhesive
   b. Seam weld rod
   c. Trowel
3. Optional Field Finish

B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01, General Requirements, Specification Sections, apply to this Section.
2. SECTION 033000, CAST-IN-PLACE CONCRETE: For proper concrete design, underslab vapor barrier and finished concrete surface required to accept resilient flooring.
3. SECTION 035416, HYDRAULIC CEMENT UNDERLAYMENT: For leveling of existing concrete slabs.
4. SECTION 061000, ROUGH CARPENTRY: For proper wood-based panel system used as resilient flooring underlayment.
5. SECTION 079200, JOINT SEALERS: For exposed movement joints.
6. SECTION 079513, EXPANSION JOINT COVER ASSEMBLIES: For expansion joint assembly penetrating through resilient flooring.
7. SECTION 096513, RESILIENT BASE AND ACCESSORIES: For wall base and transition strips between resilient sheet flooring and other surfaces.

NOTE: Edit Definitions and References below to suit project.

1.2 REFERENCES

NOTE: Coordinate and edit to the correct Section number below. The numbers shown indicate relevant broad-scope, medium-scope and narrow-scope numbers of the CSI MasterFormat® system.

A. Abbreviations and Acronyms per SECTION 011000, SECTION 014000, and as follows:

1. AHJ. Authority Having Jurisdiction from local, state and federal regulatory agencies.
2. Per. In accordance with.
3. RH. Relative humidity.
4. SCOF. Static Coefficient Of Friction.

B. Definitions per SECTION 011000, SECTION 014000, and as follows:
   1. Polyolefin: A plasticizer- or phthalate-free, heat-weldable thermoplastic, polyolefin is an olefin monomer made from an ethylene- and/or propylene-based plastic (HDPE <2>, LDPE <4>, PP <5>), which is composed of unsaturated hydrocarbons extracted from petroleum or natural gas.
   2. PCV: Polyvinyl chloride contains 57 percent chlorine by weight derived from salt with the remainder hydrogen and carbon (as ethylene) derived primarily from natural gas and petroleum. Ethylene and chlorine are combined using either direct chlorination or an oxy-chlorination process to make 1,2-dichloroethane (EDC), which is then converted, through polymerization with hydrochloric acid, into vinyl chloride monomer (VCM) resin particles. VCM resin is further polymerized into a vinyl paste or plastisol used to make flooring.
   3. PVC-Free: The product does not contain poly vinyl chloride.
   4. Resilient: The property of an elastic material to recover its shape after it is deformed under loading and then unloaded.

C. Referenced Standards per SECTION 014000 and as follows:

   1. ADA. Americans with Disabilities Act of 1990; www.ada.gov
   2. ANSI. American National Standards Institute; www.ansi.org
   3. ASTM. ASTM International; www.astm.org
      a. Practices:
         1). ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
         2). ASTM F1482, Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
         3). ASTM F1516, Sealing Seams of Resilient Flooring Products by the Heat Weld Method
         4). ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
         5). ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
      b. Specifications:
         1). ASTM F1313, Standard Specification for Sheet Vinyl Floor Covering with Backing
      c. Terminology:
         1). ASTM F141, Resilient Floor Coverings
      d. Test Methods – Performance:
         1). ASTM D2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine
         2). ASTM D4060, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
         3). ASTM D4828, Standard Test Methods for Practical Washability of Organic Coatings
         4). ASTM D5116, Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products
         5). ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials
         6). ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements (STC)
         7). ASTM E648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
         8). ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
         9). ASTM E2179, Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors (IIC)

10). ASTM F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring
11). ASTM F970, Standard Test Method for Static Load Limit
12). ASTM F1514, Standard Test Method for Measuring Heat Stability of Resilient Vinyl Flooring by Color Change.
13). ASTM F1515, Standard Test Method for Measuring Light Stability of Resilient Vinyl Flooring by Color Change
14). ASTM F1914, Standard Test Method for Short-Term Indentation and Residual Indentation of Resilient Floor Covering

e. Test Methods – Products and Materials:
1). ASTM F137, Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus
2). ASTM F386, Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
3). ASTM F410, Standard Test Method for Wear Layer Thickness of Resilient Floor Coverings by Optical Measurement

4. BAAQMD. Bay Area Air Quality Management District; www.baaqmd.gov
5. CARB. California Air Resources Board; www.arb.ca.gov
6. CA.GOV. California Integrated Waste Management Board; www.ciwmb.ca.gov
   a. Section 01350 standards
7. EPA. U.S. Environmental Protection Agency; www.epa.gov
8. NFPA. National Fire Protection Association;
   a. NFPA 253, Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Energy Source
   b. NFPA 258, Research Test Method for Determining Smoke Generation of Solid Materials
9. RFCI. Resilient Floor Material Institute; www.rfci.com
   a. Recommended Work Practices for Removal of Resilient Floor Coverings
10. SCAQMD. South Coast Air Quality Management District; www.aqmd.gov
11. USGBC. United States Green Building Council; www.usgbc.org

1.3 ADMINISTRATIVE REQUIREMENTS

NOTE: Coordinate and edit to the correct Section number below.

A. Coordination per SECTION 013000 or 013100, and as follows:

1. Coordinate expansion joint covering system installation prior to installing resilient sheet flooring. Refer to SECTION 079513.

RED NOTE: Specifier to closely coordinate applicable sections between concrete, and other subfloor surface finishes with the floor covering and adhesive to provide a proper bond.

2. Coordinate concrete topping finish per SECTION 035400 or 035416.

NOTE: Coordinate and edit to the correct Section number below.

B. Preinstallation Meetings per SECTION 013000 or 013100 and as follows:

1. Meeting purpose is to review site conditions, installation procedures, schedules, coordination with other work, and warranty requirements.

NOTE: Coordinate and edit to the correct Section number below.

C. Sequencing: Per SECTION 010000 or 011100.

NOTE: Coordinate and edit to the correct Section number below.

D. Scheduling: Per Section 010000 or 011100, and SECTION 013000 or 013200.

1.4 SUBMITTALS

NOTE: Coordinate and edit to the correct Section number below.

A. Product Data per SECTION 013000 or 013300 and as follows: Submit manufacturer's printed descriptions of materials, components and systems, performance criteria, use limitations, recommendations and installation information, and the following:

1. Typical section details indicating each specified system on proposed substrates and transitions to other flooring systems.
2. Sections indicating flooring system abutting wall.

NOTE: Coordinate and edit to the correct Section number below.

B. Shop Drawings per SECTION 013000 or 013300 and as follows: Submit keyed location plans, plans indicating sheet type, layout, pattern direction, edge transitions, columns, doorways, enclosing partitions, built-in furniture, cabinets, cutouts, expansion and control joints, and attachment requirements.

NOTE: Coordinate and edit to the correct Section number below.

C. Samples per SECTION 013000 or 013300, and as follows:

1. Initial for Selection: Submit printed color charts or Architectural Binder indicating manufacturer’s complete range to determine color, texture, pattern, shape, and/or composition for each type of material finish exposed to view.
2. Final Selection: Submit 8-1/4 x 11-3/4 inch (210mm x 298mm) product samples for acceptance, to verify close tolerances, shapes and/or specifically required aesthetics.

D. Quality Assurance Submittals per SECTION 014000 and as follows:

1. Test and Evaluation Reports: Submit certified test results by a recognized testing laboratory in accordance with specified test methods for each product and/or system indicating physical, chemical and performance characteristics.
2. Qualification Statements: Submit a letter, on printed letterhead and signed by an officer of the firm, for each listed quality assurance qualification listed, attesting to meeting each requirement called out.

NOTE: Edit LEED Requirements below to suit project.

E. Sustainable Design (USGBC LEED®) Submittals: Submit the following in accordance with the requirements of SECTION 018113, LEED REQUIREMENTS:

1. LEED Credit IEQ, Indoor Environmental Quality. Submit completed LEED-NC 2.2 Submittal Templates and required paperwork as follows:
   a. IEQ 4.1: Low Emitting Materials, Adhesives & Sealants, VOC Data
      1). Submit manufacturers' product data for construction adhesives and sealants, including printed statement of VOC content and MSDS Sheets.
      2). Submit manufacturer’s certification that products meet the requirements of SCAQMD Rule 1168 in areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur.
      3). Submit manufacturer’s certification that products meet the requirements of BAAQMD Regulation 8, Rule 51 for containers larger than 16 oz and with CARB for containers 16 oz or less, for areas where freeze/thaw conditions do exist or direct exposure to moisture can occur.
   b. IEQ 4.3: Low Emitting Materials - Flooring Systems
      1). Submit manufacturers product data for systems that includes printed statement of VOC content or test data certifications.

NOTE: Coordinate and edit to the correct Section number below.

F. Closeout Submittals per SECTION 017000 or 017800, unless noted otherwise.

1. Operation and Maintenance Data: Including, but not limited to, methods for maintaining installed products and precautions against cleaning materials with methods detrimental to finishes and performance.
2. Executed Warranty Documentation: Manufacturers' material warranties and installers workmanship warranty.
3. Record Documents: Drawings, Specifications, and Product Data.

NOTE: Edit LEED Requirements below to suit project.

4. Sustainable Design Closeout Documentation: Submit completed USGBC LEED® worksheet templates for the following credits:
   a. IEQ 4.1, IEQ 4.3

NOTE: Edit percentage below to suit scope of project.

G. Maintenance Material Submittals - Extra Materials: Submit no less than five (5) percent additional materials in rolls of each flooring type and pattern used.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements

1. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
   a. Critical Radiant Flux Classification: Class I
   b. Smoke Density per ASTM E662 or NFPA 258: 450 or less

NOTE: Coordinate and edit to the correct Section number below.

B. Qualifications per 014000 or 014300 and as follows:

1. Manufacturer: A firm experienced a minimum five (5) years in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
2. Installer / Applicator: Perform installation with skilled, experienced and trained workmen supervised by trained personnel who shall have a minimum five (5) years successful experience in installations of similar size and scope.

NOTE: Manufacturer offers 2 to 4 hour-long in-field installation demonstration seminars and issues a certificate of attendance.

3. Testing Agency: An independent testing agency with the experience and capability to conduct the testing indicated, meeting requirements of ISO/IEC (International Organization for Standardization / International Electrotechnical Commission) Standard 17025 or ASTM E699 and ASTM E329.

C. Certifications: Resilient Flooring Manufacturer shall be ISO 14001 Certified.

D. Source Limitations: Obtain primary flooring materials through one source from a single manufacturer.

1. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

NOTE: Edit sustainability standards and certifications below to suit project.

E. Sustainability Standards and Certifications:

1. Adhesive and Sealant VOC Limits: According to South Coast Air Quality Management District Rule 1168 and GS-36 for aerosols.
2. VOC Limits: As tested using U.S. EPA Reference Test Method 24 and as defined by
   a. South Coast Air Quality Management District Rules: In areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur.
      1). SCAQMD Rule 1113, Architectural Coatings
      2). SCAQMD Rule 1168, Adhesive and Sealant Applications
   b. Bay Area Air Quality Management District Regulation: For containers larger than 16 oz., for areas where freeze/thaw conditions do exist or direct exposure to moisture can occur.
      1). BAAQMD Regulation 8, Rule 51
   c. California Air Resources Board: For areas where freeze/thaw conditions do exist or direct exposure to moisture can occur.
      1). CARB for containers 16 oz. or less.
3. VOC Emissions: Test data certifying compliance to the California Section 01350 standard. Adhesives shall meet SCAQMD Rule 1168.

NOTE: Coordinate and edit to the correct Section number below.

F. Field Samples per SECTION 014000: Provide field samples, dry laid, to demonstrate aesthetic effects of materials in the room it is to be installed, assisting the Architect and Owner in making final material selections and joint layouts.

NOTE: Edit size of field sample layout to suit project.

1. Minimum Layout Size: 25 sf (2.3m^2)

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery, Storage and Handling per manufacturer's recommendations, SECTION 016000, and as follows.

1. Delivery and Acceptance Requirements
   a. Deliver materials to Project site in an undamaged condition, in original unopened cartons bearing manufacturer's intact label, names, brand names, types and sizes of contents, and proper handling, storing, unpacking, protecting, and installation instructions, as warranted.
   b. Inspect shipped materials on delivery to ensure compliance with requirements of Contract Documents and to ensure that products are undamaged and properly protected.
      1). Reject damaged goods, and accept properly ordered, protected and undamaged goods.
2. Storage and Handling Requirements
   a. Store materials at Project site in a dry, temperature-controlled interior area between 60 deg F and 85 deg F (15 deg C to 30 deg C). Avoid prolonged exposure to temperature extremes, high humidity, and water. Protect materials from damage by improper handling, and the action of other trades.
3. Packaging Waste Management
   a. Request that manufacturers, suppliers and shippers provide least amount of packaging that adequately and properly protects, supports and contains the items shipped, and is reusable, returnable or recyclable.

1.7 WARRANTY

A. Manufacturer Warranty. Provide manufacturer's limited warranty to be free from defects in material and workmanship, under normal use and service, to repair or replace all defective sheet and sub-material product.

1. Warranty Period: Ten (10) years from the date of invoice to original end user. Warranty to include reasonable labor and is non-prorated.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturers List: Subject to compliance with requirements, provide products by one of the following:

1. CERES PVC-Free Flooring, a Division of CBC (AMERICA) Corp., 55 Mall Drive, Commack, NY 11725-5703; Telephone: 888.377.8801; Fax: 631.864.8151; E-mail: support@cerespvcfreeflooring.com; website: www.cerespvcfreeflooring.com

NOTE: Select one of the following Substitution Limitations paragraphs, deleting the one not used.

B. Substitution Limitations: Manufacturers of equivalent products shall be considered when submitted in accordance with CSI Substitution Request Form 1.5C (During the Bidding Phase) or Form 13.1 (After the Bidding Phase.) link

NOTE: Coordinate and edit to the correct Section number below.

C. Substitution Limitations: Manufacturers of equivalent products shall be considered when submitted in accordance with SECTION 013000 or SECTION 013300, and SECTION 016000.

D. Product Options

NOTE: Edit the following options to fit the Project, deleting that not selected.

1. Flooring Type:
   a. CERES WELS™ Sheet
      1). Size: 182cm x 20m x 2.0mm (6 feet x 66 feet x 0.080 inches)
      2). Color and Pattern: The Collection
2. Accessories
   a. Underlayment leveling compound per SECTION 035416
   b. Expansion joints per SECTIONS 079200 and 079513
   c. Transition and divider strips per SECTION 096513
   d. Adhesive: CBC #4040 Acrylic
   e. Adhesive: CBC #950 2-Part Epoxy
   f. Trowel: Gundlach FFA Fine U-notch
   g. Weld Rod: PVC-Free
   h. Cleaning products
3. Optional Field Finish for Heavy Static Load, Rolling Heavy Load, or Top-Down Water Conditions

2.2 DESCRIPTION

A. PVC-Free Heterogeneous Heat Weldable Polyolefin Resilient Flooring: Polyolefin and mineral based sheet product with a non-porous cross-linked reinforced polyurethane wear surface, and a non-directional fiber backing.

B. Sustainability Characteristics

1. USGBC LEED Rating: Comply with project requirements intended to achieve the following Rating, as measured and documented according to the USGBC LEED® Green Building Rating System, Version indicated:

NOTE: Each LEED Version requires a different credit total to achieve the desired LEED Rating.

NOTE. Select one of the following Ratings:

a. Rating: Certified
b. Rating: Silver
c. Rating: Gold
d. Rating: Platinum

NOTE. Select one of the following Versions:

e. Version: LEED 2009-NC v. 3 (New Construction)
f. Version: LEED 2009-EB v. 3 (Existing Building)
g. Version: LEED 2009-CI v. 3 (Commercial Interiors)
h. Version: LEED 2009 for Schools
i. Version: LEED for Retail, v. 2 (July 2008) Draft (Commercial Interiors)
j. Version: LEED for Health Care

2. Applicable LEED Credits: Performance requirements of the following LEED Categories and Credits apply to this Section and are met as follows:
   a. Indoor Environmental Quality (EQ):
      1). EQ Credit 4.1, Low-Emitting Materials: Adhesives and Sealants: as applied to flooring adhesives.
         a). SCAQMD Rule 1168 sets a limit of 50 grams / liter (g/L) for VCT adhesives.
         b). BBAQMD Regulation 8, Rule 51, requires VOC limit of 150 g/L for Indoor Floor Covering Installation.

NOTE: Select from of the following adhesives, deleting that not chosen.

         c). CBC #4040 Acrylic Adhesive VOC: <1 g/L
         d). CBC #950 2-Part Epoxy Adhesive VOC: <12 g/L
      2). EQ Credit 4.3, Low-Emitting Materials – Flooring Systems: Hard surface flooring certified to emission standards meeting California Section 01350. Adhesives to meet SCAQMD Rule 1168
         A). CERES WELS™ Sheet compliant with the CA Section 01350 emission standard. Adhesive meets SCAQMD Rule 1168.

2.3 PERFORMANCE / DESIGN CRITERIA

A. Performance Characteristics:

1. Total Thickness per ASTM F386:	0.084 inch, +/- 0.002
2. Chemical Resistance per ASTM F925: (5 min. test; 24 hr. test; Blood & Betadine test)	0; No change
3. Static Load Limit per ASTM F970:	0.005 in. at 1,500 psi
4. Fire Performance per ASTM E84:	Class B
a. Flame Spread Index:	50
b. Smoke Developed Index:	150
5. Critical Radiant Flux per NFPA 253 / ASTM E648:	Class I
6. Smoke Density per ASTM E662:	Pass
a. Flaming:	68
b. Non-flaming	202
7. Heat Resistance per ASTM F1514:	Pass; △E up to 0.32
8. Light Resistance per ASTM F1515:	Pass; △E up to 0.14
9. TVOC Organic Emissions per ASTM D5116:	Pass, CA Section 01350 compliant Pass, SCAQMD Rule 1168

10. Flexibility per ASTM F137: Passes 10mm mandrel
11. Abrasion Resistance per ASTM D4060: ≥1,000 cycles
12. Scuff Resistance per ASTM D4828: Rating: 1.0; Cleaning Cycles: 3
13. Residual Indentation per ASTM F1914: Max. 2.4% loss of thickness
14. Recovery from Long-Term Indentation per ASTM F970: 1000 psi
15. Slip Resistance per ASTM D2047: 0.66
16. Impact Sound Transmission (IIC) per ASTM E2179: 39 (△IIC = 11)

B. Design Criteria

Note: Select items applicable to project, deleting irrelevant items.

1. On-grade slab placement and/or above grade.
2. No contact or intermittent contact with top down water or high humidity.
3. Contact with top down water or high humidity.
4. Glue down.
5. Welded seams for a monolithic sheet installation.

2.4 MATERIALS

A. CERES WELS™ Sheet:

1. Roll Size: 182cm x 20m (6 feet x 66 feet)
2. Thickness: 2.0mm (0.080 inch)
3. Color(s): As selected by Architect from manufacturer's complete line.

2.5 FINISHES

Note: Delete Field Finish below if not relevant to project.

A. Optional Field Finish for Static or Rolling Heavy Load and Top-Down Water Conditions: Low solid content, no stripping and low maintenance finish.

1. Manufacturer: JohnsonDiversey Inc., www.johnsondiversey.com, or flooring manufacturer and Architect acceptable equivalent.
   a. Manufacturer Acceptable Products:
      1). Cleaner / Maintainer Product: Taski® Wiwax
      2). Low Gloss Finish Product: Carefree® Matte
      3). Low Gloss Finish Product: Taski® Vision Matte
      4). High Gloss Finish Product: Taski® Vision Star

2.6 ACCESSORIES

A. Concrete Slab Leveling and Patching Compound per SECTION 035416.

1. Latex Patching Compound: Styrene-butadiene rubber, portland cement, and an aggregate mix.
2. Hydraulic Cement Underlayment.

B. Expansion Joints: Refer to SECTION 079200 and SECTION 079500 or 079513.

NOTE: Select one of the following adhesive types, deleting that not chosen.

CBC #4040 adhesive is suitable for most applications.

C. Adhesive - Acrylic: Standard water-based acrylic flooring adhesive that is a solvent-free, low odor, high tack type adhesive acceptable to sheet floor manufacturer to suit product and substrate conditions indicated.

1. Manufacturer / Product: CBC #4040

D. Adhesive - 2-Part Epoxy: Solvent-free, low odor, flooring epoxy adhesive recommended for bonding flooring under heavy static or rolling loads, hospital beds, areas that are subject to top down water, freezer cases, and areas exposed to extremes of temperature.

NOTE: Select CBC #950 2-part epoxy adhesive when expecting floors to be subject to top down water, or floors installed in extreme hot or cold, such as near outside entrances or freezer cases, or floors subject to heavy static or rolling loads, including hospital beds, heavy carts, pallet jacks, rolling chairs, etc.

1. Manufacturer / Product: CBC #950 2-part epoxy adhesive

Note: Select adhesive equipment applicable to project, deleting items not used.

E. Adhesive Trowel Equipment: Fine notched professional adhesive application trowel.

1. Manufacturer / Product: CBC Trowel shall be Gundlach FFA U-notch 1/16 x 1/32 x 1/32 inch (1.59mm x 0.79mm x 0.79mm).

F. Weld Rod: PVC-Free, 4.0mm diameter as recommended by the sheet flooring manufacturer for the product(s) specified.

1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 FIELD CONDITIONS

A. Conditions and Measurements: Visit jobsite to verify installation conditions and floor measurements.

NOTE: Coordinate and edit to the correct Section number below. The three numbers shown indicate broad-format, medium-format and narrow-format numbers of the CSI MasterFormat® system.

B. Ambient Conditions per manufacturer's recommendations, SECTION 017000 or 017100 or 017116, and as follows:

1. Acclimate product to installation location.
   a. Place all materials required for installation on site in room where they will be installed 48 hours before installation.
   b. Maintain Temperature: Minimum 60 deg F (15 deg C), and maximum 85 deg F (30 deg C) for forty-eight (48) hours prior to, during and after installation.
      1). Thereafter, maintain minimum temperature of 55 deg F (13 deg C).
   c. Maintain Humidity: 40 to 65 percent forty-eight (48) hours prior to, during and after installation.

C. Environmental Limitations: Do not deliver or install until building is enclosed, wet work is complete, and HVAC system is operating and consistently maintaining temperature and relative humidity at occupancy levels for a minimum seven (7) days in accordance with manufacturer's recommendations.

3.2 EXAMINATION

NOTE: Coordinate and edit to the correct Section number below.

A. Examination per SECTION 017000 or 017100 or 017116, and as follows:

1. Acceptance of Conditions: Carefully examine installation areas with Installer/Applicator present, for compliance with requirements affecting Work performance.
   a. Verify that field measurements, surfaces, substrates, structural support, tolerances, levelness, plumbness, temperature, humidity, moisture content level, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
      1). Verify that concrete substrates meet ASTM F710 requirements and are flat to within 3/16 inch in 10 ft (4.8mm per 3m).
      2). Verify that curing compounds and/or bond inhibitors have been removed.
2. Test substrates as required by manufacturer to verify proper conditions.

NOTE: Coordinate and edit requirements to the project substrates present.

   a. Concrete:
      1). Provide moisture testing to verify that concrete substrates are sound and dry. Perform both of the following tests:
         a). Perform relative humidity (RH) test using in situ probes per ASTM F2170. Proceed with installation only after each substrate measures a maximum 75 percent RH.
         b). Perform anhydrous calcium chloride testing per ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 5 lbs of water/1000 sf (2.27 kg of water/92.9m^2) in 24 hours.
      2). Perform alkalinity testing to verify pH level is between 5 and 9 per ASTM F710.
      3). Perform bond testing per ASTM F710 to determine compatibility of adhesive to concrete substrate.
   b. Wood: Shall be dry, clean, structurally sound, well nailed and/or glued, free of voids and with joints that do not exceed 1/16 inch (1.6mm) per underlayment manufacturer's installation instructions.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

NOTE: Coordinate and edit to the correct Section numbers below.

A. Prepare per manufacturer's recommendations, SECTION 017000 or 017100, and as follows:

1. General: Prepare substrate(s) in accordance with manufacturer's instructions that includes, but is not limited to, the following:
   a. Clean substrates.
      1). Do not use bond inhibiting commercial adhesive removers, flux cleaning agents or acid etching cleaners.
      2). Substrate shall be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation or laitance, mold, mildew, and other foreign materials that might prevent adhesive bond.
   b. HVAC system shall be in full operation a minimum seven (7) days prior to substrate testing.

NOTE: Delete item below if there are no building expansion joints.

   c. Expansion Control: Install building expansion joint covering system prior to installing resilient sheet flooring. Refer to SECTION 079513.
      1). Do not install over expansion joints, structural joints, insulation joints and other moving joints.
      2). Adhering: Provide 6mm (1/4 inch nominal) expansion space between flooring and each wall and stationary object.
      3). Expansion joints, isolation joints or other moving joints in concrete shall not be filled with patching compound nor covered with resilient flooring.

d. Hazardous Materials: If existing asbestos or other hazardous containing materials are known or suspected, review and comply with all applicable regulations prior to and during removal.

RED NOTE: Do not install polyolefin resilient sheet flooring over radiant flooring heated substrates that can exceed 85 deg F (30 deg C).

2. Concrete Substrates:
   a. Prepare and perform testing per ASTM F710 on all existing and new concrete substrates to receive product.
      1). Mechanically remove top layer of exceptionally porous, soft or dusty concrete, and other non-bonding type surfaces.
         a). Test pH level after scarification is complete.
         b). Use non-chemical methods of removal, such as abrasive cleaning or bead blasting, on existing slabs at a minimum 48 hours prior to testing.

RED NOTE: Use of plaster or gypsum patch for flooring repair or leveling is NOT acceptable.

      2). Prime and/or cover surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities with a Portland-based cementitious underlayment-patching compound with a 3,500 psi (24,115 kPa) minimum compressive strength. Refer to SECTION 035416.
      3). Concrete substrates shall pass each testing requirement prior to beginning resilient flooring installation.

NOTE: Lightweight concrete of <115 pcf is unsuitable. Coordinate with Engineer to place a minimum 1 inch (25mm) topping of >140 pcf normal weight concrete, or an acceptable panel underlayment.

   b. Level stair surfaces with Portland-based patching compound and remove each raised material, such as nails, screws, and dowels.
3. Wood Substrates and Panel Type Underlayment. Prepare and install per PS1, PS2, APA Form L335, and as follows:

GREEN NOTE: Specify use of exterior glues in lieu of interior urea-formaldehyde glue to reduce amount of indoor air pollutants.

   a. Wood substrate shall be double layer construction minimum 1 inch total thickness.
   b. Double layer underlayment construction of a minimum 1 inch (25.4mm) thickness with a minimum 18 inches (457mm) of well-ventilated airspace beneath.
      1). Crawl spaces shall be insulated and protected by a vapor barrier.
   c. The top layer of a wood substrate shall be completely free of knots or surface voids.

NOTE: Edit below to wood substrate type and thickness used. Delete APA item above if not used.

   d. [Insert wood product or panel type selected]
      1). TECPLY™ brand plywood
   e. Thickness: [Insert product thickness]
   f. Underlayment shall be smooth, dry and clean being free of paint, varnish, wax, oils, solvents or other foreign matter, structurally sound, and well nailed or screwed per manufacturer's installation instructions
      1). Ensure that each nail or screw head is set flush with or below surface.

RED NOTE: Unacceptable substrate surfaces include, but are not limited to, luan, plywood with knots, underlayment made of pine or other soft woods, particleboard, hardboard, hardwood flooring, textured or cushioned flooring or other uneven or unstable substrate surfaces.

4. Terrazzo and Ceramic Substrates:
   a. Substrate shall be structurally sound.

1). Remove separated (delaminated) substrates, the substrate and restore affected area with high-quality patching material recommended for this application. Return the surface to a smooth and flat condition.

b. Provide CBC #950 2-part epoxy adhesive on non-porous substrates.

5. Steel Substrates:
   a. Substrate shall be structurally sound.
      1). Remove surface residue and rust completely from steel substrate, and coat surface with epoxy rust-inhibitor per SECTION 099100.
   b. Provide CBC #950 2-part epoxy adhesive on non-porous substrates.
6. Doorway Expansion: Remove existing base moldings and undercut each doorjamb. Cover with appropriate molding.
7. Product Preparation: Handle products in accordance with manufacturer's instructions and warranty requirement including, but not limited to:
   a. Strictly adhering to manufacturer's handling and installation safety requirements.
   b. Refer to each product's MSDS for use of personal protective equipment.

3.4 INSTALLATION

NOTE: Coordinate and edit to the correct Section number below.

A. Installation per manufacturer's current written instructions, SECTION 017000 or 017300 or 017316, and the following:

1. Verify each roll is from the same dye lot
2. Trial Laying: Dry Lay without adhesive, and reverse roll the resilient sheet flooring during acclimation period.
   a. Trim factory edges to remove shipping damage or deformities.
3. Cutting: Lay resilient sheet flooring starting at the marked centerline. Cut the sheet closely to the wall using a utility knife.
   a. Leave a 3/16 inch (5mm) gap at all inside and outside corners.
4. Adhesive: Evenly apply adhesive using proper trowel, allowing for proper set-up and working time. Remove uncured residual adhesive per recommendations.
5. Rolling: Roll entire floor with a 100 lb., 3-section roller immediately after placing resilient sheet flooring into the adhesive bed.
6. Seam Sealing: After 24 hours rout/groove flooring material at the seam. Using a hot-air gun, thermally weld proper adhesive weld rod into the seam.

3.5 FIELD QUALITY CONTROL

NOTE: Coordinate and edit to the correct Section number below.

A. Site Tests and Inspections: Per SECTION 014000 or 014500 or 014523, and as follows:

1. Inspect floor installation for non-conforming work including, but not limited to, the following:
   a. Lack of adequate adhesion
   b. Air blisters, buckles, and dirt or debris under the sheet flooring
   c. Loose edges or seams
   d. Adhesive on top of the flooring
   e. Wide joints
   f. Improper substrate preparation as indicated by buckling or telegraphing
   g. Damaged tiles as indicated by dents, splits, cuts, cracks, punctures, melting, burn marks

B. Non-Conforming Work per General Conditions and as follows:

1. Remove, Repair and Reinstall or Restore in Place damaged items.
   a. Finish touch-up damaged surface finishes.
2. Replace damaged materials or items with New if repair not acceptable to Architect.

3.6 CLEANING

NOTE: Coordinate and edit to the correct Section number below.

A. Waste Management per SECTION 017000 or 017400 or 017419, and as follows:

1. Coordinate take-back program with manufacturer, if applicable.
   a. Store and return pallets, containers and packaging to manufacturer or recycler for reuse or recycling.

NOTE: Coordinate and edit to the correct Section number below.

B. Provide Progress Cleaning per SECTION 017000 or 017400 or 017413, and as follows:

1. Work Areas: Continuously clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   a. Clean and maintain completed construction until Substantial Completion.

NOTE: Coordinate and edit to the correct Section number below.

C. Provide Final Cleaning immediately prior to Substantial Completion inspection per SECTION 017000 or 017400 or 017423.

1. Protection: Remove installed protection immediately prior to Substantial Completion inspection.
   a. Replace protection after inspection and remove just prior to Final Completion.

3.7 CLOSEOUT ACTIVITIES

NOTE: Coordinate and edit to the correct Section number below.

A. Substantial Completion Requirements per SECTION 017000 or 017700 and as follows:

1. Perform Closeout Procedures per SECTION 017000 or 017700.
2. Sustainable Design Closeout Documentation per SECTION 017000, 017800 or 017853: LEED credit worksheet paperwork.

3.8 PROTECTION

A. Protect materials from construction operations until date of Final Completion or Owner occupancy, whichever occurs first.

1. Protect finished floor from abuse and damage by using heavy non-staining kraft paper, drop cloths or equivalent. Use additional non-damaging protective materials as needed.

NOTE: Insert relevant Light and Heavy Static or Rolling Loading and/or Wet Condition Guidelines meeting Project requirements per Adhesive Manufacturers Recommendations.

B. Keep foot traffic off the new floor for a minimum 12 hours.

C. Keep furniture, fixtures and rolling traffic off the new floor for 48 hours.

3.9 MAINTENANCE

RED NOTE: Do not use treated dust mops.

A. Initial Maintenance:

1. Wait minimum 72 hours (3 days) before performing initial maintenance.

2. Clean floor of debris, dust, dirt and adhesive residue.
3. Wash floor with neutral 6-8 ph non-abrasive cleaner per manufacturer's instructions.

B. Routine Maintenance per Manufacturer's Recommendations:

1. Clean floor of dirt and grit.
2. Wash with neutral pH non-abrasive cleaner per manufacturer's instructions.
3. Rinse mop in clean water after each mopping pass to remove picked up soil.

C. Maintain Temperature: Maintain minimum ambient temperature of 55 deg F (13 deg C).

D. Maintain Humidity: 40 to 65 percent RH after installation.

END OF SECTION

RED NOTE: Be sure to obtain the latest version of this Guide Specification.

This Guide Specification is not a completed document ready for use. It must be edited, deleting, adding, or modifying text, as required to suit project requirements.

The professional stamping and the contracting parties of the Contract Documents are responsible for the accuracy of issued project specifications, including any use of this CERES WELS™ SHEET resilient flooring Guide Specification.

CERES PVC-FREE FLOORING AND CBC (AMERICA) CORP SHALL NOT BE LIABLE FOR DAMAGES ARISING OUT OF THE USE OF THIS GUIDE SPECIFICATION.