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APPEAL SUMMARY

Status: Decision Rendered - Held over from ID 15328 (7/5/17) for additional information

Appeal ID: 15948	**Project Address:** 3610 SE 29th Ave
Hearing Date: 10/11/17	**Appellant Name:** Tim Richard
Case No.: B-010	**Appellant Phone:** 503-230-2337
Appeal Type: Building	**Plans Examiner/Inspector:** Thomas Ng, Jody Orrison
Project Type: commercial	**Stories:** 4 **Occupancy:** R-2 **Construction Type:** V-A
Building/Business Name:	**Fire Sprinklers:** Yes - Throughout - All 4 builidngs
Appeal Involves: Erection of a new structure,Reconsideration of appeal	**LUR or Permit Application No.:** Permit 16-164324-CO,16-164326-CO, 16-164327-CO, 17-216899-CO
Plan Submitted Option: pdf [File 1] [File 2] [File 3]	**Proposed use:** Multifamily Residential

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	OSSC Section 1203.2 Ventilation
Requires	Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilation openings protected against the entrance of rain and snow. Blocking and bridging shall be arranged so as not to interfere with the movement of air. An airspace of not less than 1 inch (25 mm) shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/150th of the area of the space ventilated.
Proposed Design	The proposed design is to 1-hour enclosed roof framing assembly and created unvented enclosed roof assembly. This will be composed of roof membrane over ¼" protection board, 15/32 inch roof sheathing, 3/4 inch structural sheathing fastened to double 2 x 12 joists. 4½ inches of closed cell spray polyurethane foam (SPF) insulation will be applied directly to the underside of the roof sheathing to create an impermeable vapor barrier. This closed-cell SPF insulation will comply with 2012 IBC, IRC, and IECC per the ESR-2072 report. The remainder of the cavity (7½ inch) will be completely filled with R-30 unfaced batt insulation. The ceiling assembly will have an interior finish of 2 layers of 5/8 inch Type C gypsum drywall. See Exhibit #A for the assembly detail. This design is based on Approved Appeal 14647. "Reconsideration Text" The proposed design is a 1-hour enclosed roof framing assembly that creates an unvented enclosed roof assembly. It is composed of a roof membrane over ¼ inch protection board, 15/32 inch roof sheathing, 7/8 inch structural sheathing fastened to double 2 X 12 joists. 5½ inches of closed cell spray polyurethane foam (SPF) insulation will be applied directly to the underside of the roof sheathing to create an impermeable vapor barrier. The closed-cell SPF insulation will comply

with the 2012 IBC, IRC, and IECC per the ESR-2072 report. The remainder of the cavity (6 inch) will be completely filled with R-21 unfaced batt insulation. The ceiling assembly will have an interior finish of 2 layers of 5/8 inch Type C gypsum wallboard.

Reason for alternative

The intent of the 1 inch airspace per 2014 OSSC §1203.2 is to provide for ventilation to remove any condensation that may form between the attic insulation and the roof sheathing. In the proposed design, insulation is placed in direct contact with the plywood sheathing, which effectively eliminating any airspace in which moisture might condense. Foamed polyurethane spray insulation will also act as a vapor barrier and prevent the transfer of moisture from outside.

Based on the dew point analysis (from Appeal ID: 14647, Exhibit #B) was done to determine the dew point location in the assembly under static (steady-state) conditions. This method can be used predict the surface temperature based on the temperature difference and the thermal resistance of the assembly. The thermal gradient within the roof assembly helps to understand the temperature patterns within the materials to establish where the water vapor might condense. Two winter conditions were considered, a typical winter month and a severe winter month, with outdoor temperatures reaching to 20QF. The interior temperature is assumed to be maintained at 68QF and relative humidity at 40% based on continuous mechanical ventilation. The analysis concluded that the dew point falls within the foamed polyurethane and the condensing surface is kept above the temperature where condensation will likely occur. Therefore, there is no migration of moisture into the interior surface of the roof assembly.
The effects for unsteady (dynamic) conditions, using WUFI (Item 2 Exhibit #C), was also analyzed to find how the proposed assembly functions during an annual model period. The graphs indicate that the temperature stays above the dew point at all points in the assembly during the year and that the RH stays below 100% indicating that condensation is not an issue for the roof systems.

The 2015 IBC §1203.3 has recognized unvented attic and enclosed roof assemblies if a number of conditions are met including the unvented attic space is completely contained in the building thermal envelope; a vapor retarder in direct contact to the underside of the insulation; the insulation must be in direct contact with the underside of the roof sheathing; and the impermeable insulation shall be at least R-15 for Climatic Zone 4.

As applying 4½ inches of closed cell spray foam provides impermeable vapor barrier, which is supported by the attached analysis, condensation will not occur within the assembly. Therefore, we request you to grant this appeal.

"Reconsideration Text"

The intent of the 1 inch airspace per 2014 OSSC §1203.2 is to provide for ventilation to remove any condensation that may form between the attic insulation and the roof sheathing. In the proposed design, insulation is placed in direct contact with the plywood sheathing, which effectively eliminating any airspace in which moisture might condense. Foamed polyurethane spray insulation will also act as a vapor barrier and prevent the transfer of moisture from outside.

A dew point analysis is used to determine the dew point location in the assembly under static (steady-state) conditions. This method predicts the surface temperature based on the temperature difference and the thermal resistance of the assembly. The thermal gradient within the roof assembly helps to understand the temperature patterns within the materials to establish where the water vapor has the potential to condense. Two winter conditions were considered: a typical winter month and a severe winter month with outdoor temperatures reaching to 20°F. The interior temperature is assumed to be maintained at 68ºF and relative humidity at 50% based on continuous mechanical ventilation. The analysis showed conclusively that the dew point falls within the foamed polyurethane and the condensing surface is kept above the temperature where

condensation will likely occur. Therefore, there is no migration of moisture into the interior surface of the roof assembly.

The effects for unsteady (dynamic) conditions, using WUFI (Item 2 Exhibit #C), was also analyzed to find how the proposed assembly functions during an annual model period. The graphs indicate that the temperature stays above the dew point at all points in the assembly during the year and that the RH stays below 100% indicating that condensation is not an issue for the roof systems.

The 2015 IBC §1203.3 has recognized unvented attic and enclosed roof assemblies if a number of conditions are met including the unvented attic space is completely contained in the building thermal envelope; a vapor retarder in direct contact to the underside of the insulation; the insulation must be in direct contact with the underside of the roof sheathing; and the impermeable insulation shall be at least R-15 for Climatic Zone 4.

As applying 5½ inches of closed cell spray foam provides impermeable vapor barrier, which is supported by the attached analysis, condensation will not occur within the assembly. Therefore, we request you to grant this appeal.

APPEAL DECISION

Unventilated attic space: Granted as proposed.

The Administrative Appeal Board finds that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

10/4/2017

Tim Richard
Lead Architect
Siteworks Design-Build
240 SE 2nd Avenue
Portland, OR 97214

Sunshine Portland Apartments – Roof Assembly

Dear Mr. Richard,

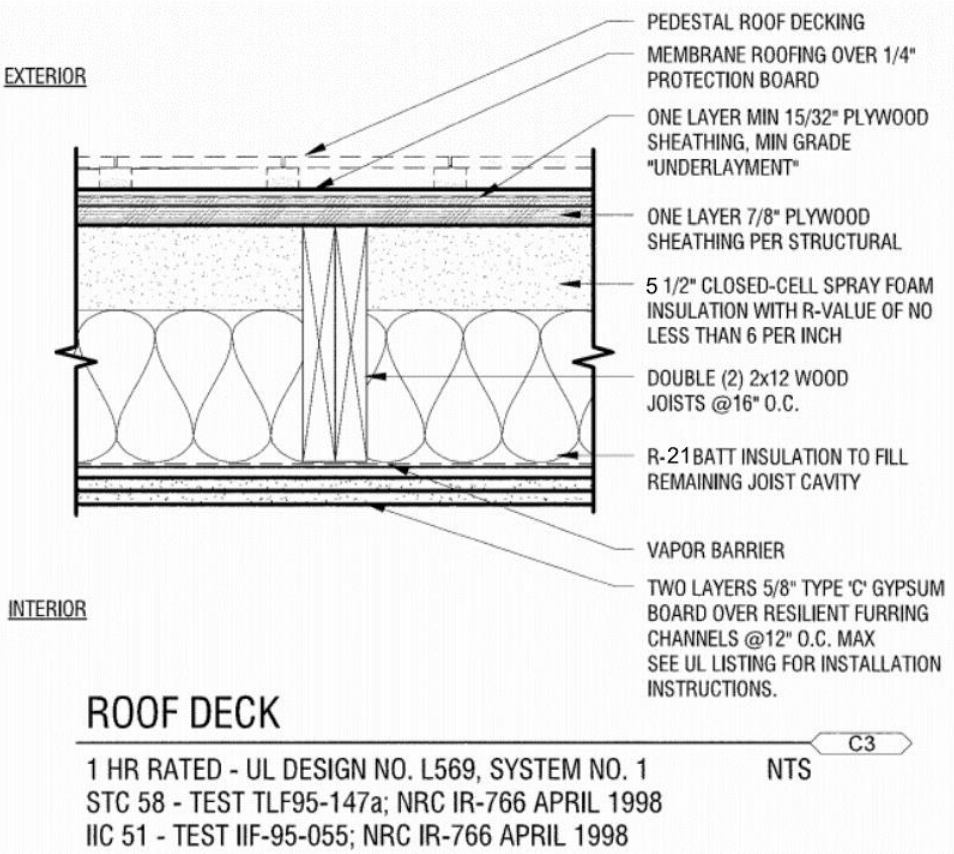
Siteworks is designing Sunshine Portland Apartments. This project includes four new buildings, located at 3610 SE 29th Ave in Portland, Oregon. Each building is 4 story of Type V-A construction.

Per 2014 OSSC Section 1203.2, the roof assembly is required to have an airspace of not less than 1 inch between the insulation and the roof sheathing,

Code Unlimited was asked to provide a thermal gradient analysis to support an alternate. The proposed design is an unvented roof assembly with close cell spray polyurethane foam insulation. Our analysis shows that the dew point during the winter months occurs within the foam insulation.

Proposed Design

The proposed design is a 1-hour enclosed roof framing assembly that creates an unvented enclosed roof assembly. It is composed of a roof membrane over ¼ inch protection board, $^{15}/_{32}$ inch roof sheathing, $^{7}/_{8}$ inch structural sheathing fastened to double 2 X 12 joists. 5½ inches of closed cell spray polyurethane foam (SPF) insulation will be applied directly to the underside of the roof sheathing to create an impermeable vapor barrier. The closed-cell SPF insulation will comply with the 2012 IBC, IRC, and IECC per the ESR-2072 report. The remainder of the cavity (6 inch) will be completely filled with R-21 unfaced batt insulation. The ceiling assembly will have an interior finish of 2 layers of 5/8 inch Type C gypsum wallboard.



Dew Point Analysis

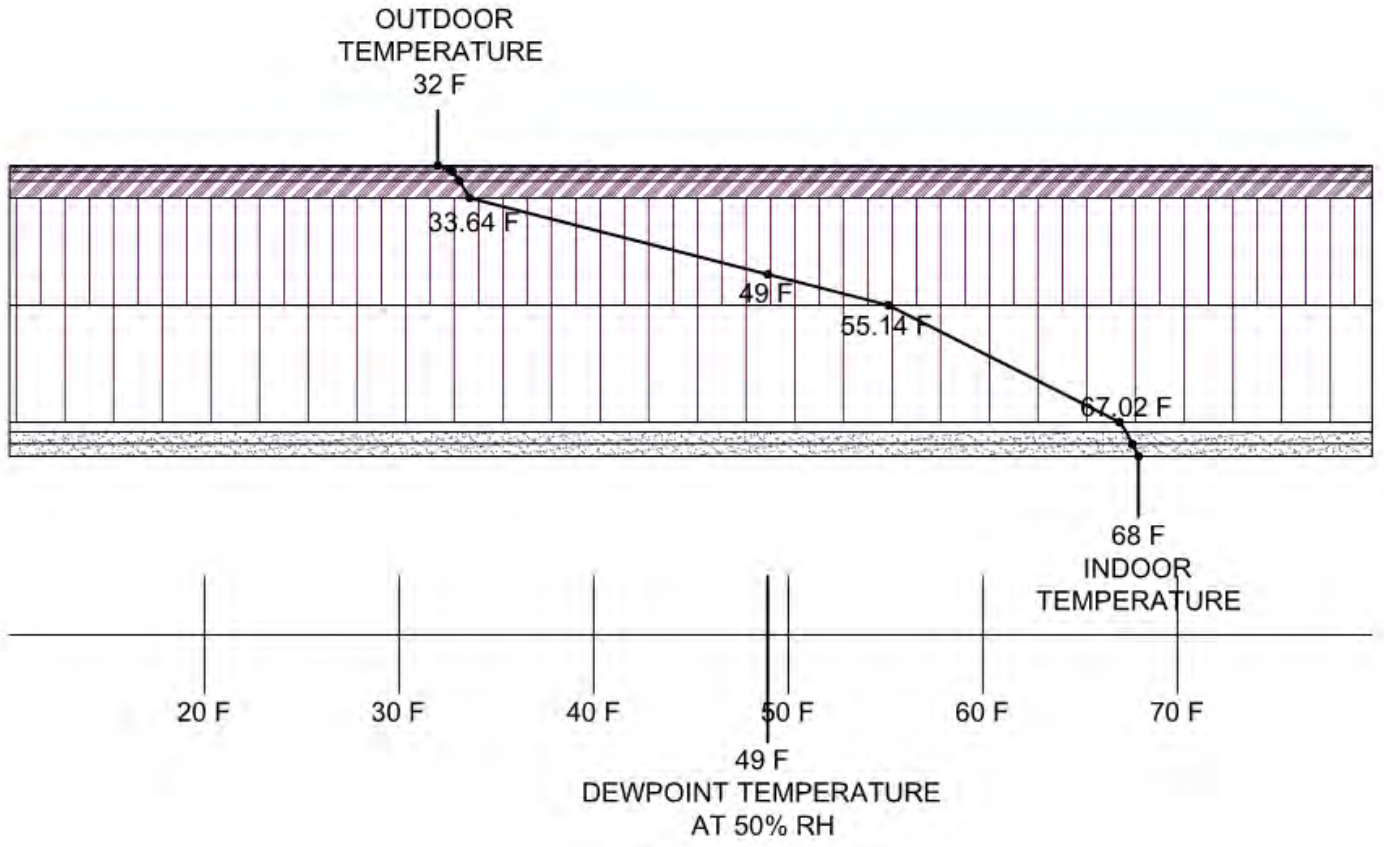
The dew point analysis is used to determine the dew point location in the assembly under static (steady-state) conditions. This method predicts the surface temperature based on the temperature difference and the thermal resistance of the assembly. The thermal gradient within the roof assembly helps to understand the temperature patterns within the materials to establish where the water vapor has the potential to condense. Two winter conditions were considered: a typical winter month and a severe winter month with outdoor temperatures reaching to 20°F. The interior temperature is assumed to be maintained at 68ºF and relative humidity at 50% based on continuous mechanical ventilation. The analysis showed conclusively that the dew point falls within the foamed polyurethane and the condensing surface is kept above the temperature where condensation will likely occur. Therefore, there is no migration of moisture into the interior surface of the roof assembly.

See the analysis details below.

THERMAL GRADIENT THROUGH THE 1-HOUR ROOF ASSEMBLY – TYPICAL WINTER CONDITION

THERMAL COMPONENT	COMPONENT RESISTANCE	CUMULATIVE RESISTANCE	TEMPERATURE DIFFERENCE TO REFERENCE POINT (cumulative resistance/ total cumulative resistance) X (Outdoor-Indoor Temperature Difference)	TEMPERATURE AT REFERENCE POINT ºF
Outdoor Air	-	-	-	32.00 ºF
TPO Roof Membrane	0.33	0.33	0.19	32.19 ºF
1/4" Protection Board	1.00	1.33	0.75	32.75 ºF
15/32" Plywood Board	0.62	1.95	1.10	33.10 ºF
7/8" Plywood Board	0.94	2.89	1.64	33.64 ºF
5.5" Closed Cell Spray Polyurethane Foam (SPF) Insulation	38.00	40.89	23.14	55.14 ºF
6" Batt Insulation	21.00	61.89	35.02	67.02 ºF
1/2" Furring Channel	0.61	62.5	35.37	67.37 ºF
5/8" Type C Gypsum Board	0.56	63.06	35.68	67.68 ºF
5/8" Type C Gypsum Board	0.56	63.62	36.00	68.00 ºF
Indoor Air	-	-	-	68.00 ºF

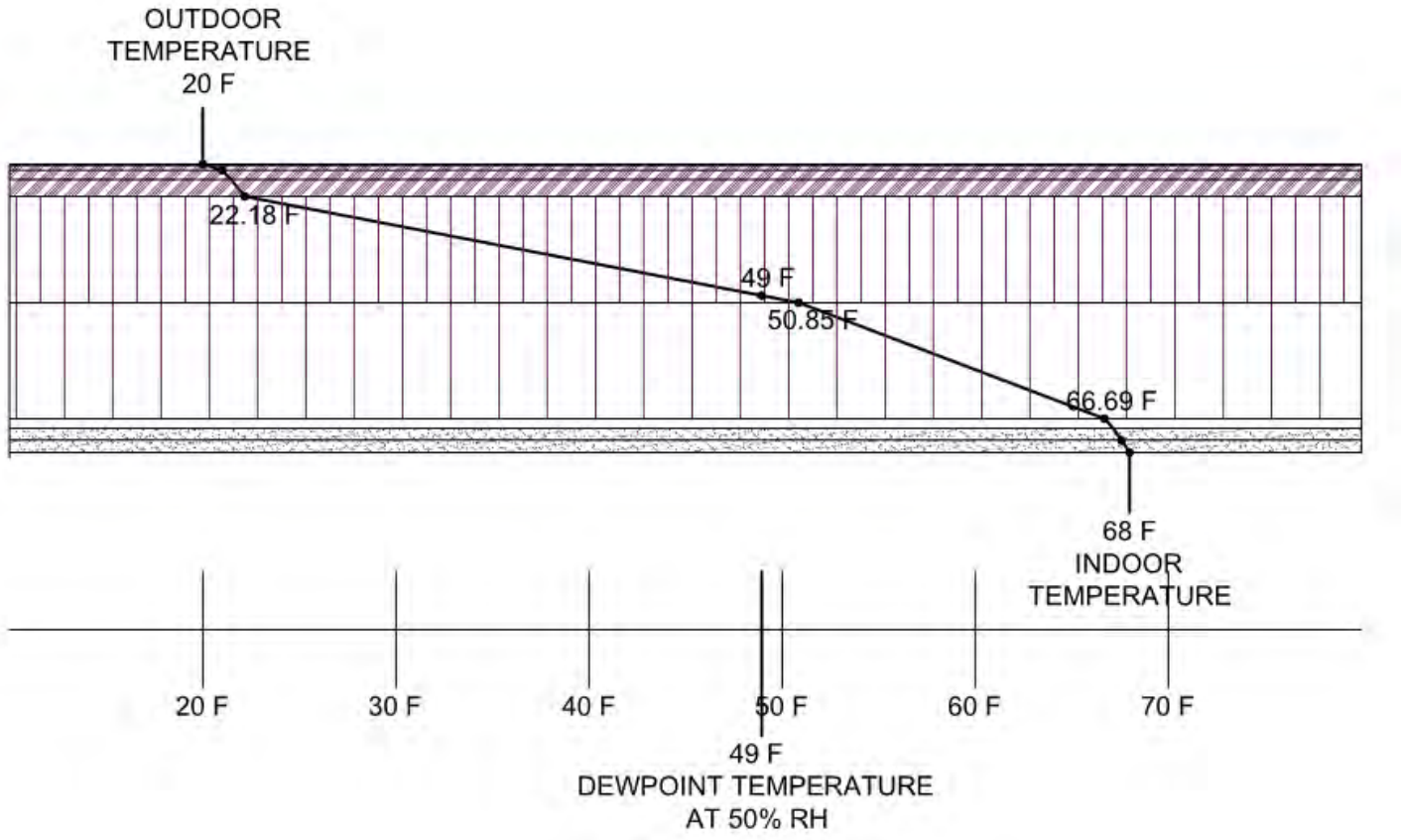
Relative Humidity (68F Indoor)	30%	40%	50%
Dew Point Temperature	35 F	42 F	49 F



THERMAL GRADIENT THROUGH THE 1-HOUR ROOF ASSEMBLY – SEVERE WINTER CONDITION

THERMAL COMPONENT	COMPONENT RESISTANCE	CUMULATIVE RESISTANCE	TEMPERATURE DIFFERENCE TO REFERENCE POINT (cumulative resistance/ total cumulative resistance) X (Outdoor-Indoor Temperature Difference)	TEMPERATURE AT REFERENCE POINT ºF
Outdoor Air	-	-	-	20.00 ºF
TPO Roof Membrane	0.33	0.33	0.25	20.25 ºF
1/4" Protection Board	1.00	1.33	1.00	21.00 ºF
15/32" Plywood Board	0.62	1.95	1.47	21.47 ºF
7/8" Plywood Board	0.94	2.89	2.18	22.18 ºF
5.5" Closed Cell Spray Polyurethane Foam (SPF) Insulation	38.00	40.89	30.85	50.85 ºF
6" Batt Insulation	21.00	61.89	46.69	66.69 ºF
1/2" Furring Channel	0.61	62.5	47.15	67.15 ºF
5/8" Type C Gypsum Board	0.56	63.06	47.58	67.58 ºF
5/8" Type C Gypsum Board	0.56	63.62	48.00	68.00 ºF
Indoor Air	-	-	-	68.00 ºF

Relative Humidity (68F Indoor)	30%	40%	50%
Dew Point Temperature	35 F	42 F	49 F



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Reissued 09/2015
This report is subject to renewal 09/2017.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 21 00—THERMAL INSULATION
SECTION: 07 25 00—WATER RESISTIVE BARIERS/WEATHER BARRIERS

REPORT HOLDER:

ACCELLA POLYURETHANE SYSTEMS, LLC

2400 SPRING STUEBNER ROAD WEST
SPRING, TEXAS 77389

EVALUATION SUBJECT:

BAYSEAL™ CLOSED CELL SPRAY-APPLIED POLYURETHANE FOAM INSULATION

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 21 00—Thermal Insulation
Section: 07 25 00—Water-Resistive Barriers/Weather Barriers

REPORT HOLDER:

ACCELLA POLYURETHANE SYSTEMS, LLC
2400 SPRING STUEBNER ROAD WEST
SPRING, TEXAS 77389
(281) 350-9000
www.accellacorp.com

EVALUATION SUBJECT:

BAYSEAL™ CLOSED CELL SPRAY-APPLIED POLYURETHANE FOAM INSULATION

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2015, 2012 and 2009 *International Residential Code*® (IRC)
- 2015, 2012 and 2009 *International Energy Conservation Code*® (IECC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

- Other Codes (see Section 8)

Properties evaluated:

- Surface-burning characteristics
- Physical properties
- Thermal resistance
- Attic and crawl space installation
- Air permeability
- Vapor permeance
- Water-resistive barrier
- Exterior walls in Types I through IV construction

2.0 USES

Bayseal™ Closed Cell spray foam insulation is used as thermal insulating materials in Type I, II, III, IV and V construction under the IBC and dwellings under the IRC. See Section 4.6 for use in Type I, II, III and IV construction. The insulation is for use in wall cavities, floor assemblies or ceiling assemblies, or attics and crawl spaces when installed in accordance with Section 4.0. When installed in accordance with Section 4.5, the insulation may be used as an alternative to water–resistive barriers required in IBC Section 1404.2 and IRC Section R703.2.

3.0 DESCRIPTION

3.1 Bayseal™ Closed Cell Foam Plastic Insulation:

Bayseal™ Polar Closed Cell spray-applied polyurethane foam insulation comprises a series of products designated: Bayseal™ CC X; and Bayseal™ CC XP. Bayseal™ Closed Cell spray polyurethane foam insulation is medium-density polyurethane foam plastic intended to be installed as a component of floor/ceiling and wall assemblies. The material is a two-component, closed cell, one-to-one-by-volume spray foam insulation with a nominal density of 1.9 pcf (30 kg/m^3). The insulation is produced in the field by combining a polymeric isocyanate (A component) with a polymeric resin blend (B component). The insulation liquid components have a shelf life of six months, are supplied in nominally 55-gallon (208 L) drums and must be stored at temperatures between 70°F (21°C) and 80°F (27°C) a minimum of 48 hours prior to use.

3.2 Surface-burning Characteristics:

The insulation at a maximum thickness of 4 inches (102 mm) and a nominal density of 1.9 pcf (30 kg/m^3) has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84. Thicknesses of up to 8 inches (203 mm) for wall cavities and 12 inches (305 mm) for ceiling cavities are recognized based on room corner fire testing in accordance with NFPA 286, when covered with a minimum $^1/_2$-inch-thick (13 mm) gypsum board or an equivalent thermal barrier complying with, and installed in accordance with, the applicable code.

3.3 Thermal Resistance (*R*-values):

The insulation has thermal resistance (*R*-value) at a mean temperature of 75°F (24°C) as shown in Table 1.

3.4 Vapor Permeance:

The foam plastic has a vapor permeance of less than 1 perm (5.7x10^{-11} kg/Pa-s-m^2) when applied at a minimum thickness of 1 inch (25.4 mm) and may be used where a Class II vapor retarder is required by the applicable code.

3.5 Air Permeability:

Bayseal™ Closed Cell spray foam insulation is air-impermeable in accordance with 2015 IBC Section 1203.3

and 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4), at a minimum thickness of $^3/_4$-inches (19.1 mm), based on testing in accordance with ASTM E283.

3.6 Bayseal™ IC Intumescent Coating:

Bayseal™ IC intumescent coating is a one-component, water-based polymer coating. Bayseal™ IC intumescent coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of one year when stored in a factory-sealed container at temperatures of 50°F (10°C) or above.

3.7 Flame Seal® TB Intumescent Coating:

Flame Seal® TB, manufactured by Flame Seal Products Inc., is a two-component, four-to-one-by-volume, liquid-applied, water-based polymer intumescent coating. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of six months when stored in a factory-sealed container at temperatures between 40°F and 90°F (4°C and 32°C).

3.8 TPR^2 Fireshell® BMS-TC Intumescent Coating:

TPR^2 Fireshell® BMS-TC (ESR-3997) is manufactured by TPR^2 Corporation, and is a one-component, water-based polymer intumescent coating. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of one year when stored in factory-sealed containers at temperatures between 45°F (7.2°C) and 95°F (35°C).

3.9 DC-315 Intumescent Coating:

DC-315 (ESR-3702) is manufactured by International Fireproof Technology Inc., and is a one-component, water-based intumescent coating supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a shelf life of one year when stored in factory-sealed containers at temperatures between 50°F (10°C) and 80°F (27°C).

4.0 INSTALLATION

4.1 General:

Bayseal™ Closed Cell spray foam insulation must be installed in accordance with the manufacturer's published installation instructions and this report. A copy of the manufacturer's published installation instructions must be available at all times on the jobsite during installation.

4.2 Application:

The insulation is spray-applied on the jobsite using volumetric positive displacement pumps as identified in the Accella Polyurethane Systems application instructions. The maximum service temperature must not exceed that specified in the manufacturer's published installation instructions. The foam plastic must not be used in electrical outlet or junction boxes or in contact with water. The foam plastic must not be sprayed onto a substrate that is wet, or covered with frost or ice, loose scales, rust, oil, or grease.

The insulation must be applied in accordance with the manufacturer's published installation instructions up to the maximum total thickness as specified in Sections 3.2, 4.3 and 4.4. Additional passes, if necessary, may be applied after ten minutes or more of curing time.

4.3 Thermal Barrier:

4.3.1 Application with a Prescriptive Thermal Barrier: Bayseal™ Closed Cell spray foam insulation must be separated from the interior of the building by an approved thermal barrier of $^1/_2$-inch-thick (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with, and installed in accordance with, IBC Section 2603.4 or IRC Section R316.4, as applicable. Thicknesses of up to 8 inches (203 mm) for wall cavities and 12 inches (305 mm) for ceiling cavities are recognized, based on room corner fire testing in accordance with NFPA 286.

4.3.2 Application without a Prescriptive Thermal Barrier:

4.3.2.1 Application with Flame Seal® TB Intumescent Coating: The prescribed 15-minute thermal barrier may be omitted when installation is in accordance with this section. The Bayseal™ Closed Cell insulation and Flame Seal® TB system may be used in lieu of the prescribed 15-minute thermal barrier. The foam plastic insulation thickness must not exceed 6 inches (152 mm) in walls and ceilings, and the insulation must be covered with 18 dry mils (0.46 mm) of Flame Seal® TB intumescent coating applied at a minimum rate of 1.6 gallons (6 L) per 100 square feet (9.3 m^2). The substrate must be dry, clean and free of dirt and loose debris or other substances that could interfere with the adhesion of the coating. Flame Seal® TB may be applied by airless sprayer at ambient temperatures between 50°F and 115°F (10°C and 46°C) and relative humidity of less than 70 percent.

4.3.2.2 Application with TPR^2 Fireshell® BMS-TC Intumescent Coating: The prescribed 15-minute thermal barrier may be omitted when installation is in accordance with this section. The Bayseal™ Closed Cell insulation and TPR^2 Fireshell® BMS-TC system may be used in lieu of the prescribed 15-minute thermal barrier. The foam plastic insulation thickness must not exceed $7^1/_4$ inches (184 mm) in walls and $9^1/_4$ inches (235 mm) in ceilings, and the insulation must be covered with 12 dry mils (0.30 mm) [20 wet mils (0.51 mm)], at a minimum rate of 1.24 gallons (4.7 L) per 100 square feet (9.3 m^2)]. The substrate must be dry, clean and free of dirt and loose debris or other substances that could interfere with the adhesion of the coating. TPR^2 Fireshell® BMS-TC may be applied by airless sprayer, conventional spray, medium knap roller or brush at ambient temperatures between 62°F and 95°F (16°C and 35°C) and relative humidity of less than 70 percent.

4.3.2.3 Application with DC315 Intumescent Coating: The prescribed 15-minute thermal barrier may be omitted when installation is in accordance with this section. The Bayseal™ Closed Cell insulation and DC315 system may be used in lieu of the prescribed 15-minute thermal barrier. The foam plastic insulation thickness must not exceed $7^1/_4$ inches (184 mm) in walls and in ceilings and the insulation must be covered with 12 dry mils [18 wet mils (0.45 mm)], at a minimum rate of 1.12 gallons (4.23 L) per 100 square feet (9.3 m^2). The substrate must be dry, clean and free of dirt and loose debris or other substances that could interfere with the adhesion of the coating. The DC315 intumescent coating may be applied by airless sprayer at ambient temperatures between 50°F and 105°F (10°C and 41°C) and relative humidity of less than 80 percent.

4.3.2.4 Use as Interior Finish: The Bayseal™ Closed Cell spray-applied polyurethane foam insulation and intumescent coating systems, as described in Section 4.3.2.1, 4.3.2.2 or 4.3.2.3 may be used as an interior finish in all construction types under the IBC and dwellings under the IRC.

4.4 Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier: When Bayseal™ Closed Cell insulation is installed within

attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 or IRC Sections R316.5.3 and R316.5.4, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code, and must be installed in a manner so the foam plastic insulation is not exposed. The insulation as described in this section may be installed in unvented attics in accordance with 2015 and 2012 IRC Section R806.5 or the 2009 IRC Section R806.4.

4.4.2 Application without a Prescriptive Ignition Barrier:

4.4.2.1 General: Where Bayseal™ Closed Cell insulation is installed without a prescriptive ignition barrier as described in Section 4.4.2.2, 4.4.2.3, 4.4.3.1 or 4.4.3.2, in attics and crawl spaces, the following conditions apply:

- Entry to the attic or crawl space is only to service utilities and no storage is permitted.
- There are no interconnected attic or crawl space areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Under-floor (crawl space) ventilation is provided when required by 2015 IBC Section 1203.4 (2012 and 2009 IBC Section 1203.3) or IRC Section R408.1, as applicable.
- Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except when air-impermeable insulation is permitted in unvented attics in accordance with 2015 IBC Section 1203.3 and 2015 and 2012 IRC Section R806.5 or 2009 IRC Section R806.4.
- Combustion air must be provided in accordance with Section 701 of the *International Mechanical Code*® (IMC).

4.4.2.2 Use with Bayseal™ IC intumescent Coating: Bayseal™ Closed Cell insulation may be spray-applied to the underside of roof sheathing and/or rafters, and the underside of wood floors and/or floor joists in crawl spaces as described in this section. The thickness of the foam plastic applied to the underside of the wood floor or roof sheathing must not exceed 12 inches (305 mm). The thickness of the spray foam insulation applied to vertical wall surfaces in attics and crawl spaces must not exceed 8 inches (203 mm). All foam plastic surfaces must be covered with 4 dry mils (0.1 mm) of Bayseal™ IC intumescent coating, applied at a rate of 0.5 gallon (1.9 L) per 100 square feet (9.3 m^2). Bayseal™ IC intumescent coating may be applied by brush, roller or airless sprayer at ambient temperatures between 50°F and 115°F (10°C and 46°C) and relative humidity of less than 75 percent. Surfaces to be coated must be dry, clean, and free of dirt, loose debris and any other substances that could interfere with adhesion of the coating. Bayseal™ Closed Cell insulation, as described in this section, may be installed in unvented attics in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4).

4.4.2.3 Application of Bayseal™ CC X and Bayseal™ CC XP Closed Cell Insulation without Intumescent Coating: Bayseal™ CC X or Bayseal™ CC XP Closed Cell insulation may be spray-applied to the underside of roof sheathing and/or rafters and the underside of wood floors and/or floor joists in crawl spaces as described in this section. The thickness of the foam plastic applied to the underside of the wood floor or roof sheathing must not exceed $11^1/_4$ inches (286 mm).

The thickness of the foam plastic insulation applied to vertical surfaces in attics and crawl spaces must not exceed $7^1/_4$ inches (184 mm). Bayseal™ CC X or Bayseal™ CC XP Closed Cell insulation, as described in this section, may be installed in unvented attics in accordance with 2015 and 2012 IRC Section R806.5 or 2009 IRC Section R806.4.

When Bayseal™ CC X or Bayseal™ CC XP Closed Cell insulation is installed in accordance with this section, the ignition barrier in accordance with IBC Section 2603.4 and IRC Section R316.5.3 may be omitted.

4.4.3 Attic Floors:

4.4.3.1 Use on Attic Floors with Bayseal™ IC Intumescent Coating: Bayseal™ Closed Cell insulation may be installed at a maximum thickness of 8 inches (203 mm) between and over the joists in attic floors. All foam plastic surfaces must be covered with 4 dry mils (0.1 mm) of Bayseal™ IC intumescent coating uniformly applied at a rate of 0.5 gallons (1.9 L) per 100 square feet (9.3 m^2). Bayseal™ IC intumescent coating may be applied by brush, roller or airless sprayer at ambient temperatures between 50°F and 115°F (10°C and 46°C) and relative humidity of less than 75 percent. Surfaces to be coated must be dry, clean, and free of dirt, loose debris and any other substances that could interfere with adhesion of the coating. The insulation must be separated from the interior of the building (beneath the attic) by an approved thermal barrier. The ignition barrier in accordance with IBC Section 2603.4.1.6 and IRC Section R316.5.3 may be omitted.

4.4.3.2 Use of Bayseal™ CC X and Bayseal™ CC XP Closed Cell Insulation on Attic Floors without Intumescent Coating: Bayseal™ CC X or Bayseal™ CC XP Closed Cell insulation may be installed exposed at a maximum thickness of $7^1/_4$ inches (184 mm) between and over joists in attic floors without a code-prescribed ignition barrier or intumescent coating. The insulation must be separated from the interior of the building by an approved thermal barrier. The ignition barrier in accordance with IBC Section 2603.4.1.6 and IRC Section R316.5.3 may be omitted.

4.5 Water-resistive Barrier:

Bayseal™ Closed Cell spray-applied polyurethane foam insulation may be used as the water-resistive barrier prescribed in IBC Section 1404.2 and IRC Section R703.2, when installed on exterior walls as described in this section. The insulation must be spray-applied to the exterior side of the sheathing, masonry or other suitable exterior wall substrates to form a continuous layer of 1 inch (25.4 mm) minimum thickness. All construction joints and penetrations are to be completely sealed with Bayseal™ Closed Cell insulation. Optionally, self-adhering flexible flashing materials complying with ICC-ES Acceptance Criteria for Flexible Flashing (AC148), dated April 2015, may be installed around penetrations and openings prior to application of the Bayseal™ Closed Cell spray-applied insulation.

4.6 Exterior Walls in Types I, II, III and IV Construction:

When used on walls of Type I, II, III and IV construction, the assembly in which the Bayseal™ Closed Cell spray-applied polyurethane insulation is used must comply with Section 2603.5 of the IBC and must be installed at a maximum thickness of 3.25 inches (82.6 mm) in accordance with the manufacturer's published installation instructions and this report. The potential heat of the Bayseal™ Closed Cell spray-applied polyurethane insulation is 1838 Btu/ft^2 (20.9 MJ/m^2) per inch of thickness

when tested in accordance with NFPA 259. Wall assemblies complying with this section must be as described in Table 2.

5.0 CONDITIONS OF USE

The Bayseal™ Closed Cell spray-applied foam plastic insulations described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The products must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. If there are any conflicts between the manufacturers' published installation instructions and this report, this report governs.

5.2 The insulation must be separated from the interior of the building by an approved 15-minute thermal barrier, except when installation is as described in Sections 4.3.2 and 4.4.

5.3 The insulation must not exceed the thicknesses noted in Sections 3.2, 4.3 and 4.4 of this report.

5.4 The insulation must be protected from exposure to weather during and after application.

5.5 The insulation must be applied by contractors qualified by Accella Polyurethane Systems, LLC.

5.6 When use is on buildings of Types I, II, III and IV construction, construction must be as described in Section 4.6 and Table 2.

5.7 Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with IRC Section R318.4 or 2015 and 2009 IBC Section 2603.8 (2012 IBC Section 2603.9), as applicable.

5.8 Jobsite certification and labeling of the insulation must comply with 2015 IRC Section N1101.10 [2012 IRC Section N1101.12 (2009 IRC Section N1101.4)] and 2015 and 2012 IECC Sections C303.1, R303.1 and R401.3 (2009 IECC Sections 303.1 and 401.3), as applicable.

5.9 Use of the insulations in fire-resistance-rated construction is outside the scope of this report.

5.10 Bayseal™ Closed Cell spray-applied foam insulations are produced by Accella Polyurethane Systems, LLC, in Spring, Texas, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated April 2016, including reports of tests in accordance with Appendix X.

6.2 Reports of room corner tests in accordance with NFPA 286 and UL 1715.

6.3 Report of potential heat of foam plastics tests in accordance with NFPA 259.

6.4 Report of air leakage tests in accordance with ASTM E283.

6.5 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-resistive Barriers (AC71), dated February 2003 (editorially revised January 2016).

6.6 Report of water vapor transmission testing in accordance with ASTM E96.

6.7 Report of fire propagation characteristics testing in accordance with NFPA 285.

6.8 An engineering analysis supporting the report of testing in accordance with NFPA 285.

7.0 IDENTIFICATION

Components for Bayseal™ Closed Cell spray-applied foam plastic insulations are identified with the manufacturer's name (Accella Polyurethane Systems, LLC), address and telephone number; the product name (Bayseal™ CC X or Bayseal™ CC XP); mixing instructions; the density; the flame-spread and smoke-development indices; and the evaluation report number (ESR-2072).

Flame Seal Products Inc. Flame Seal® TB Intumescent Coating, described in Section 3.7, is identified with the coating manufacturer's name and address, the product name and use instructions.

Fireshell BMS-TC coating is labeled with the manufacturer's name and address; the product name; the date of manufacture, the shelf life or expiration date; the manufacturer's instruictions for application, and the evaluation report number (ESR-3997).

DC-315 coating is labeled with the manufacturer's name and address; the product name; the date of manufacture, the shelf life or expiration date; the manufacturer's instructions for application, and evaluation report number (ESR-3702).

8.0 OTHER CODES

In addition to the codes referenced in Section 1.0, the products described in this report were evaluated for compliance with the requirements of the following codes:

- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)
- 2006 *International Energy Conservation Code*® (2006 IECC)
- 2003 *International Building Code*® (2003 IBC)
- 2003 *International Residential Code*® (2003 IRC)
- 2003 *International Energy Conservation Code*® (2003 IECC)

The products comply with the above-mentioned codes as described in Sections 2.0 through 7.0 of this report, with the revisions noted below:

- **Application with a Prescriptive Thermal Barrier:** See Section 4.3.1, except the approved thermal barrier must be installed in accordance with Section R314.4 of the 2006 IRC or Section R314.1.2 of the 2003 IRC, as applicable.
- **Application with a Prescriptive Ignition Barrier:** See Section 4.4.1 except attics must be vented in accordance with Section 1203.2 of the 2006 and 2003 IBC or Section R806 of the 2003 IRC, and crawl space ventilation must be in accordance with IBC Section 1203.3 of the 2006 and 2003 IBC or IRC Section R408, as applicable. Additionally, an ignition barrier must be installed in accordance with Sections R314.5.3 or R314.5.4 of the 2006 IRC or Section R314.2.3 of the 2003 IRC, as applicable.
- **Application without a Prescriptive Ignition Barrier:** See Section 4.3.2, except attics must be vented in accordance with Section 1203.2 of the 2006 and 2003 IBC or Section R806 of the 2003 IRC, and crawl space ventilation must be in accordance with IBC Section 1203.3 of the 2006 and 2003 IBC or IRC Section R408, as applicable.

- **Protection against Termites:** See Section 5.7, except use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with Section R320.5 of the 2006 IRC or Section R320.4 of the 2003 IRC.
- **Jobsite Certification and Labeling:** See Section 5.9, except jobsite certification and labeling must comply with Sections 102.1.1 and 102.1.1.1, as applicable, of the 2006 IECC.

TABLE 1—THERMAL RESISTANCE (*R*-VALUES)[1]

THICKNESS (inches)	*R*-VALUE (°F.ft^2.h/Btu)
1	6.9
2	14
3	21
3.5	24
4	28
5	34
5.5	38
6	41
7	48
7.5	52
8	55
9	62
10	69
11	76
12	83

For **SI:** 1 inch = 25.5 mm; 1°F.ft^2.h/Btu = 0.176 110°K.m^2/W.

[1] *R*-values are calculated based on tested *K* values at 1 and 3.5-inch thicknesses.

TABLE 2—NFPA 285 COMPLYING EXTERIOR WALL ASSEMBLIES

WALL COMPONENT	MATERIALS
Base Wall System – Use either 1, 2 or 3	1 – Concrete wall 2 – Concrete masonry wall 3 – 1 layer $^5/_8$-inch-thick Type X gypsum wallboard complying with ASTM C36 or C1396 on the interior, installed over minimum 3$^5/_8$-inch-deep, No. 20 gage, C-shaped steel studs, spaced a maximum of 24 inches on center with lateral bracing every 4 feet vertically. Gypsum wallboard must be attached with No. 6, 1$^1/_4$-inch-long self-tapping screws located 8 inches on center along the perimeter and in the field of wallboard. Gypsum wallboard joints must be taped and treated with joint compound in accordance with ASTM C840 or GA-216
Floorline Firestopping	4 pcf mineral wool (e.g., Thermafiber) in each stud cavity at each floorline, attached with Z-clips
Cavity Insulation – Use either 1, 2 or 3	1 – None 2 – Fiberglass batt insulation (faced or unfaced) 3 – Bayseal closed cell or open cell insulation
Exterior Sheathing – Use either 1 or 2	1 – $^1/_2$-inch-thick, exterior-type gypsum sheathing 2 – $^5/_8$-inch-thick, exterior-type gypsum sheathing
Exterior Insulation	Bayseal™ closed cell SPF, up to a maximum nominal thickness of 3 inches
Exterior Wall Covering – Use either 1, 2 or 3	1 – Brick - standard nominally 4-inch-thick clay brick; brick veneer anchors – standard types installed a maximum of 24 inches OC vertically on each stud – Maximum 2-inch air gap between exterior insulation and brick 2 – Stucco - minimum $^3/_4$-inch-thick, exterior cement plaster and lath. A secondary water-resistive barrier may be installed between the exterior insulation and the lath. The secondary water-resistive barrier must not be full-coverage asphalt or butyl- based self-adhered membranes 3 – Minimum 2-inch-thick limestone. Any standard non-open-jointed installation technique such as ship-lap, etc., may be used

For **SI:** 1 inch = 25.4 mm; 1 pcf = 16.018 kg/m^3.

Johns Manville
A Berkshire Hathaway Company

Formaldehyde-Free™ Fiberglass Insulation

UNFACED | KRAFT FACED | FOIL FACED

COMPANY

Johns Manville, a Berkshire Hathaway company, was founded in 1858. Our ownership by Berkshire Hathaway, one of the most admired companies in the world and one of the most financially secure, allows JM to invest for the future. This enables JM to continue delivering the broadest range of insulation products in the industry and offering innovative solutions that meet your needs.

DESCRIPTION

JM Formaldehyde-free™ thermal and acoustical insulation is made of long, resilient glass fibers bonded with a thermosetting resin. A wide range of thermal resistance R-values is available to provide thermal control for both vertical and horizontal applications. JM insulation is available unfaced or with a variety of facings, including kraft or foil vapor retarder.

USE

JM Formaldehyde-free™ thermal and acoustical insulation can be used in a wide variety of wood frame, engineered wood and steel frame construction applications, including:

New Construction: residential homes and commercial buildings interior and exterior walls, floors and ceilings for thermal and sound control, as well as basement wall insulation.

Retrofit: adding insulation to attics, crawl spaces and above suspended ceilings.

INSTALLATION

JM insulation cuts easily with an ordinary utility knife, and unfaced or tabless versions install easily by simply pressing in place between studs or joists in standard framing. Standard facings have stapling tabs for attachment to framing if additional securement is required.

PACKAGING

JM insulation is compression-packaged for savings in storage and freight costs.

DESIGN CONSIDERATIONS

Kraft and standard foil facings on this product will burn and must not be left exposed. It must be covered with gypsum board or another approved interior finish. Where an exposed application is required, use FSK-25 flame-resistant faced insulation.

In colder climate areas, vapor retarders (whether attached to the insulation or applied separately) are often placed toward the heated or conditioned side of the wall. This is done to reduce water vapor penetration into the wall from the building interior. Check your local building codes for vapor retarder requirements.

Refer to JM guide specifications for further design considerations and required installation instructions.

LIMITATIONS OF USE

Check applicable building codes.

Actual color of product may be lighter than image.
Product image typical of material produced in the USA.

PERFORMANCE ADVANTAGES

Formaldehyde-free: will not off-gas formaldehyde in the indoor environment.

Thermally Efficient: provides effective resistance to heat transfer with R-values up to R-49 (RSI-8.6).

Sound Control: reduces transmission of sound through exterior and interior walls and floor or ceiling assemblies.

Fire Resistant and Noncombustible: see Physical Properties.

Durable Inorganic Glass: will not rot, mildew or deteriorate and is noncorrosive to pipes, wiring and metal studs.

Superior Performance: bonded glass fibers are dimensionally stable and will not slump within the wall cavity, settle or break down during normal applications.

ENERGY AND ENVIRONMENT

CERTIFIED RECYCLED CONTENT SCS GLOBAL SERVICES
NORTH AMERICAN AVERAGE 30% POST-CONSUMER RECYCLED CONTENT ACTUAL RECYCLED CONTENT WILL VARY

ENERGY STAR PARTNER

UL GREENGUARD GOLD *

CERTIFIED INDOOR AIR QUALITY SCS GLOBAL SERVICES
INDOOR ADVANTAGE GOLD BUILDING MATERIALS

**GREENGUARD certification is not intended for residential environments. Instead, the certification is intended only for buildings meeting ASHRAE 62.1-2007 commercial building ventilation rates. This certification is proof that the product meets the GREENGUARD Environmental Institute's indoor air quality standards and product emission standards for VOCs.*

Johns Manville
A Berkshire Hathaway Company

Formaldehyde-Free™ Fiberglass Insulation

UNFACED | KRAFT FACED | FOIL FACED

APPLICABLE STANDARDS & BUILDING CODE CLASSIFICATION

JM UNFACED INSULATION	JM KRAFT FACED INSULATION	JM FOIL FACED INSULATION
ASTM C665, Type I; ASTM E136	ASTM C665, Type II Class C, Category 1	ASTM C665, Type III, Class B, Category 1
IBC, ALL TYPES	IBC TYPES III, IV, V	IBC TYPES III, IV, V

STANDARD SIZES*

R-VALUE (hr•ft²•°F/Btu)	RSI VALUE (m²•°C/Watts)	THICKNESS** in (mm)	WIDTH† WOOD FRAMING in (mm)			WIDTH† METAL FRAMING in (mm)	
††	††	2¾ (70)		—		16 (406)	24 (610)
11	1.9	3½ (89) 3⅝ (92)	15 (381)	19 (483)	23 (584)	16 (406)	24 (610)
13	2.3	3½ (89) 3⅝ (92)	15 (381)		23 (584)	16 (406)	24 (610)
15	2.6	3½ (89)	15 (381)				—
19	3.3	6½ (165)	15 (381)	19 (483)	23 (584)	16 (406)	24 (610)
20	3.5	5½ (140)	15 (381)				—
21	3.7	5½ (140)	15 (381)		23 (584)	16 (406)	
22	3.9	7½ (191)	15 (381)				—
30	5.3	10¼ (260)	16 (406)	19 (483)	24 (610)	16 (406)	24 (610)
30‡	5.3	8¼ (210)	15½ (394)		23⅝ (600)		—
38	6.7	13 (330)	16 (406)		24 (610)	16 (406)	24 (610)
38‡	6.7	10¼ (260)	15½ (394)		23⅝ (600)		—
49	8.6	13½ (343)	16 (406)		24 (610)	16 (406)	24 (610)

** Consult your local JM sales representative or product availability chart for available sizes and R-values (RSI-values) including wide-roll products.*
*** Thickness may vary by producing location.*
† Special widths and lengths may be available. Check with your local JM sales representative. Standard product lengths include 48", 93" and 96" (1219 mm, 2362 mm and 2438 mm) batts.
†† For sound control applications in interior walls.
‡ Cathedral ceiling application.

PHYSICAL PROPERTIES‡‡

PRODUCTION	FLAME SPREAD	SMOKE DEVELOPED	VAPOR RETARDER (PERMS)	WATER VAPOR SORPTION
Unfaced*	<25	<50	N/A	<5%
Foil Faced	<75	<150	0.05	N/A
Kraft Faced	N/R	N/R	1	N/A

*‡‡ **Products are tested in accordance:** R-value ASTM C518 | Surface Burning Characteristics ASTM E84 | Perm Rating ASTM E96 | Water Vapor Sorption ASTM C1104*
Kraft and standard foil facing will burn. Do not leave exposed. Facing must be installed in substantial contact with an approved ceiling, floor or wall material. Keep open flame and other heat sources away from facing. Do not place insulation within 3" of light fixtures or similar electrical devices unless device is labeled for contact with insulation. Use only unfaced insulation between wood framing and masonry chimneys. Do not use insulation in spaces around metal chimneys, fireplaces, or flues. JM Unfaced insulation is considered non-combustible by model building codes. Flame Spread 25 products are flame spread rated and can be left exposed where codes allow. See package for warnings, fire hazard and installation instructions, or call 800-654-3103.

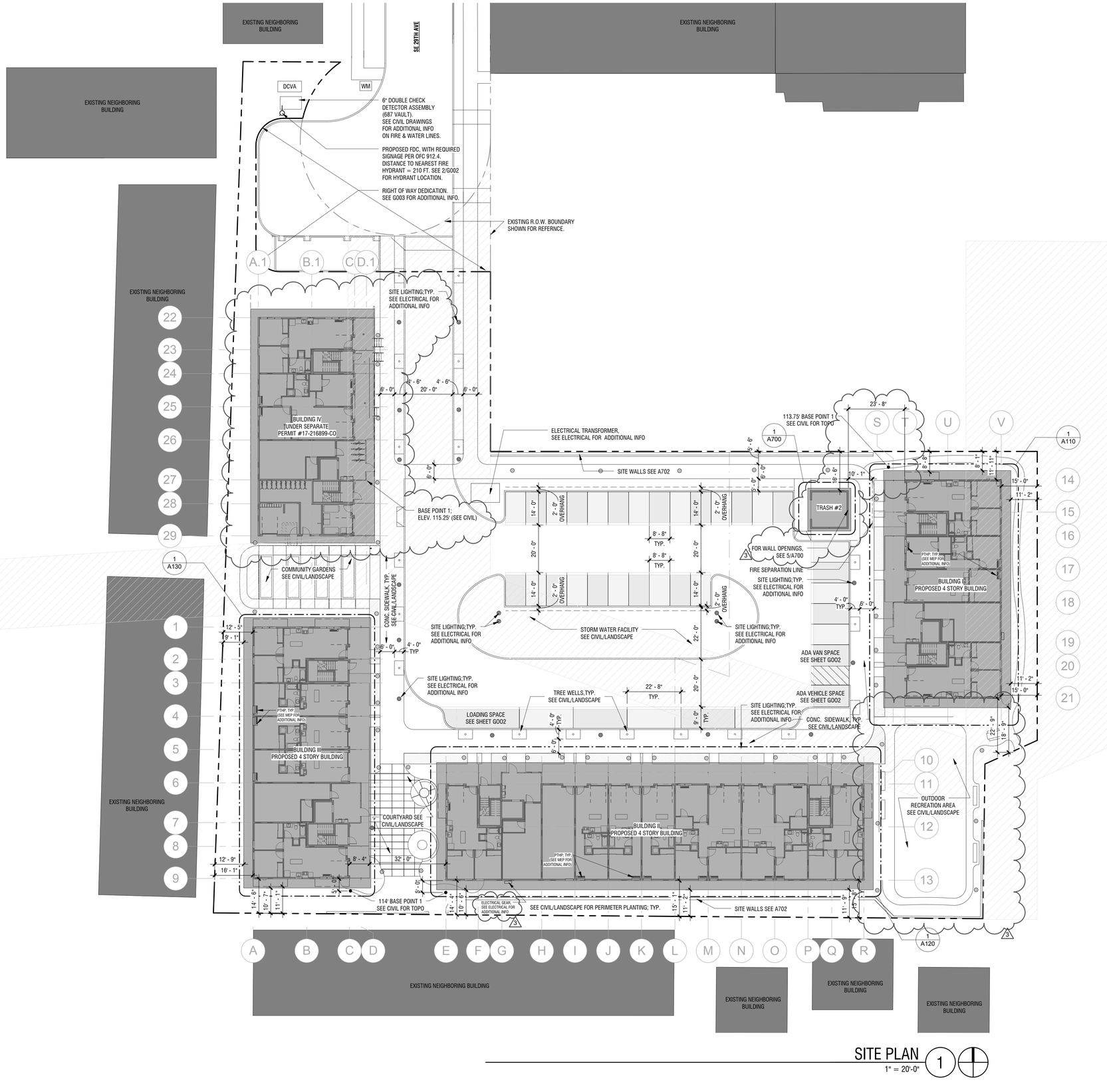
Due to potential skin irritation, unfaced insulation should not be used for exposed applications where it will be subject to human contact.

** Unfaced fiberglass insulation is considered noncombustible according to ASTM E136.*

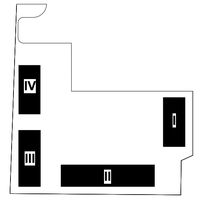
Johns Manville

Visit our website at **www.JM.com** or call **800-654-3103** | **Building Insulation Division** P.O. Box 5108 | Denver, CO 80217-5108

BID-0144 1/17



SITE PLAN
1" = 20'-0"



KEY PLAN

Project Location
SUNSHINE PORTLAND
3610 SE 29th Ave
Portland, OR 97202

REGISTERED ARCHITECT
Timothy Richard Furst
PORTLAND, OREGON
STATE OF OREGON

THESE DRAWINGS ARE FOR CONSTRUCTION BY JEAN-PIERRE VEILLET SITEWORKS, INC. ONLY

Date: 2016.04.28

Drawn By: DSM / ATC

Phase: PERMIT

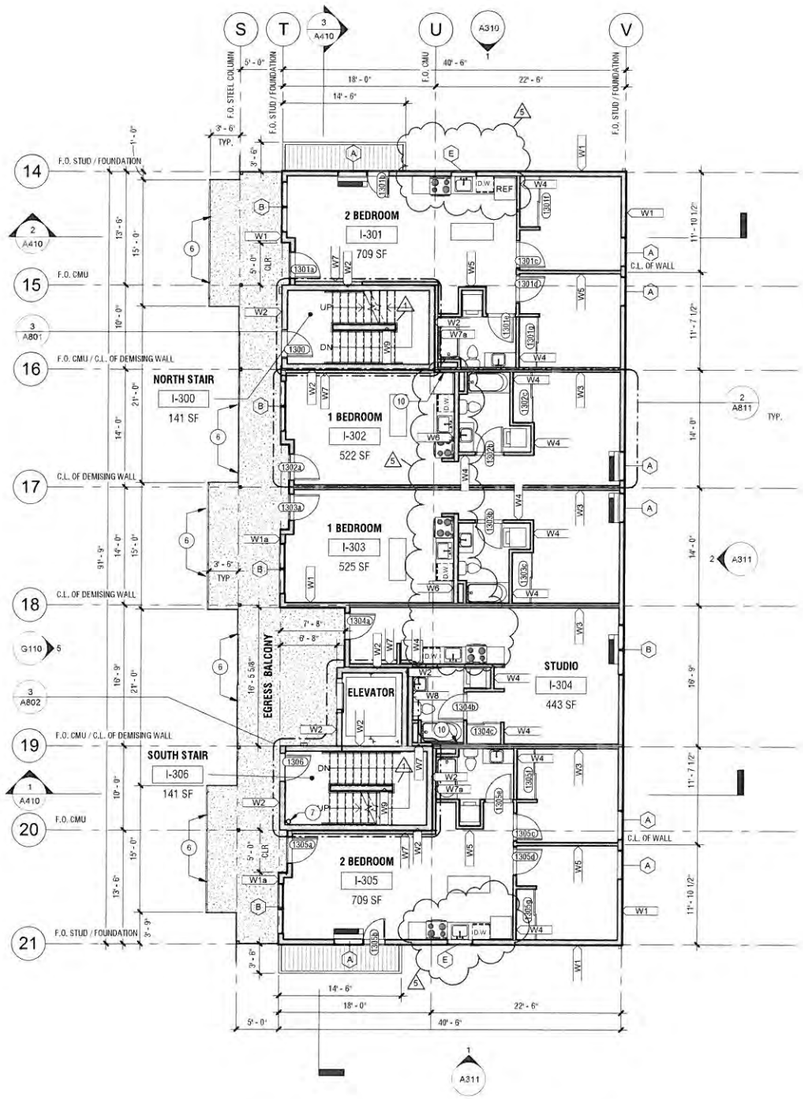
Revisions:

Number	Description	Date
3	Permit Revision #1	2017.10.09

Sheet Name
SITE PLAN

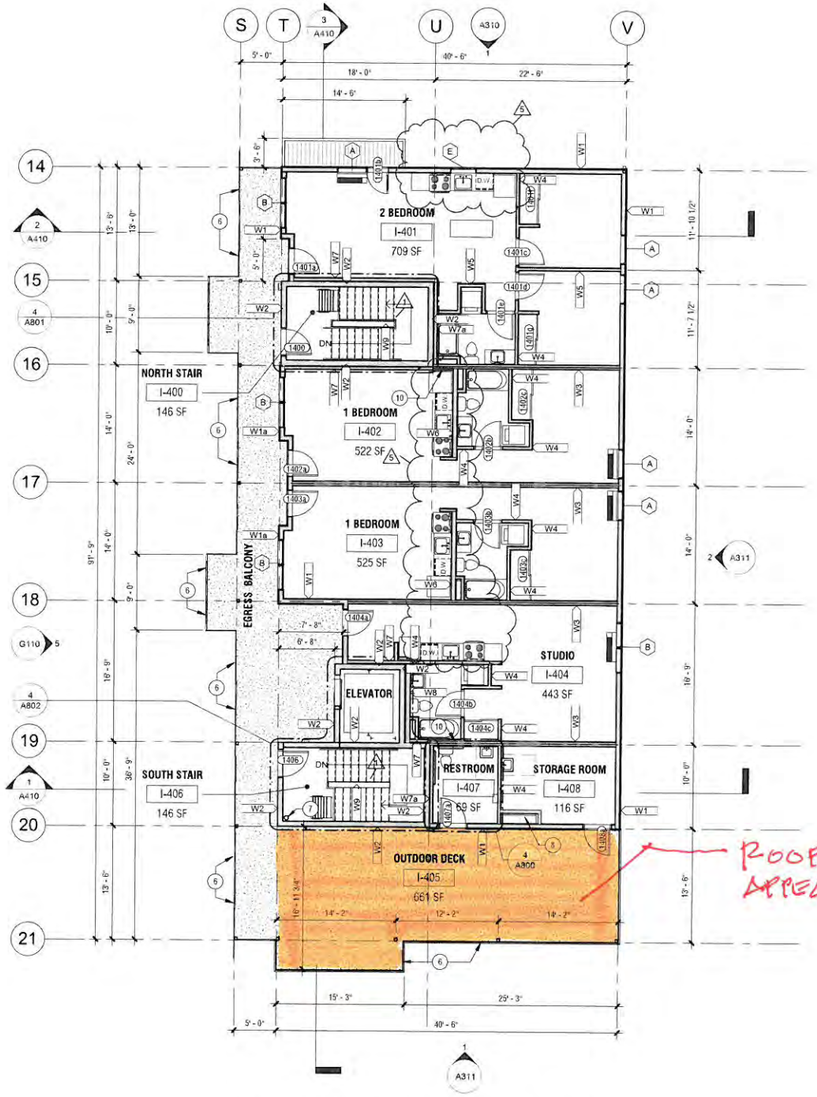
Sheet No.
A100

SITEWORKS
DESIGN | BUILD
240 SE 2nd Avenue Portland Oregon 97214 503.230.2337 tel www.siteworksportland.com lic/bond/ins CCB#113920 WA SITEWD888UW CA 982952



BUILDING I - THIRD FLOOR PLAN (1)

1/8" = 1'-0"



BUILDING I - FOURTH FLOOR PLAN (2)

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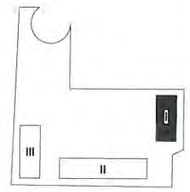

KEY PLAN

KEYNOTES - FLOOR PLANS

#	DESCRIPTION
1	MAILBOXES, TO COMPLY WITH USPS STANDARDS
2	PLANTER, SEE CIVIL / LANDSCAPE FOR DETAILS
3	RAMP UP, MAX SLOPE 1:12, V.I.F. CHANGE IN ELEVATION
4	SCREEN PATIO ENCLOSURE; SEE ELEVATION
5	P.G.E. ELECTRICAL MAIN & DISCONNECT, SEE ELECTRICAL
6	SCREEN RAILING, SEE ELEVATIONS; TYPICAL
7	STANDPIPE
8	BUILT IN GAS FIREPLACE; MAKE & MODEL TBD
9	CONCRETE PATIO / WALKWAY
10	FUR OUT WALL AS REQ. TO MAKE FINISH SHEETROCK ALIGN FLUSH

GENERAL NOTES - FLOOR PLANS

A. FLOOR PLAN KEYNOTES AND GENERAL NOTES APPLY TO FLOOR PLANS ONLY. ALL KEYNOTES AND GENERAL NOTES MAY NOT OCCUR ON THIS SHEET AND DO NOT APPLY TO ANY OTHER SHEETS EXCEPT THOSE NOTED. ALL KEYNOTES REFERENCE THE SHEET THEY ARE DRAWN.
B. SEE STRUCTURAL, LANDSCAPE, CIVIL, AND MEP FOR MORE INFORMATION.
C. SEE SHEETS G110 - G130 FOR ALL RATED WALL LOCATIONS.
D. SEE SHEETS G200 AND G201 FOR ASSEMBLY TYPES.
E. SEE SHEETS A900 - A930 FOR DOOR AND WINDOW TYPES AND SCHEDULES.
F. INTERIOR UNIT W.ALL TYPES TAGGED IN ENLARGED UNIT PLANS, APPLY TO ALL SIM UNITS.

SITEWORKS
DESIGN / BUILD

243 SE 2nd Avenue Portland Oregon 97214 503.230.2337 tel www.siteworksportland.com info@siteworks.us CCB# 113523 WA SITEWOS856J7 CA 6826G2

Project Location
SUNSHINE PORTLAND
3610 SE 29th Ave
Portland, OR 97202

REGISTERED ARCHITECT
Timothy Richard
TIM RICHARD
PORTLAND, OREGON
STATE OF OREGON

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Date: 2016.12.09

Drawn By: ATC / DSM

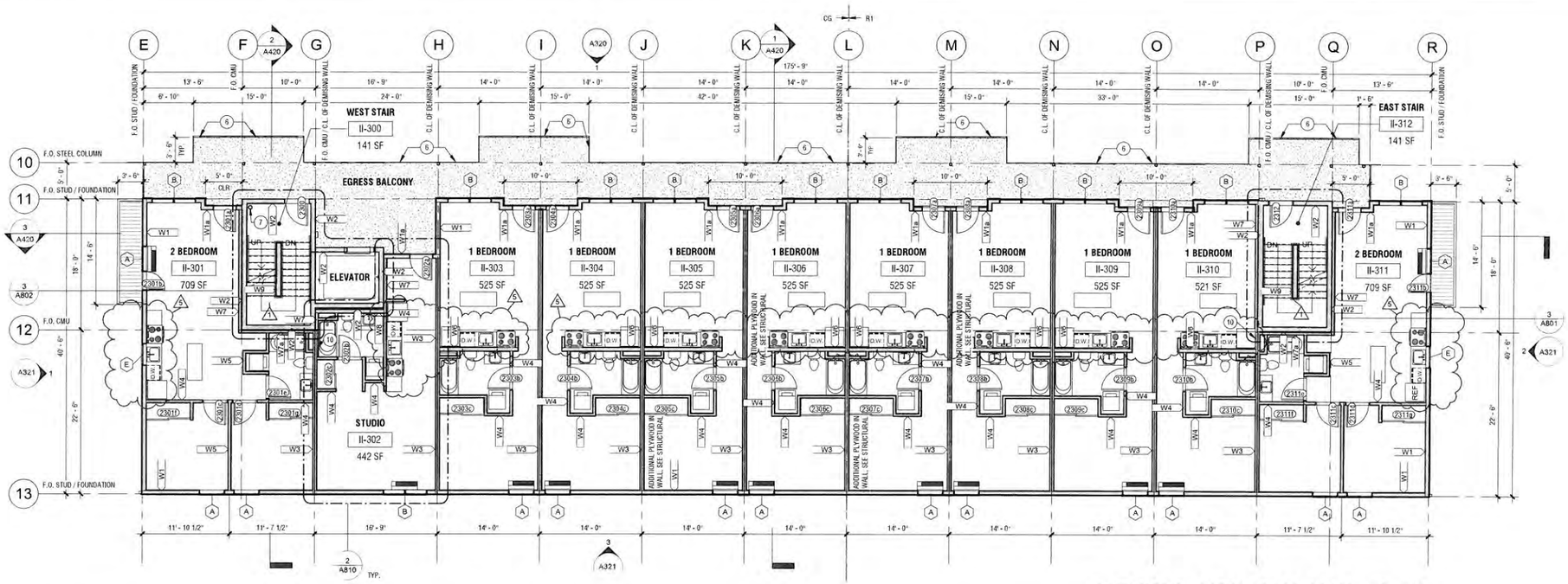
Phase: CONSTRUCTION

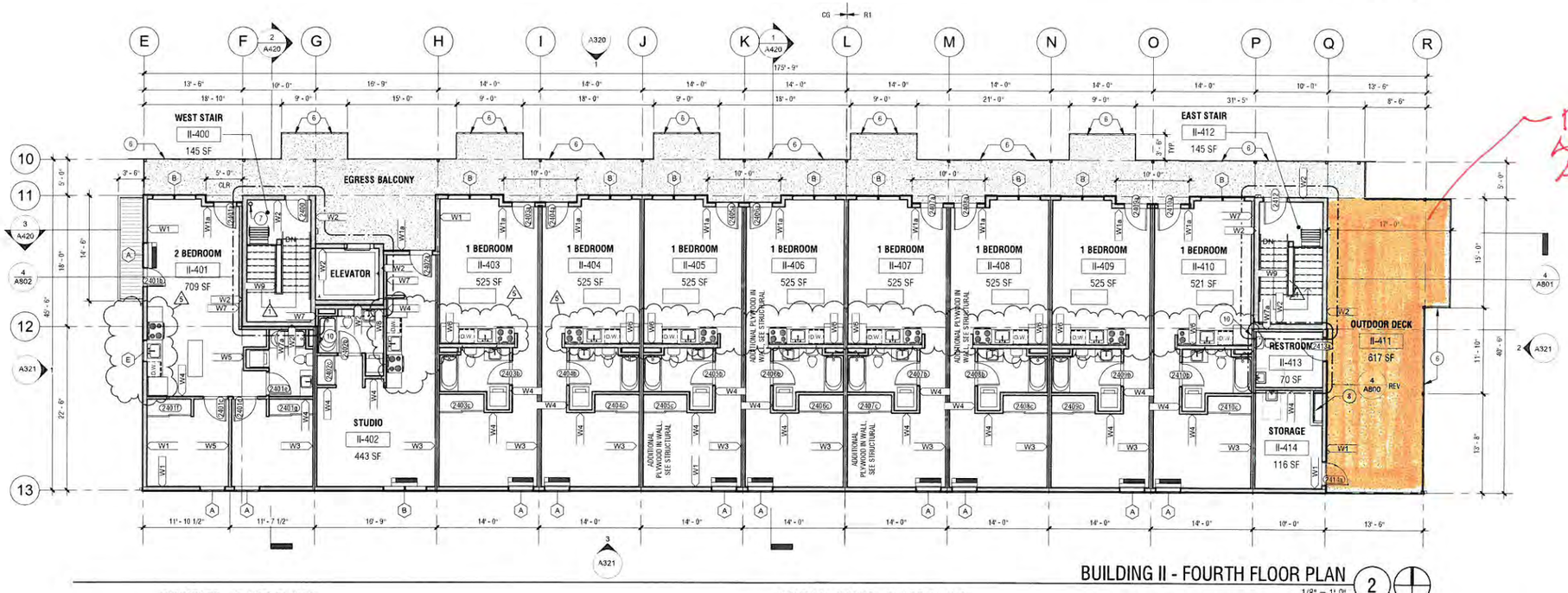
Revisions:

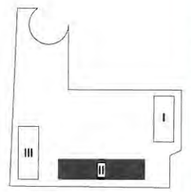
Number	Description	Date
1	RFI UPDATES	2017.01.05
5	CABINETRY UPDATES	2017.04.14

Sheet Name
BUILDING I - FLOOR PLANS

Sheet No.
A111







KEY PLAN

KEYNOTES - FLOOR PLANS

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7	STANDPIPE
8	BUILT IN GAS FIREPLACE; MAKE & MODEL TBD
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E. SEE SHEETS A506 - A930 FOR DOOR AND WINDOW TYPES AND SCHEDULES.
F. INTERIOR UNIT WALL TYPES TAGGED IN ENLARGED UNIT PLANS, APPLY TO ALL SIM UNITS.

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DESIGN | BUILD
240 SE 2nd Avenue Portland Oregon 97214 503.230.2937 tel www.siteworksportland.com lic.bend/las CCB#113920 WA SITEWOSB86LW CA 962952

Project Location
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REGISTERED ARCHITECT
Timothy Richard Flynn
PORTLAND, OREGON
STATE OF OREGON

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Date: 2016.12.09

Drawn By: ATC / DSM

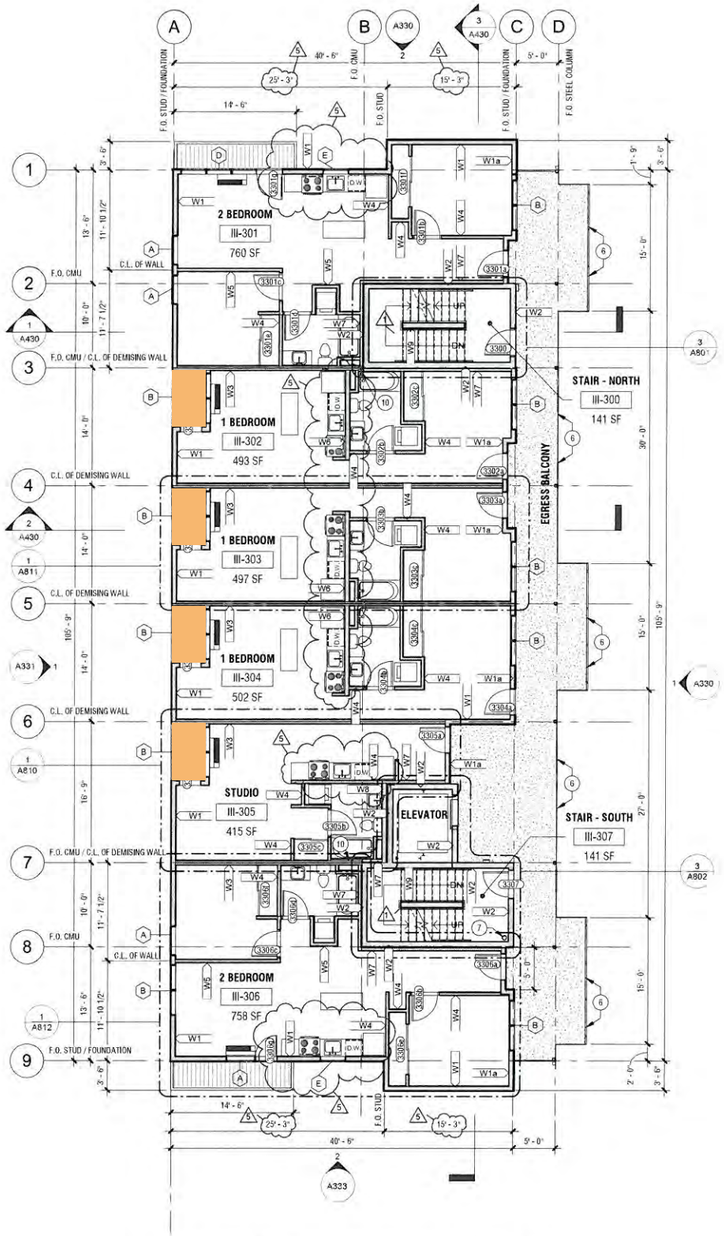
Phase: CONSTRUCTION

Revisions:

Number	Description	Date
1	RFI UPDATES	2017.01.05
5	CABINETRY UPDATES	2017.04.14

Sheet Name
BUILDING II - FLOOR PLANS

Sheet No.
A121



BUILDING III - THIRD FLOOR PLAN

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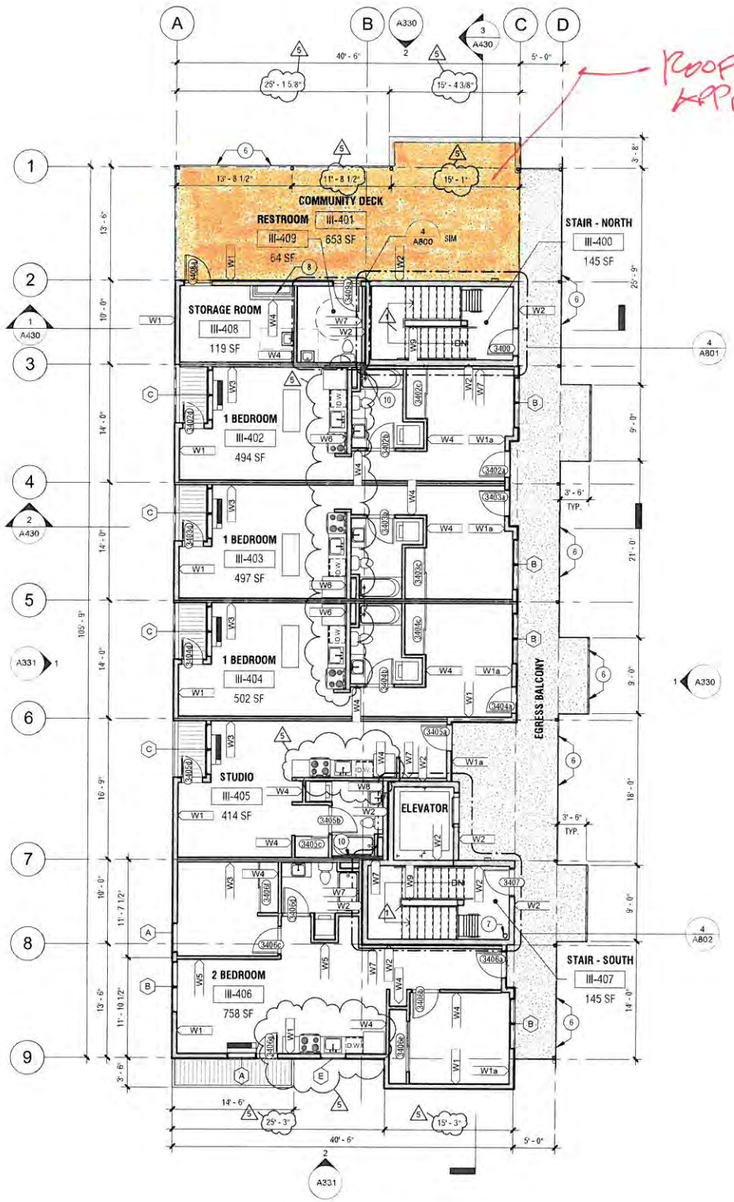
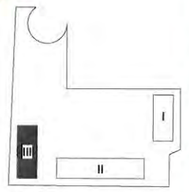


BUILDNG III - FOURTH FLOOR PLAN

1/8" = 1'-0" (2)



KEY PLAN

KEYNOTES - FLOOR PLANS

#	DESCRIPTION
1	MAILBOXES, TO COMPLY WITH USPS STANDARDS
2	PLANTER, SEE CIVIL / LANDSCAPE FOR DETAILS
3	RAMP UP, MAX SLOPE 1:12, V.I.F. CHANGE IN ELEVATION
4	SCREEN PATIO ENCLOSURE; SEE ELEVATION
5	P.G.E. ELECTRICAL MAIN & DISCONNECT, SEE ELECTRICAL
6	SCREEN RAILING, SEE ELEVATIONS; TYPICAL
7	STANDPIPE
8	BUILT IN GAS FIREPLACE; MAKE & MODEL TBD
9	CONCRETE PATIO / WALKWAY
10	FUR OUT WALL AS REQ. TO MAKE FINISH SHEETROCK ALIGN FLUSH

GENERAL NOTES - FLOOR PLANS

A. FLOOR PLAN KEYNOTES AND GENERAL NOTES APPLY TO FLOOR PLANS ONLY. ALL KEYNOTES AND GENERAL NOTES MAY NOT OCCUR ON THIS SHEET AND DO NOT APPLY TO ANY OTHER SHEETS EXCEPT THOSE NOTED. ALL KEYNOTES REFERENCE THE SHEET THEY ARE DRAWN.
B. SEE STRUCTURAL, LANDSCAPE, CIVIL, AND MEP FOR MORE INFORMATION.
C. SEE SHEETS G110 - G130 FOR ALL RATED WALL LOCATIONS.
D. SEE SHEETS G200 AND G201 FOR ASSEMBLY TYPES.
E. SEE SHEETS A900 - A939 FOR DOOR AND WINDOW TYPES AND SCHEDULES.
F. INTERIOR UNIT WALL TYPES TAGGED IN ENLARGED UNIT PLANS, APPLY TO ALL SIM UNITS.

SITEWORKS
DESIGN | BUILD

240 SE 2nd Avenue Portland Oregon 97214 503.230.2357 tel www.siteworkspdx.com info@siteworkspdx.com CCB#193920 WA SITEWOB880LW CA 962952

Project Location
SUNSHINE PORTLAND
3610 SE 29th Ave
Portland, OR 97202

REGISTERED ARCHITECT
Timothy Richard Ramsey
PORTLAND, OREGON
STATE OF OREGON

THESE DRAWINGS ARE FOR CONSTRUCTION BY JEAN-PIERRE VEILLET SITEWORKS, INC. ONLY

Date: 2016.12.09

Drawn By: ATC / DSM

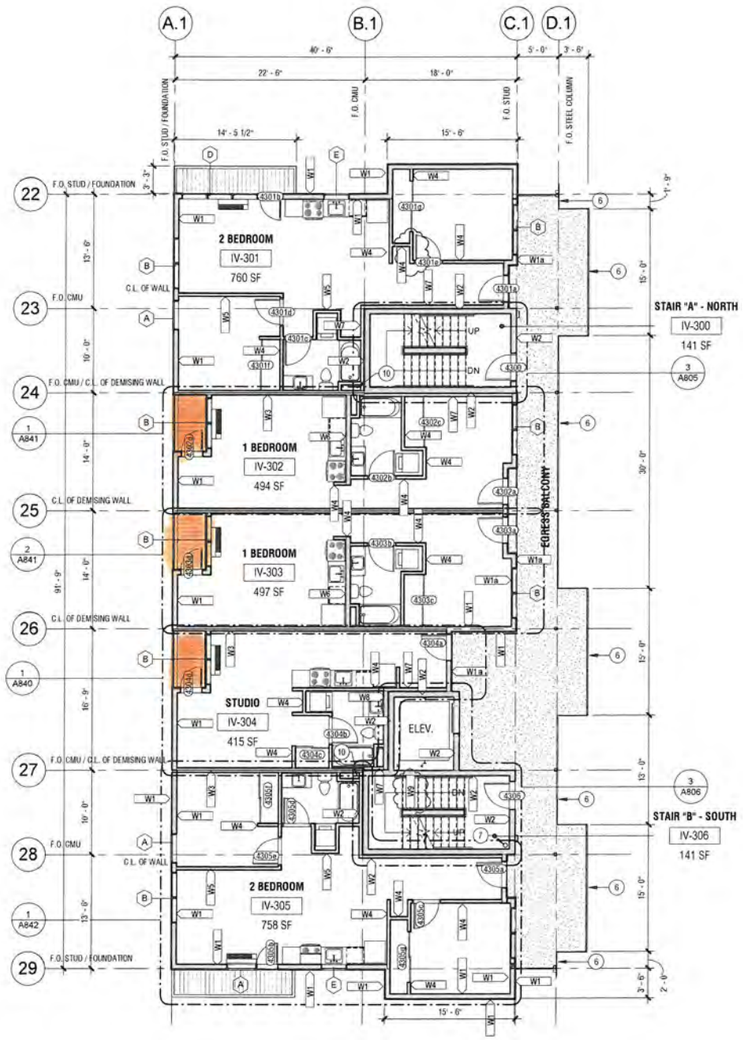
Phase: CONSTRUCTION

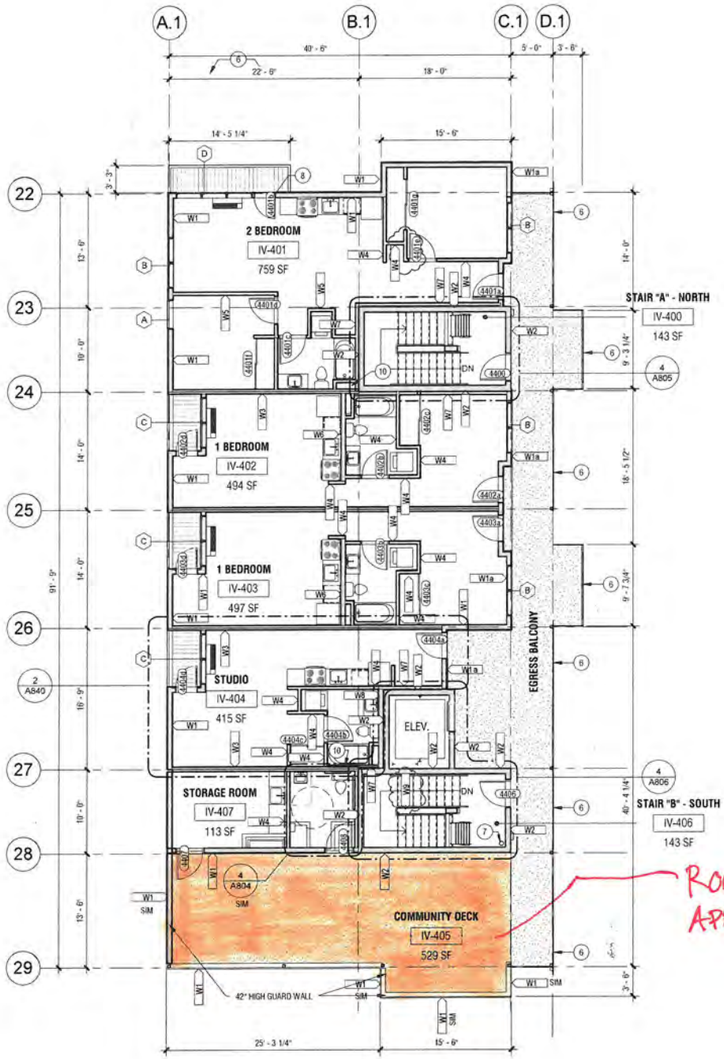
Revisions:

Number	Description	Date
1	RFI UPDATES	2017.01.05
5	CABINETRY UPDATES	2017.04.14

Sheet Name
BUILDING III - FLOOR PLANS

Sheet No.
A131





BUILDING IV - THIRD FLOOR PLAN (1)

1/8" = 1'-0"

BUILDNG IV - FOURTH FLOOR PLAN (2)

1/8" = 1'-0"

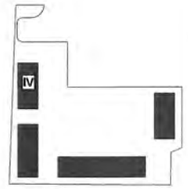
KEYNOTES - FLOOR PLANS

(#) DESCRIPTION

1 MAILBOXES, TO COMPLY WITH USPS STANDARDS
2 PLANTER, SEE CIVIL / LANDSCAPE FOR DETAILS
3 RAMP UP, MAX SLOPE 1:12, V.I.F. CHANGE IN ELEVATION
4 SCREEN PATIO ENCLOSURE; SEE ELEVATION
5 P.G.E. ELECTRICAL MAIN & DISCONNECT, SEE ELECTRICAL
6 SCREEN RAILING, SEE ELEVATIONS; TYPICAL
7 STANDPIPE
8 BUILT IN GAS FIREPLACE; MAKE & MODEL TBD
9 CONCRETE PATIO / WALKWAY
10 FUR OUT WALL AS REQ. TO MAKE FINISH SHEETROCK ALIGN FLUSH

GENERAL NOTES - FLOOR PLANS

A. FLOOR PLAN KEYNOTES AND GENERAL NOTES APPLY TO FLOOR PLANS ONLY. ALL KEYNOTES AND GENERAL NOTES MAY NOT OCCUR ON THIS SHEET AND DO NOT APPLY TO ANY OTHER SHEETS EXCEPT THOSE NOTED. ALL KEYNOTES REFERENCE THE SHEET THEY ARE DRAWN.
B. SEE STRUCTURAL, LANDSCAPE, CIVIL, AND MEP FOR MORE INFORMATION.
C. SEE SHEETS G140 FOR ALL RATED WALL LOCATIONS.
D. SEE SHEETS G240 AND G241 FOR ASSEMBLY TYPES.
E. SEE SHEETS A904 & A940 FOR DOOR AND WINDOW TYPES AND SCHEDULES.
F. INTERIOR UNIT WALL TYPES TAGGED IN ENLARGED UNIT PLANS, APPLY TO ALL SIM UNITS.



Project Location
SUNSHINE PORTLAND
3660 SE 29th Ave
Portland, OR 97202

REGISTERED ARCHITECT
Timothy Richard
TIM RICHARD
PORTLAND, OREGON
STATE OF OREGON

THESE DRAWINGS ARE FOR CONSTRUCTION BY JEAN-PIERRE VEILLET SITEWORKS, INC. ONLY

Date: 2017.10.09

Drawn By: DTF / DSM

Phase: PERMIT

Revisions:

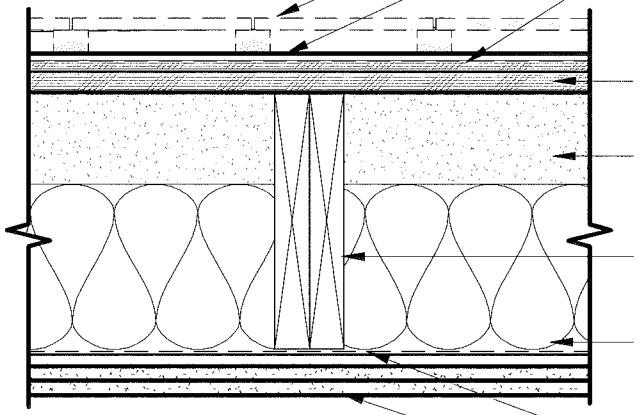
Number	Description	Date
1	CHECK SHEET RESPONSE	2017.10.05

Sheet Name
BUILDING IV - FLOOR PLANS

Sheet No.
A141

SITEWORKS
DESIGN / BUILD
240 SE 2nd Avenue Portland, Oregon 97214 503.230.2437 tel www.siteworksportland.com info@siteworks.com WA SITEWOB860LW CA 982952

EXTERIOR



INTERIOR

PEDESTAL ROOF DECKING

MEMBRANE ROOFING OVER 1/4" PROTECTION BOARD

ONE LAYER MIN 15/32" PLYWOOD SHEATHING, MIN GRADE "UNDERLAYMENT"

ONE LAYER 7/8" PLYWOOD SHEATHING PER STRUCTURAL

5 1/2" CLOSED-CELL SPRAY FOAM INSULATION WITH R-VALUE OF NO LESS THAN 6 PER INCH

DOUBLE (2) 2x12 WOOD JOISTS @16" O.C.

R-21 BATT INSULATION TO FILL REMAINING JOIST CAVITY

VAPOR BARRIER

TWO LAYERS 5/8" TYPE 'C' GYPSUM BOARD OVER RESILIENT FURRING CHANNELS @12" O.C. MAX
SEE UL LISTING FOR INSTALLATION INSTRUCTIONS.

ROOF DECK

C3

1 HR RATED - UL DESIGN NO. L569, SYSTEM NO. 1 NTS
STC 58 - TEST TLF95-147a; NRC IR-766 APRIL 1998
IIC 51 - TEST IIF-95-055; NRC IR-766 APRIL 1998

Project Location

SUNSHINE PORTLAND
3610 SE 29th Ave
Portland, OR 97202

THESE DRAWINGS ARE FOR CONSTRUCTION BY JEAN-PIERRE VEILLET SITEWORKS, INC. ONLY

Date: 2017.06.23

Drawn By: DTF

Phase: APPEAL

Revisions:

Number	Description	Date

Sheet Name

RDOF DECK ASSEMBLY DETAIL

Sheet No.

BCA-1

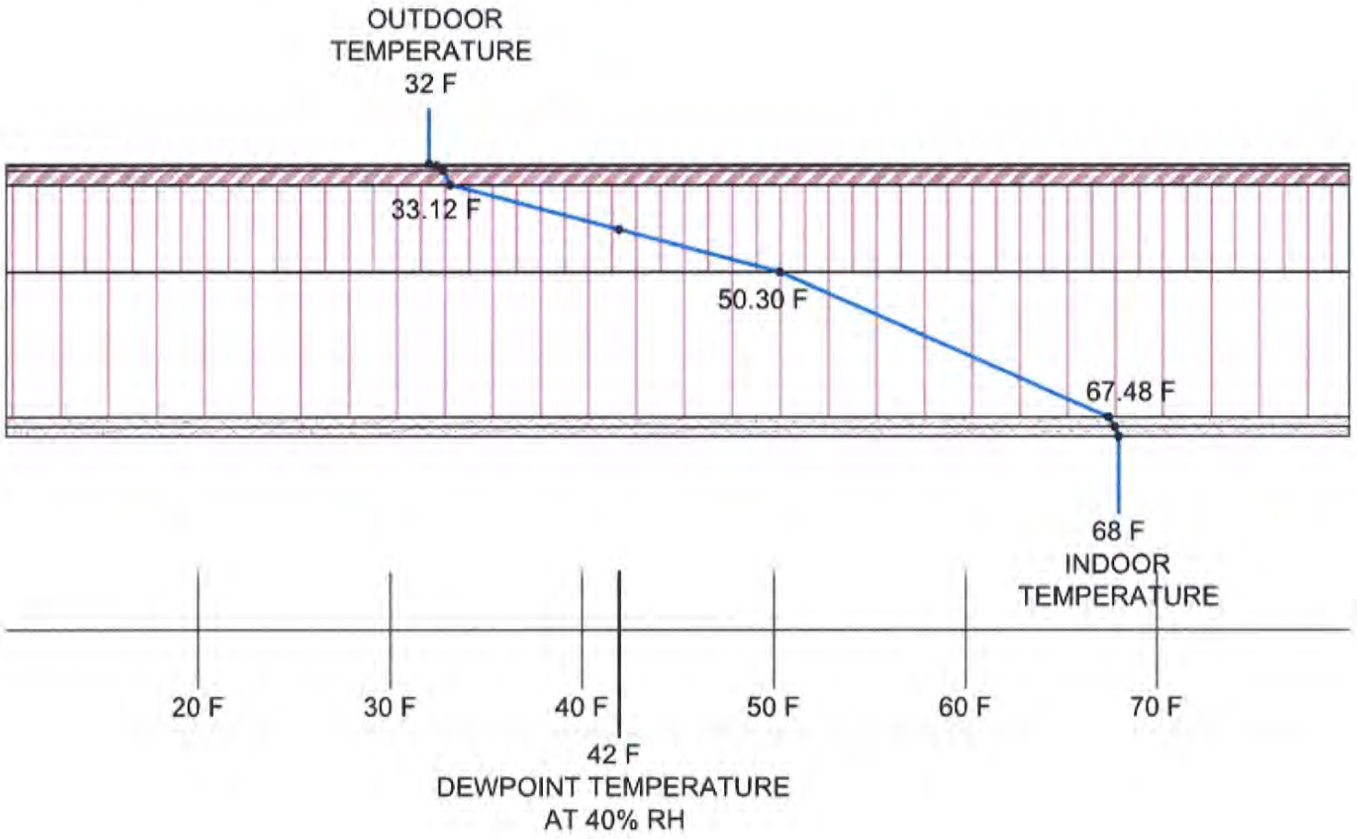
SITEWORKS
243 SE 2nd Ave. Portland Oregon 97214 503.239.2337 tel www.siteworksportland.com lic.landarch CCB#113920 WA SITEWD888QW CA 982352

EXHIBIT B

THERMAL GRADIENT THROUGH THE 1-HOUR ROOF ASSEMBLY – TYPICAL WINTER CONDITION

THERMAL COMPONENT	COMPONENT RESISTANCE	CUMULATIVE RESISTANCE	TEMPERATURE DIFFERENCE TO REFERENCE POINT (cumulative resistance/ total cumulative resistance) X (Outdoor-Indoor Temperature Difference)	TEMPERATURE AT REFERENCE POINT °F
Outdoor Air	-	-	-	32.00 °F
TPO Roof Membrane	0.33	0.33	0.19	32.19 °F
1/4" Protection Board	1.00	1.33	0.76	32.76 °F
3/4" Plywood Board	0.62	1.95	1.12	33.12 °F
4.5" Closed Cell Spray Polyurethane Foam (SPF) Insulation	30.00	31.95	18.30	50.30 °F
7.5" Batt Insulation	30.00	61.95	35.48	67.48 °F
1/2" Type C Gypsum Board	0.45	62.4	35.74	67.74 °F
1/2" Type C Gypsum Board	0.45	62.85	36.00	68.00 °F
Indoor Air	-	-	-	68.00 °F

Relative Humidity (68F Indoor)	30%	40%	50%
Dew Point Temperature	35 F	42 F	49 F



THERMAL GRADIENT THROUGH THE 1-HOUR ROOF ASSEMBLY – SEVERE WINTER CONDITION

THERMAL COMPONENT	COMPONENT RESISTANCE	CUMULATIVE RESISTANCE	TEMPERATURE DIFFERENCE TO REFERENCE POINT (cumulative resistance/ total cumulative resistance) X (Outdoor-Indoor Temperature Difference)	TEMPERATURE AT REFERENCE POINT °F
Outdoor Air	-	-	-	20.00 °F
TPO Roof Membrane	0.33	0.33	0.25	20.25 °F
1/4" Protection Board	1.00	1.33	1.02	21.02 °F
3/4" Plywood Board	0.62	1.95	1.49	21.49 °F
4.5" Closed Cell Spray Polyurethane Foam (SPF) Insulation	30.00	31.95	24.40	44.40 °F
7.5" Batt Insulation	30.00	61.95	47.31	67.31 °F
1/2" Type C Gypsum Board	0.45	62.4	47.66	67.66 °F
1/2" Type C Gypsum Board	0.45	62.85	48.00	68.00 °F
Indoor Air	-	-	-	68.00 °F

Relative Humidity (68F Indoor)	30%	40%	50%
Dew Point Temperature	35 F	42 F	49 F

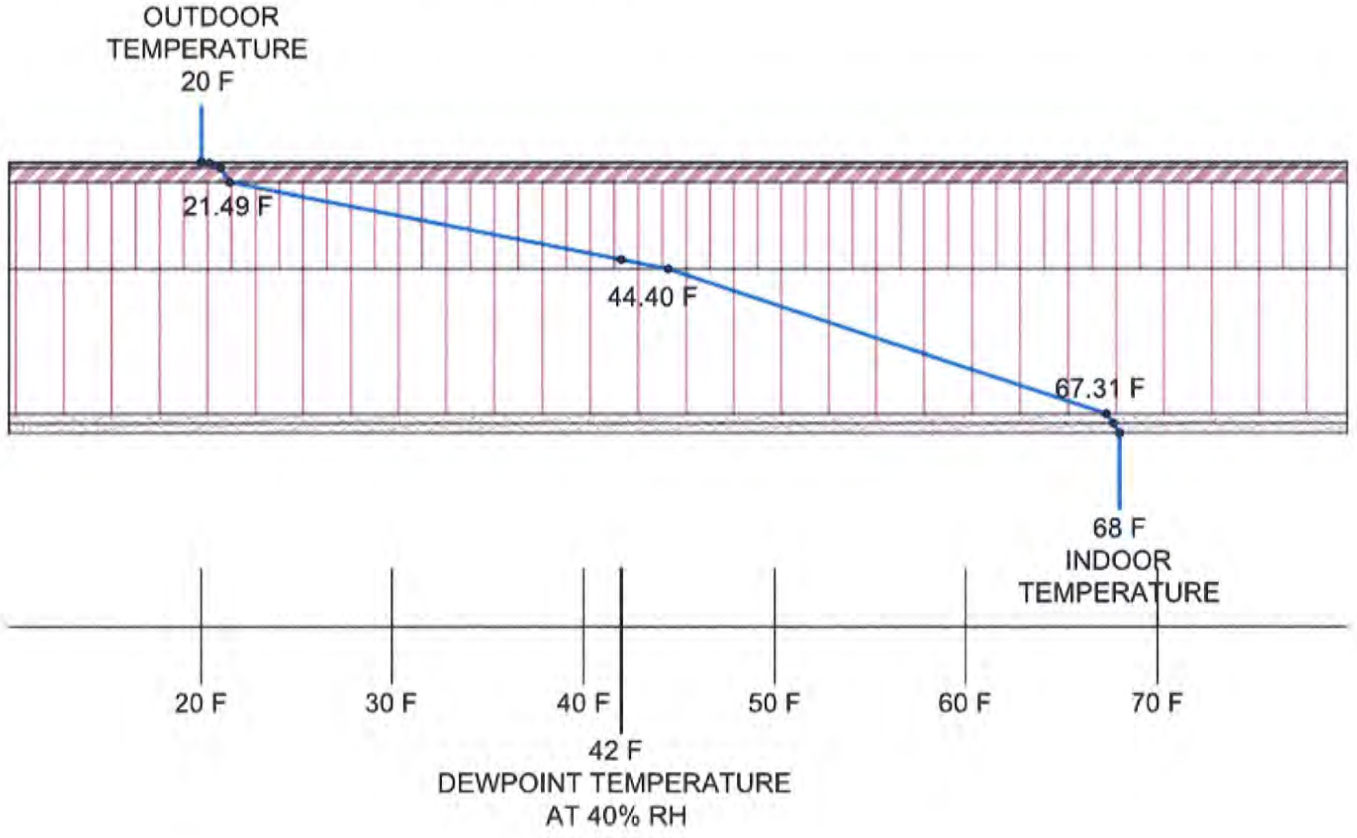
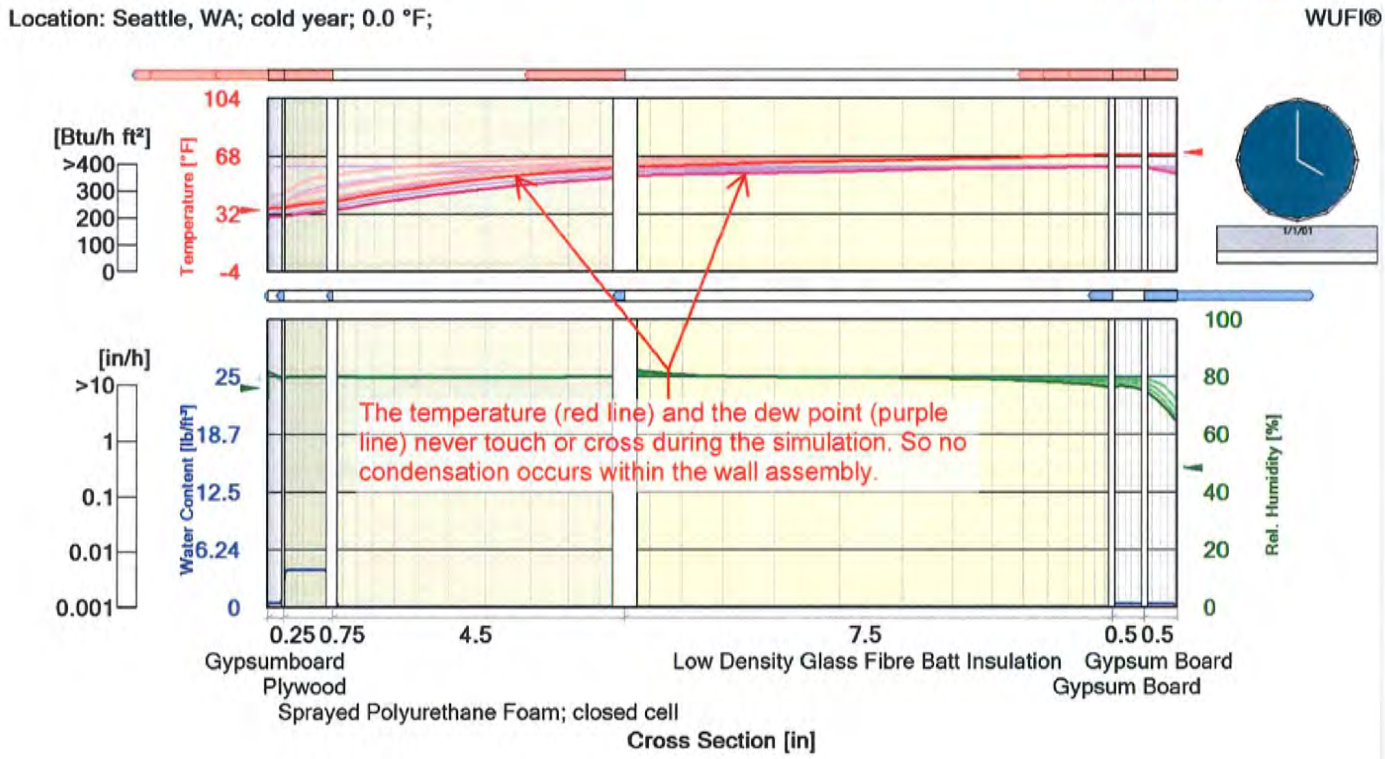
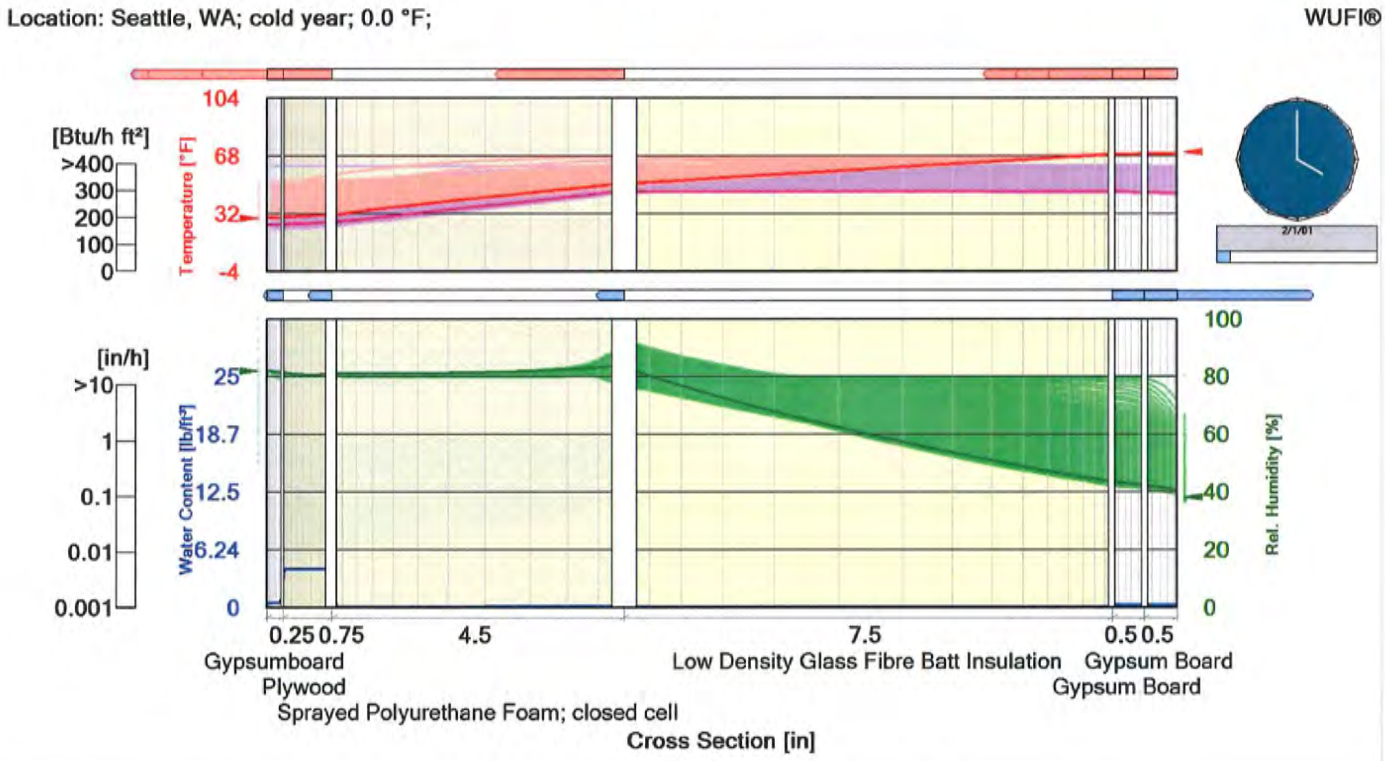


EXHIBIT C



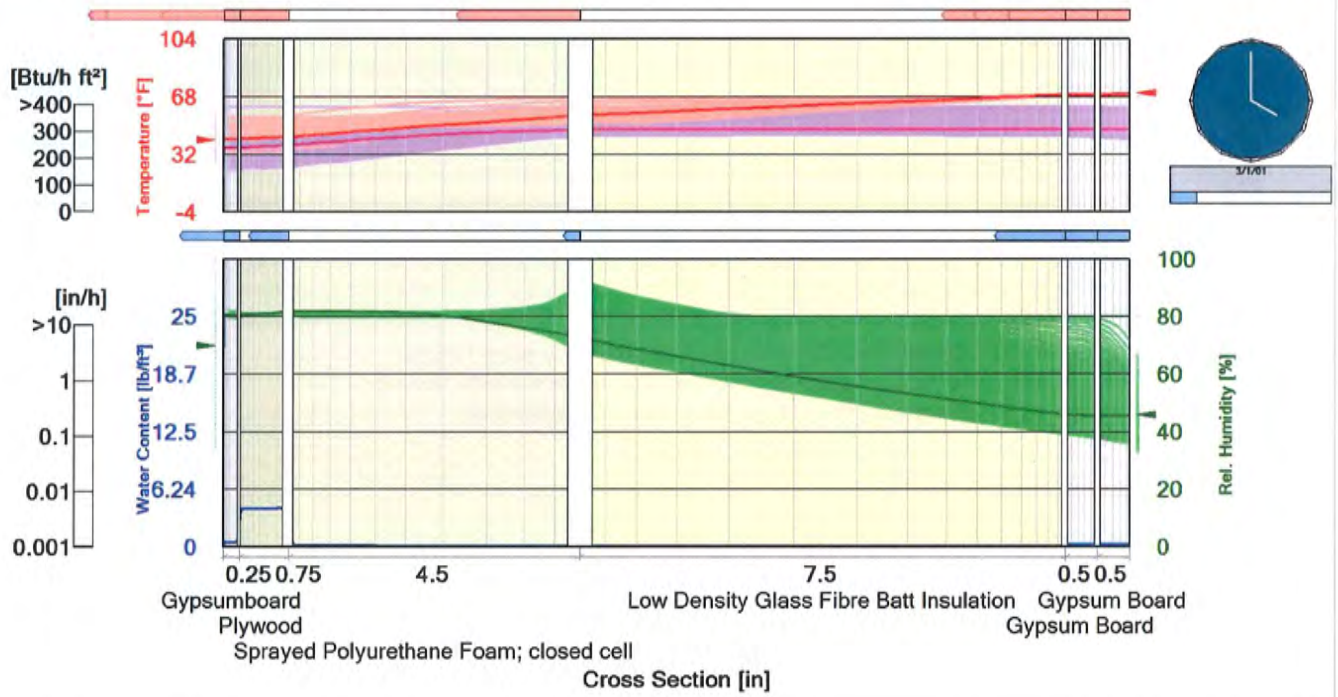
JANUARY



FEBRUARY

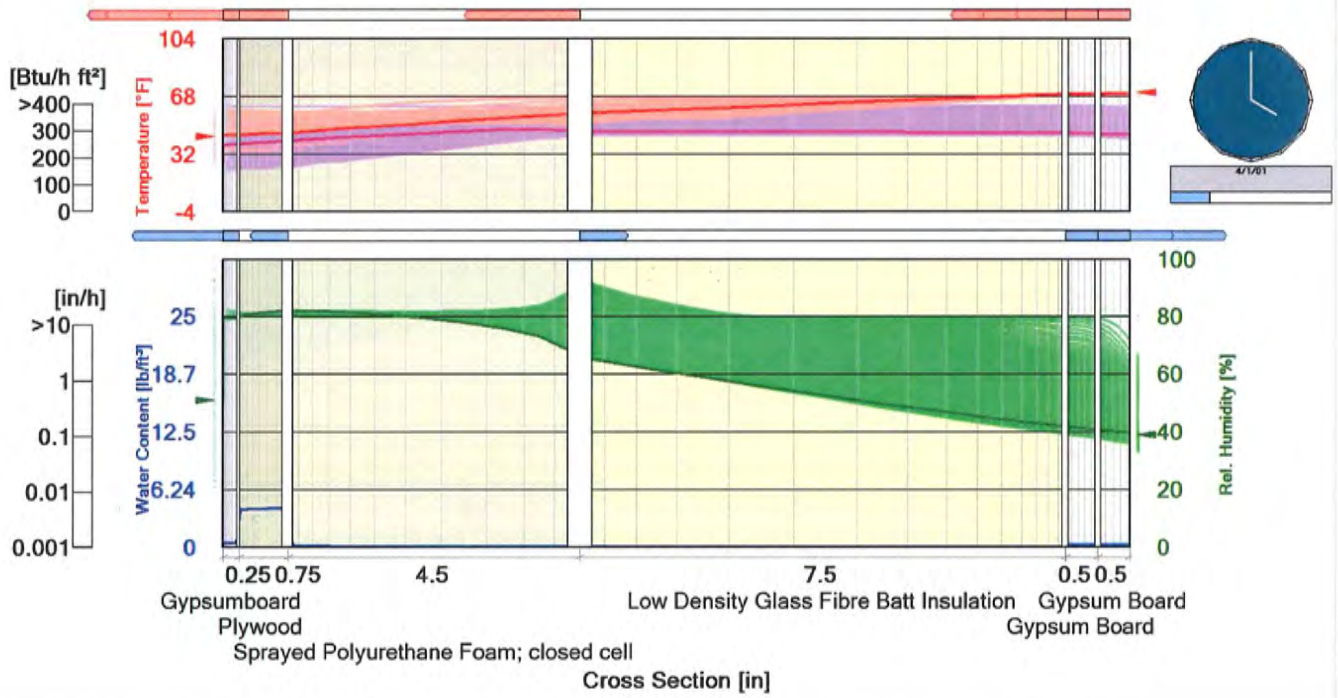
Top (yellow) graph represents the temperature profile, bottom (green/blue) graph is the moisture/humidity profile. The dark curves (red, purple and dark green) are the current profiles, the shaded regions (yellow and light green) represent the range of earlier profiles. This simulation was run for a "coldest" typical year.

Location: Seattle, WA; cold year; 0.0 °F; WUFI®



MARCH

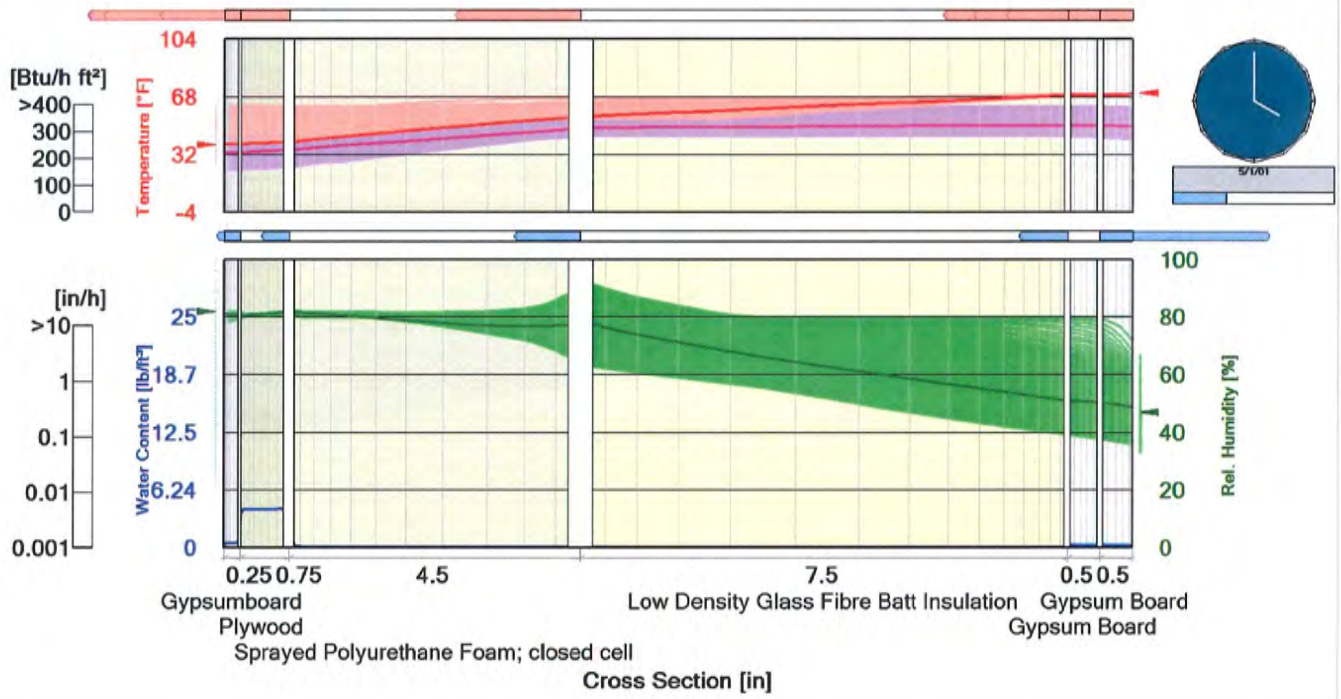
Location: Seattle, WA; cold year; 0.0 °F; WUFI®



APRIL

Location: Seattle, WA; cold year; 0.0 °F;

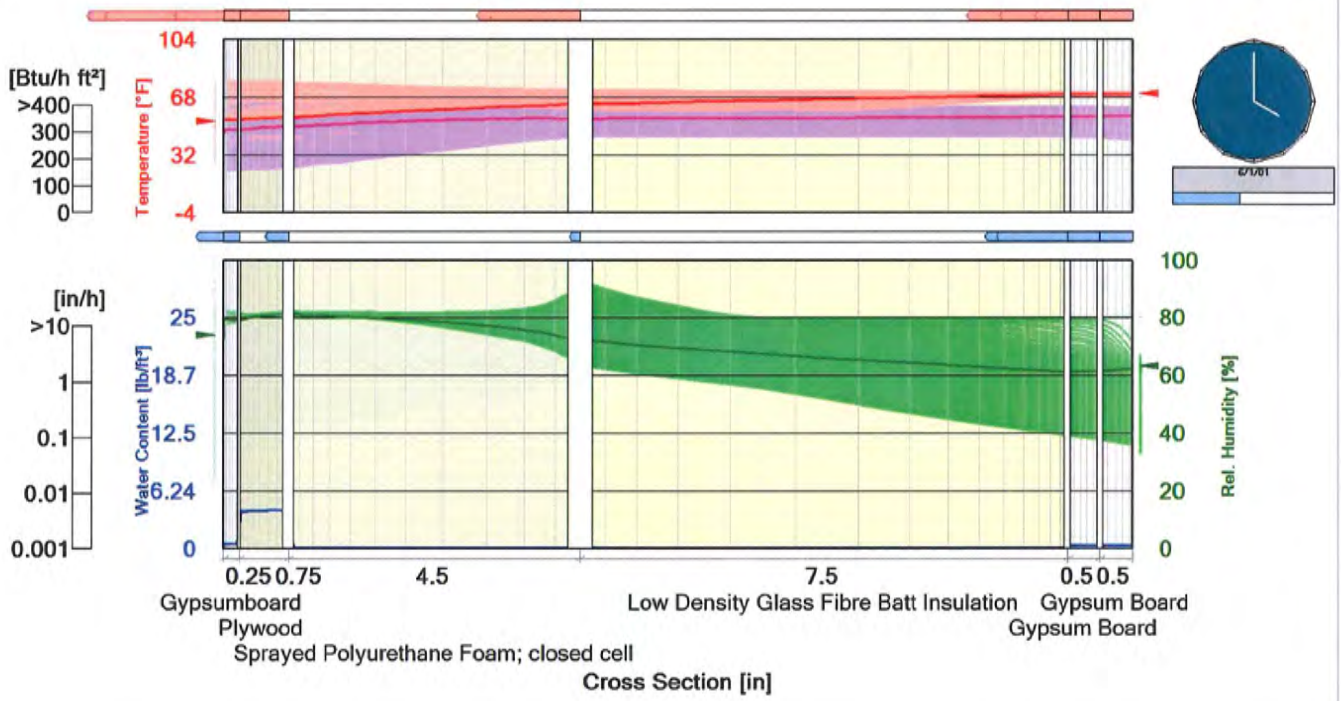
WUFI®



MAY

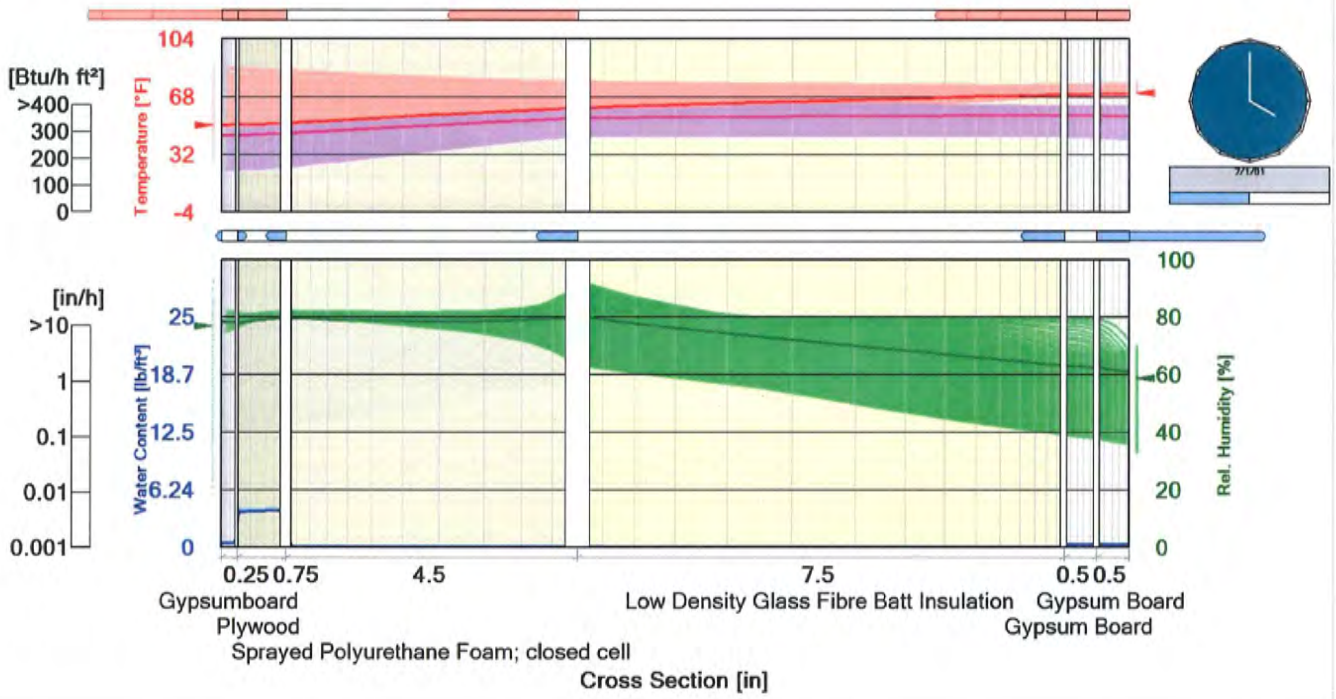
Location: Seattle, WA; cold year; 0.0 °F;

WUFI®



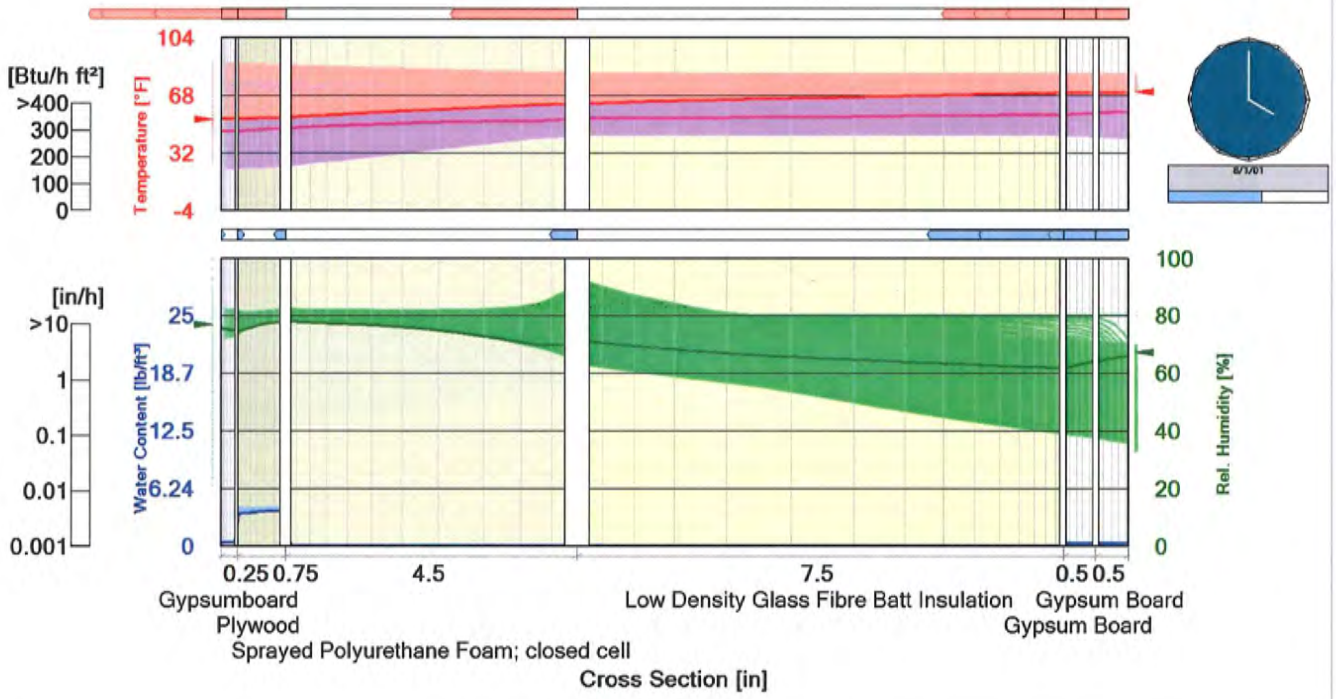
JUNE

Location: Seattle, WA; cold year; 0.0 °F; WUFI®



JULY

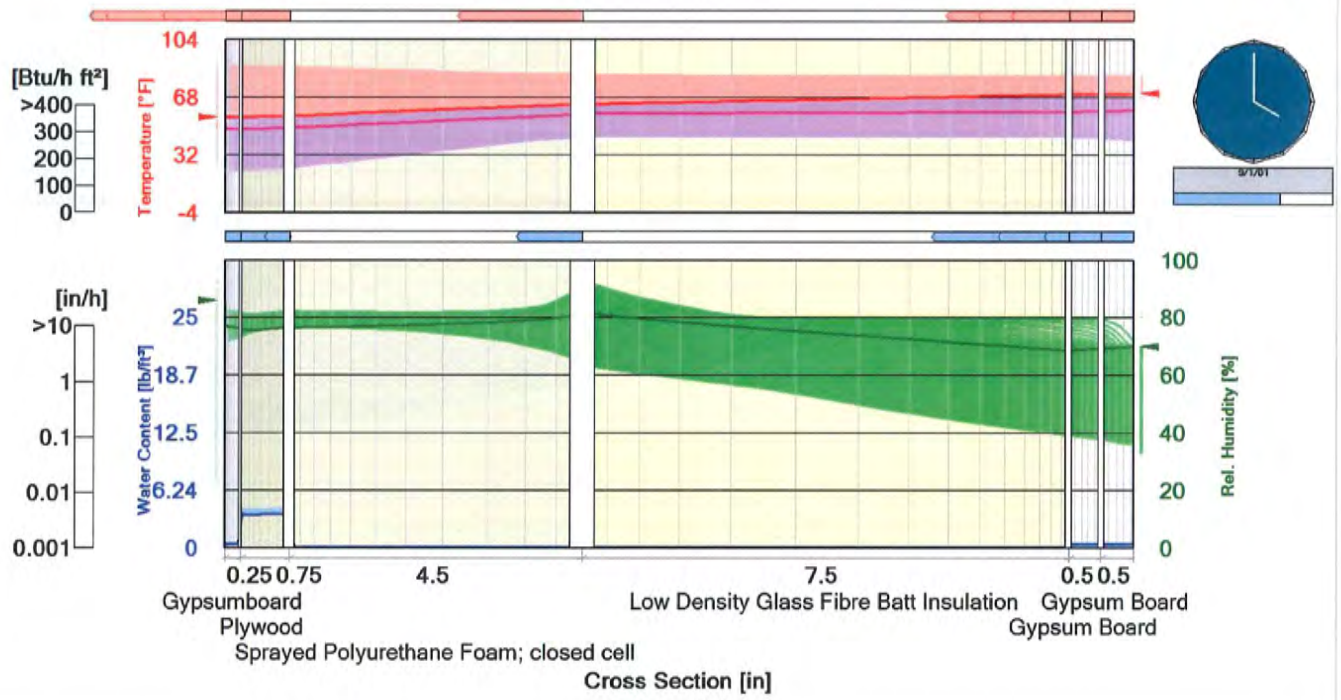
Location: Seattle, WA; cold year; 0.0 °F; WUFI®



AUGUST

Location: Seattle, WA; cold year; 0.0 °F;

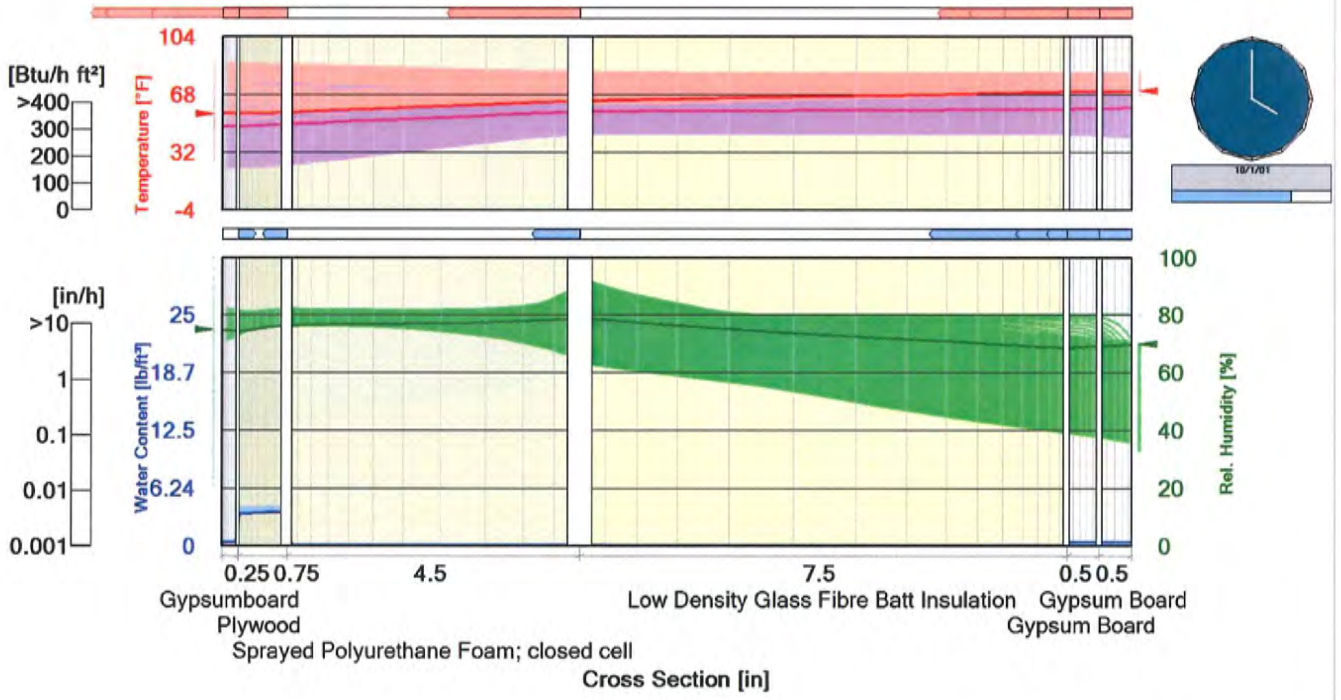
WUFI®



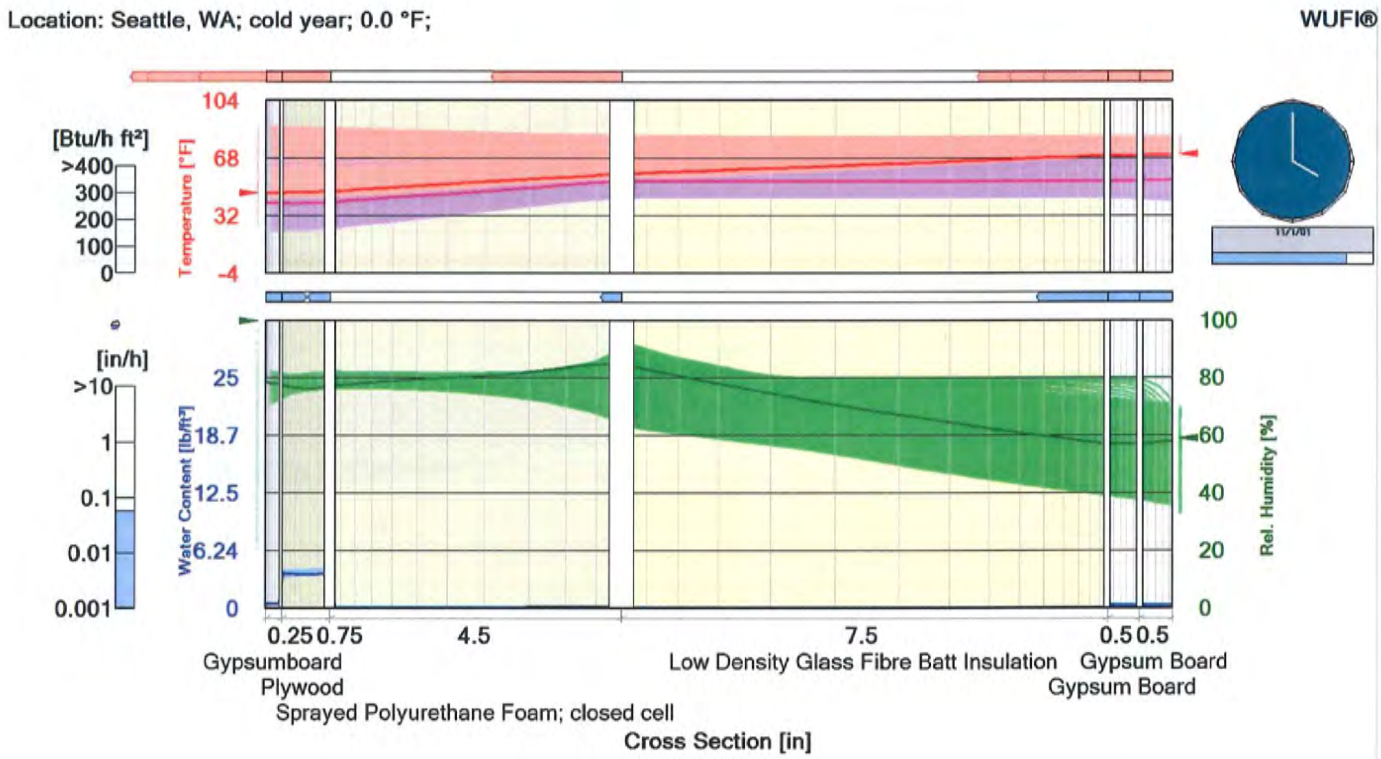
SEPTEMBER

Location: Seattle, WA; cold year; 0.0 °F;

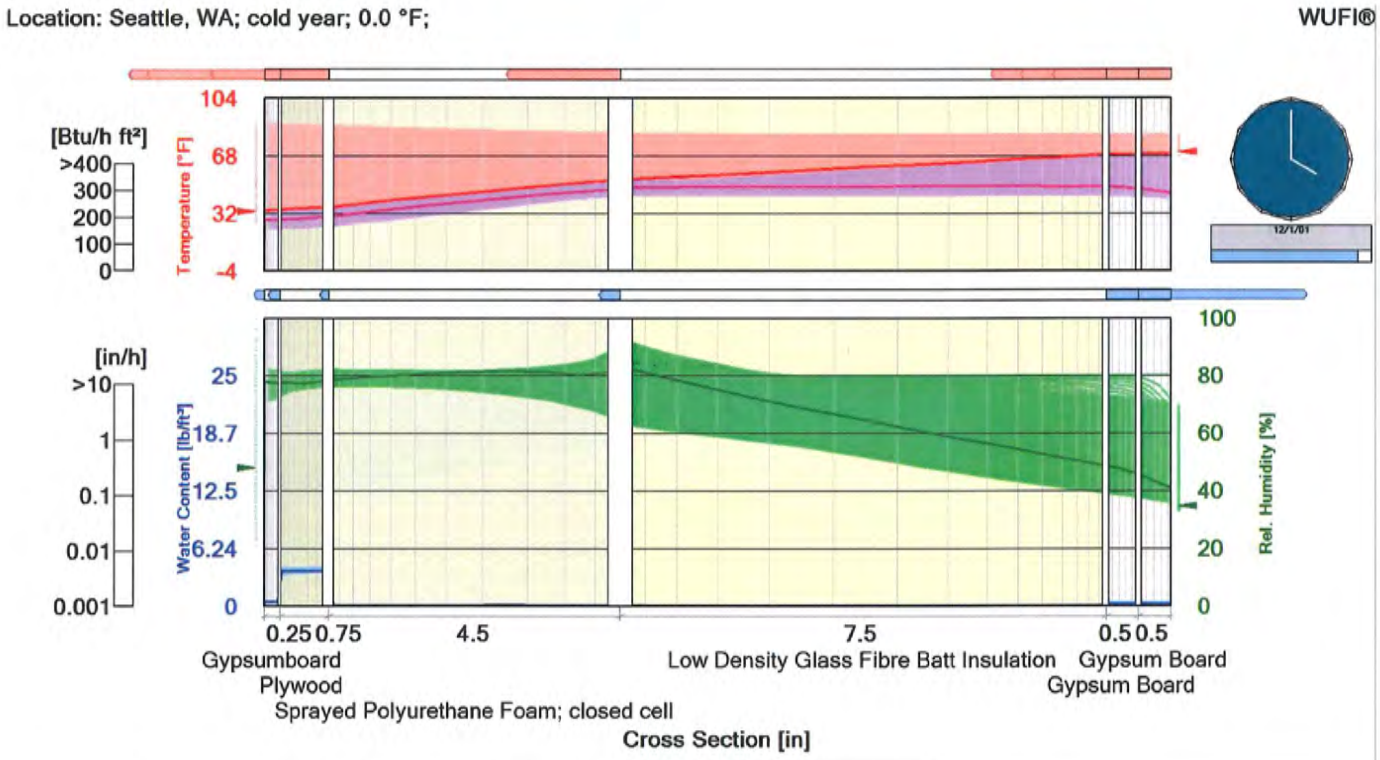
WUFI®



OCTOBER



NOVEMBER



DECEMBER

Summary Report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission Class and Impact Insulation Class Results

Warnock, A. C. C.; Birta, J. A.

http://dx.doi.org/10.4224/20331639

National Research Council Canada
Conseil national de recherches Canada

NRC-CNRC

Summary Report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission Class and Impact Insulation Class Results

by

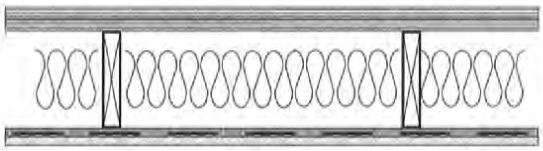
A.C.C. Warnock & J.A. Birta

IRC Internal Report IR-766

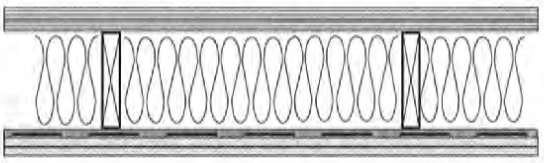
April 1998

Table 2: Solid Wood Joists: Double layer subfloors and one or two ceiling layers

Joist Depth	235 mm
Joist Spacing	406 mm o.c.
Cavity filling	152 mm glass fiber batts
Resilient channels	610 mm o.c.

(c) Double layer subfloor and single layer ceiling	

Subfloor material	Subfloor thickness, mm	Gypsum board thickness, mm	Test ID	STC	Test ID	IIC
OSB	2*15	15.9	TLF-95-123a	55	IIF-95-043	47
Plywood	2*13	15.9	TLF-95-129a	51	IIF-95-046	46
Plywood	2*15	15.9	TLF-95-149a	53	IIF-95-056	46

(d) Double layer subfloor and double layer ceiling	

Subfloor material	Subfloor thickness, mm	Gypsum board thickness, mm	Test ID	STC	Test ID	IIC
Plywood	2*13	2*15.9	TLF-95-131a	58	IIF-95-047	53
Plywood	2*15	2*15.9	TLF-95-147a	58	IIF-95-055	51
OSB	2*15	2*15.9	TLF-95-125a	60	IIF-95-044	53