

INNOVATIVE BUILDING SOLUTIONS:
Building Better Commercial Buildings
With Engineered Wood Technologies

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This Presentation was developed by a third party and is not
funded by Woodworks or the Softwood Lumber Board

Engineered Wood Is Made From Wood – A Renewable Resource

- Manufacturers use SFI®-certified forest management and procurement systems which help ensure wood comes from well-managed forests
- Improved Manufacturing process means no part of the log goes to waste
- Use of only low-emitting, safe resins as a binder



History Of Engineered Wood

- Even after the delivery of logs to a sawmill, residue materials had represented up to 60% of the log
- Wood waste after the production of structural lumber was a concern for producers and Forestry Agencies

Particle Board

- 1887-1941-Particle Board-Germany
- 1950's-Particle Board production in the US (LDF)

Plywood

- 1940's-Plywood
- 1946-NOVOPLY (3-ply MDF)

Strand Board

- 1965-Waferboard (random strand)
- 1978-Flakeboard (Oriented Strand Board)

Forest Service Supported OSB Technology

- In 1973 A symposium was held by the Forest Service's Structural Flakeboard Task Force. The meeting was titled "Structural Flakeboard from Forest Residues"
- The cost savings from plywood helped OSB gain market acceptance
- Benefits include: shear strength, longer lengths, using new growth trees over larger trees needed for plywood

OSB Growth in the US

1980-750M sq ft

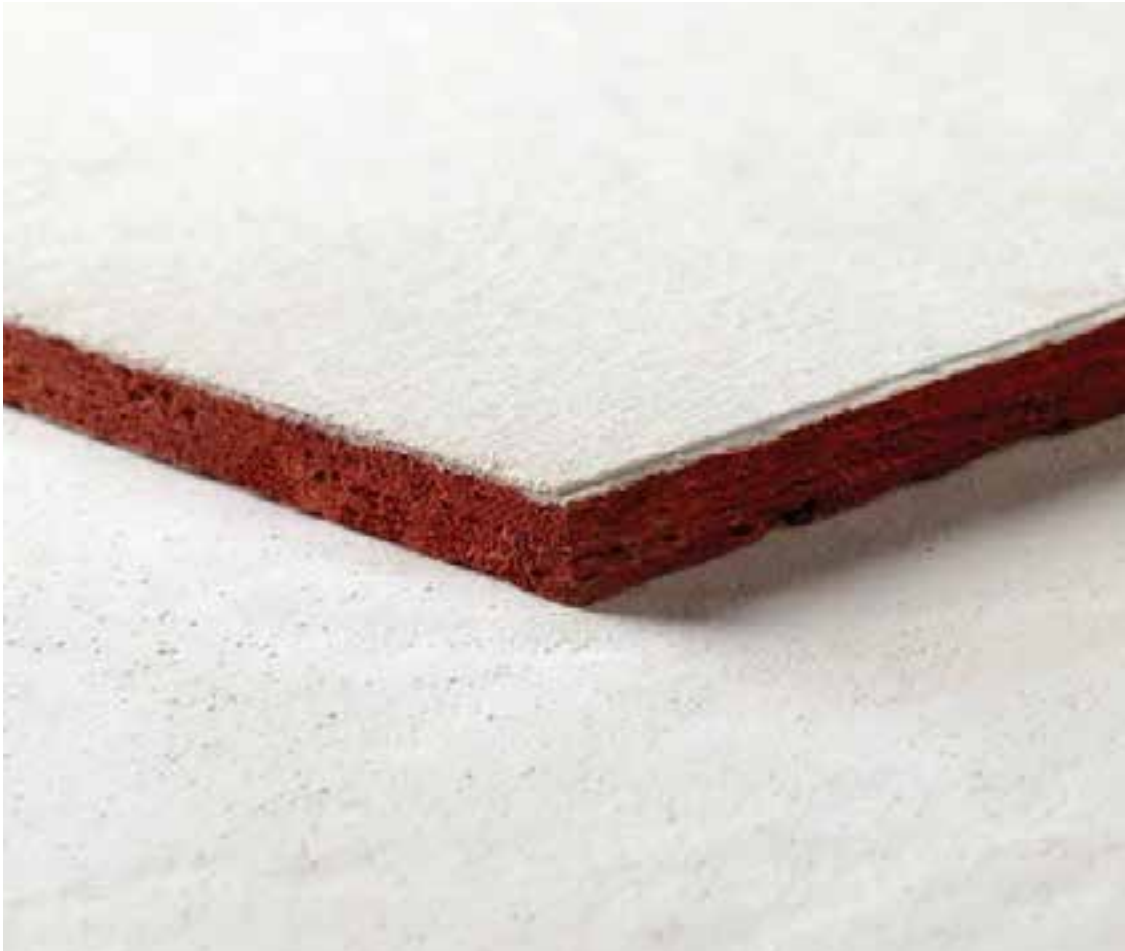
1990-7.6 B sq ft

2006-31 B sq ft

2013-24 B sq ft

2018-26 B sq ft

What is Cementitious Coated OSB?



- Ignition resistant Magnesium Oxide coating applied to one or both sides of APA rated OSB panel
- OSB substrate is not chemically treated – No structural reductions
- Structural and fire performance in one sheet
- Installs with standard fasteners – galvanized and stainless not required
- Joints do not require caulk
- Standard 3/16 gapping as regular OSB and Plywood

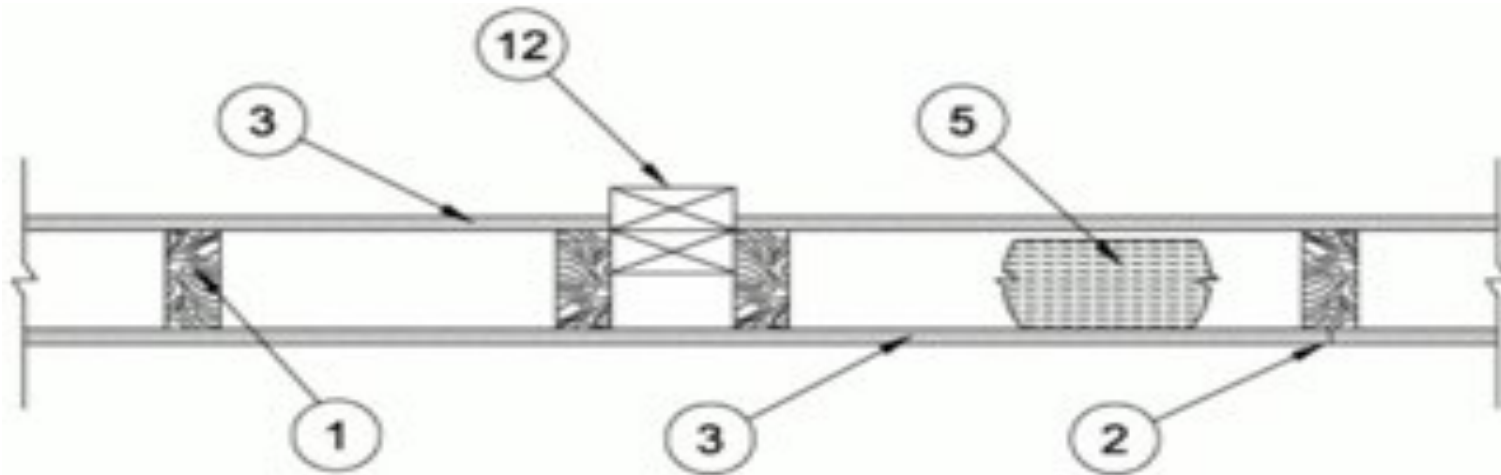
Third Party– Testing

- Tested in accordance with ASTM E84
 - Flame spread index of 25 or less in 10-minute test
 - Flame progression less than 10'-6" for full 30 minute test.
 - Satisfies smoke development criteria
- Cementitious Coated OSB wall assemblies tested in accordance with ASTM E119
 - U348, U349, U350, W408, V337, Intertek LPB/WPPS 60-01, and Intertek LPB/WPPS 60-02
 - Intertek and UL laboratories are Third Party private companies that test materials and assemblies to ASTM standards

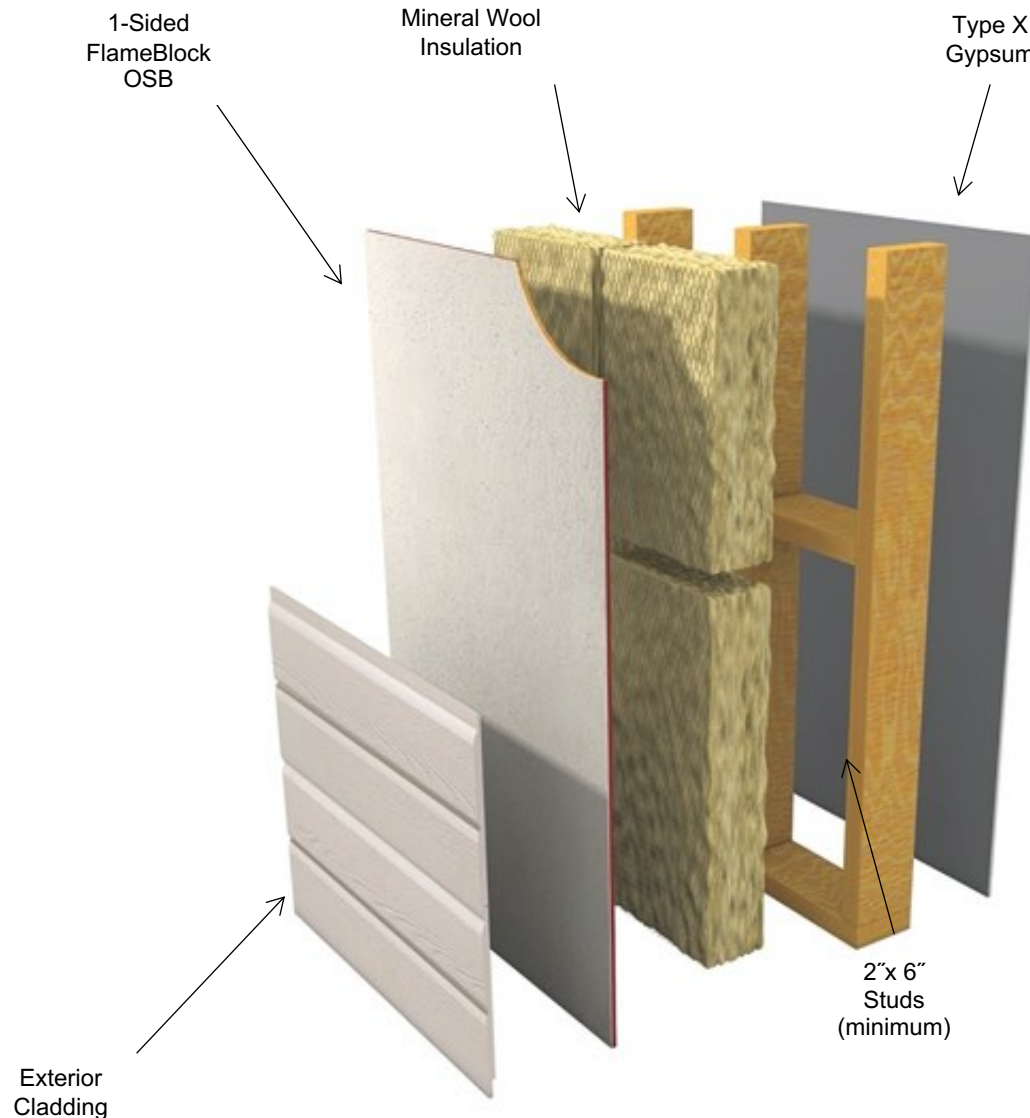


EXAMPLE: COMMON 1-HOUR GYP EXTERIOR WALL

- UL Generic Design U305: Load-bearing assembly with 5/8" Type X GWB on each side
- Rated for 1 hour from both sides
- Structural panel may be added without compromising fire resistance



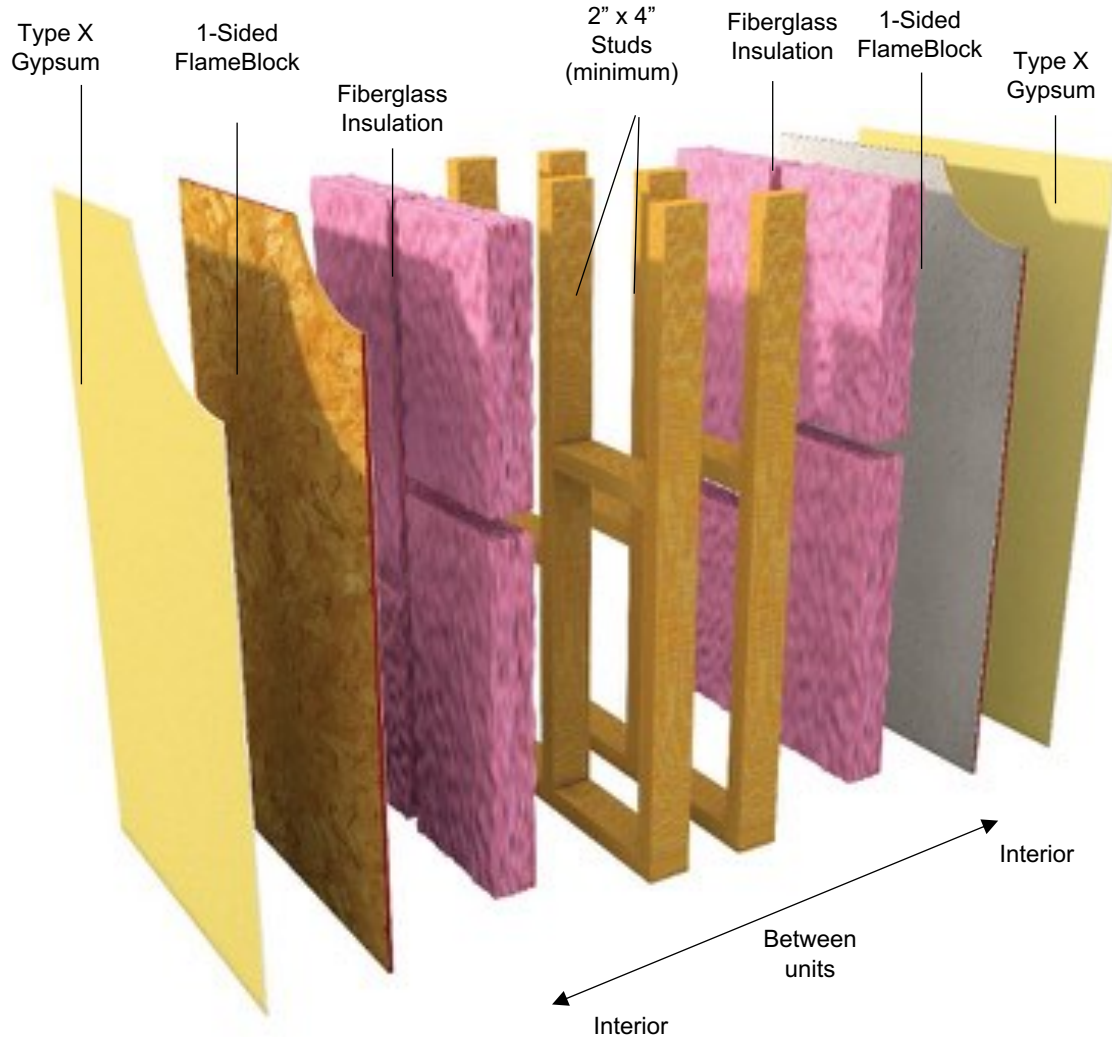
LPB/WPPS 60-01:1-Hour Wall Assembly



<i>Application</i>	<ul style="list-style-type: none">• Exterior load-bearing wall
<i>Fire rating</i>	<ul style="list-style-type: none">• 1 hour (1 hours from inside, 1 hours from outside)
<i>Construction type(s)</i>	<ul style="list-style-type: none">• Type III Non-bearing (2 Side FB)• Type V Exterior Walls and Fire Walls
<i>Advantages over competing assemblies</i>	<ul style="list-style-type: none">• Removes exterior gypsum• Wood, fiber cement, steel or stucco as exterior cladding• No cladding requirement with 19/32"

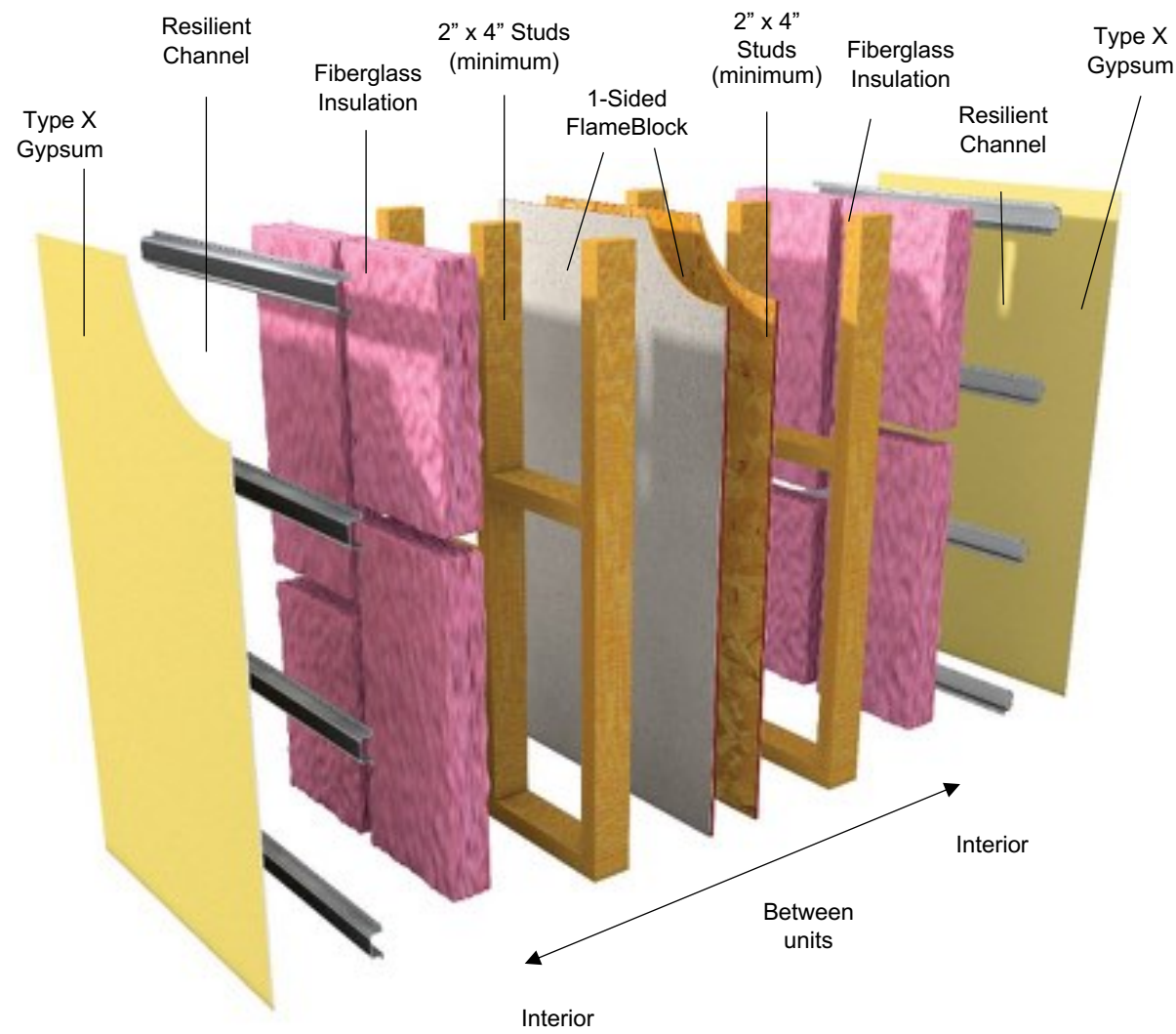
The New UL V340 is a 2x4 1-Hour rated Wall assembly. With No cladding requirement

Assembly U350 – Type A



<i>Application</i>	<ul style="list-style-type: none"> Interior load-bearing wall
<i>Fire rating</i>	<ul style="list-style-type: none"> 2 hours (2 hours from both sides)
<i>Construction type(s)</i>	<ul style="list-style-type: none"> Type III (5-6 story commercial or multi-family) Type V (1-4 story wood-framed single or multi-family)
<i>Advantages over competing assemblies</i>	<ul style="list-style-type: none"> Removes two layers of gypsum Removes need for extra equipment (C channels, H studs, breakaway clips) Allows for standard OSB design values, while FRT plywood must take deductions

Assembly U350 – Type B

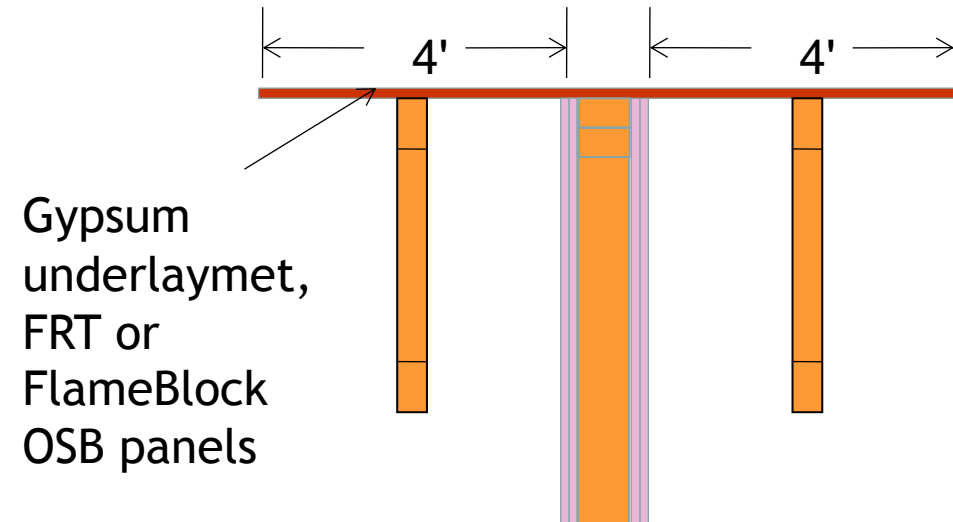


<i>Application</i>	<ul style="list-style-type: none">• Interior load-bearing wall
<i>Fire rating</i>	<ul style="list-style-type: none">• 2 hours (2 hours from both sides)
<i>Construction type(s)</i>	<ul style="list-style-type: none">• Type III (5-6 story commercial or multi-family)• Type V (1-4 story wood-framed single or multi-family)
<i>Advantages over competing assemblies</i>	<ul style="list-style-type: none">• Removes two layers of gypsum• Removes need for extra equipment (C channels, H studs, breakaway clips)• Allows for standard OSB design values, while FRT plywood must take deductions

Vertical Continuity of Fire Walls

One of the first and most common applications for Fire Retardant OSB is in roof decking on either side of a fire wall in Type V construction

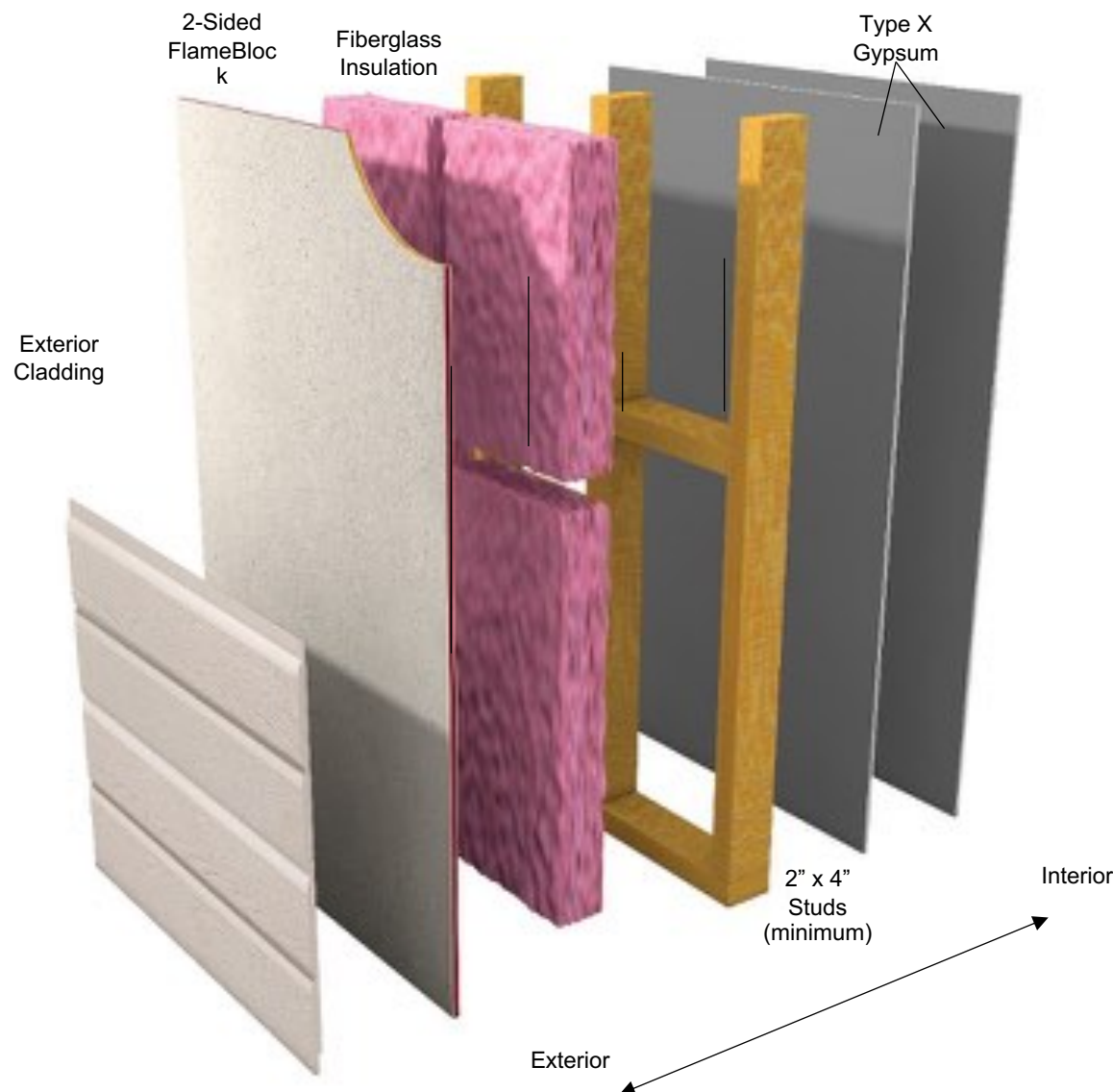
- IBC 706.6 requires a 30" parapet for walls rated up to 2 hours
- As an exception, fire walls can terminate at roof deck if code-compliant FR sheathing is installed for 4 feet along the wall



EXTERIOR WALLS OF TYPE III CONSTRUCTION

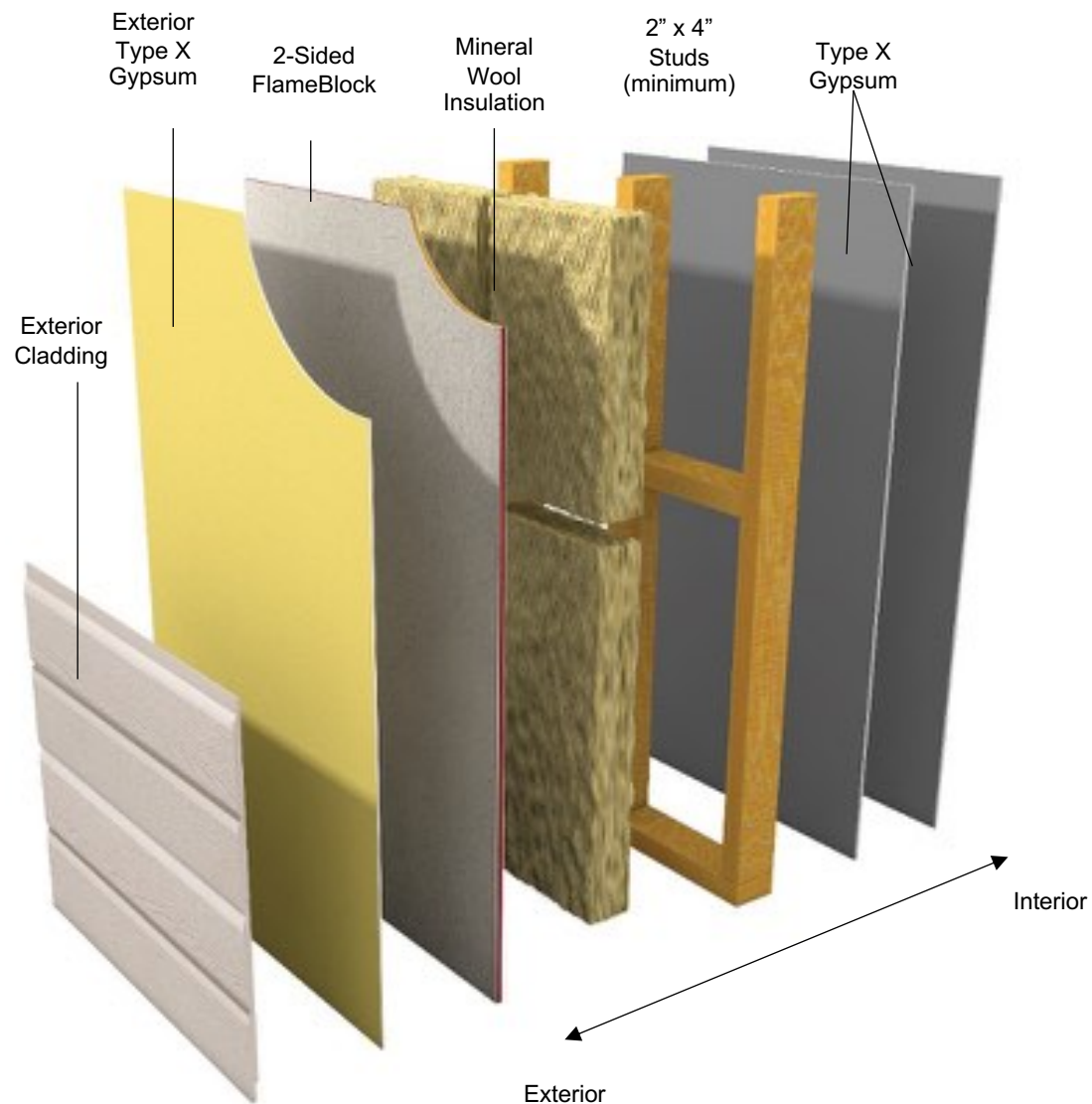


Assembly U349



<i>Application</i>	<ul style="list-style-type: none"> Exterior load-bearing wall
<i>Fire rating</i>	<ul style="list-style-type: none"> 2 hours (from inside only)
<i>Construction type(s)</i>	<ul style="list-style-type: none"> Type III (5-6 story commercial or multi-family)
<i>Advantages over competing assemblies</i>	<ul style="list-style-type: none"> Removes one layer of gypsum Switches fiberglass in for mineral wool; contractors find that mineral wool is more difficult to install Allows for standard OSB design values, while FRT plywood must take deductions

Assembly V337



<i>Application</i>	<ul style="list-style-type: none">• Exterior load-bearing wall
<i>Fire rating</i>	<ul style="list-style-type: none">• 2 hours (2 hours from inside, 2 hours from outside)
<i>Construction type(s)</i>	<ul style="list-style-type: none">• Type III (5-6 story commercial or multi-family)
<i>Advantages over competing assemblies</i>	<ul style="list-style-type: none">• Removes one layer of gypsum• Allows for standard OSB design values, while FRT plywood must take deductions

Weather Resistant Barriers-WRB Panels

Perfect for Type 5 and Low-Rise Commercial Construction

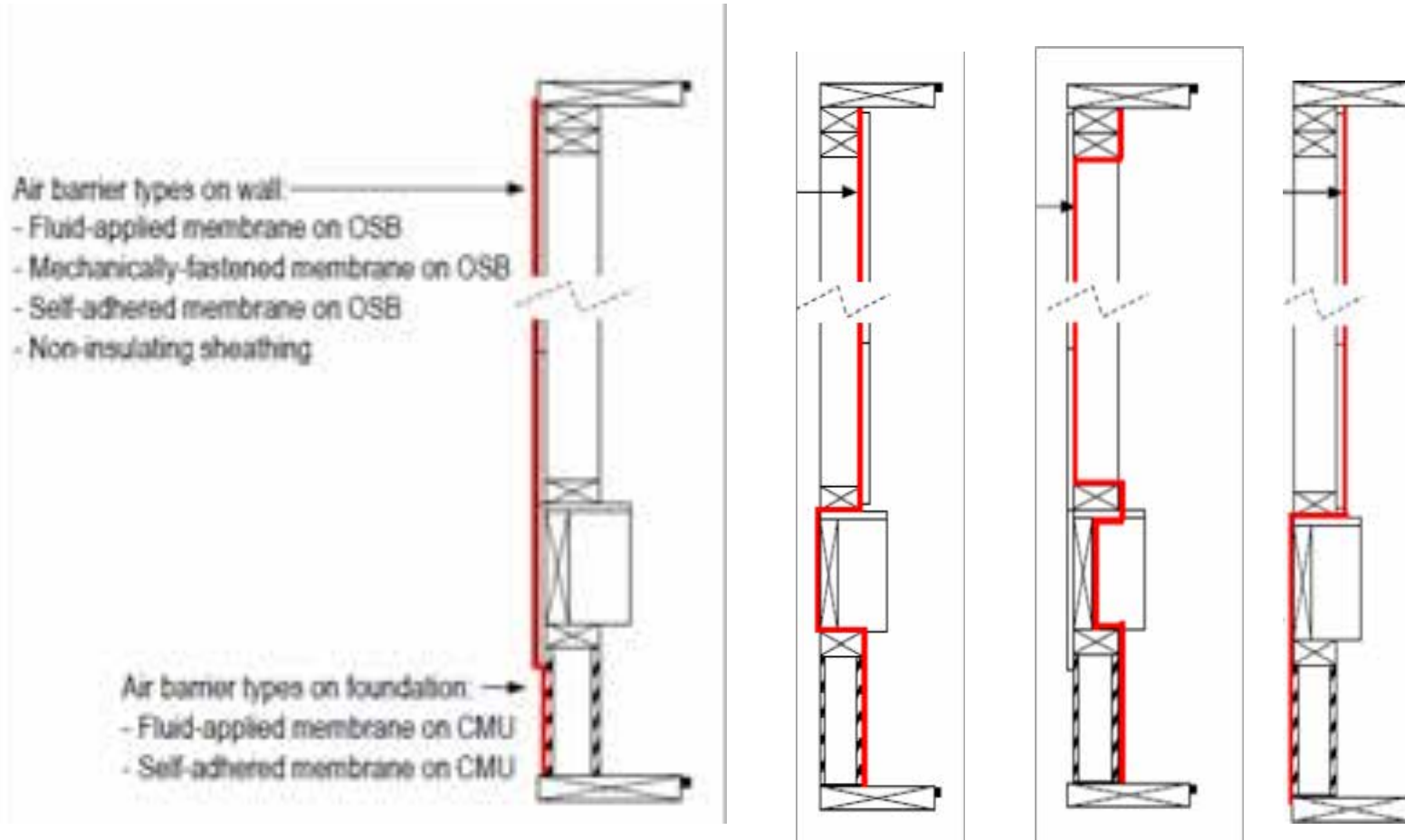
Weather resistant overlay comes already intricately bonded to panels-WRB

- Virtually eliminates tears, rips, or damage during construction
- Superior durability
- No exposure during construction
- Installs faster- fewer man hours
- Water cannot be trapped behind barrier
- Can be installed on windy days
- Cleaner jobsite
- Reliability- once in place, stays in place



ENERGY EFFICIENCY-

COMBINED AIR AND WEATHER BARRIER



**Simplified air barrier system-
Follow the Red Line!**

- **Steps required to create complete weather barrier with house wraps**

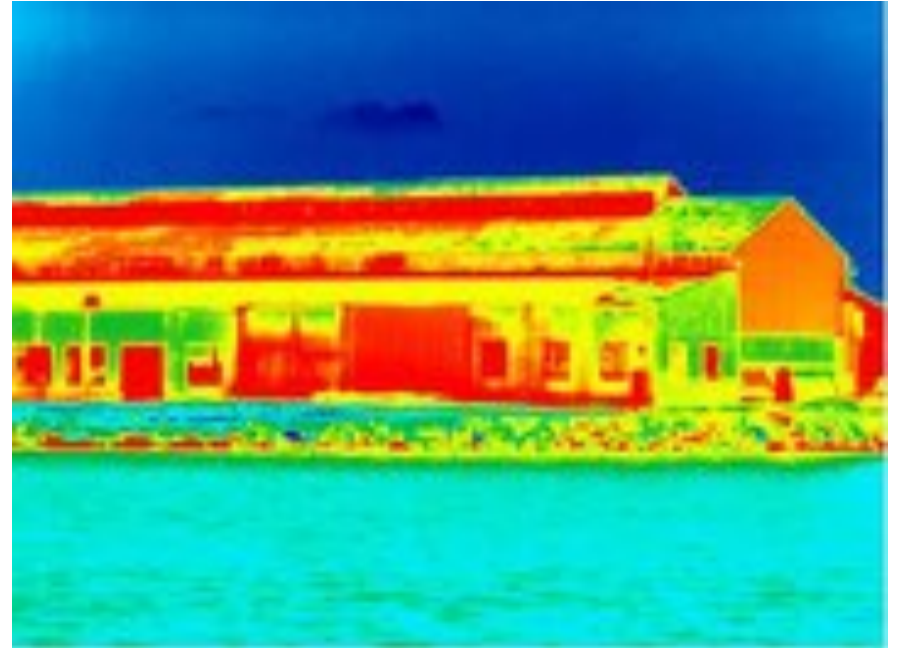
BUILDING SCIENCE OVERVIEW

Hygrothermal properties of a building

- **Water Permeability**
 - The rate in which water vapor moves through materials.
 - Reported “perms” are typically wet cup method
- **Air Permeability**
 - The rate in which air moves through a material(s)
- **Thermal (R-value)**
 - Measure of resistance to conductive heat flow.

Three primary barrier systems

- Air barrier (interior, exterior, or both)
- Weather barrier (bulk water)
- Thermal barrier (insulation)



Installation Details

Installs like standard OSB

- 1/8" Gap on Edges, Nail 3/8" from edge, 6" OC on Edge, 12" OC in Field



Tape Is The Key to a Successful WRB System

- Not all Tape is Created Equal
- Each WRB system includes supplemental flashing for rough openings and sheathing margins, proprietary flashing tape and proprietary stretch flashing tape as well as liquid sealant are available
- Some tape achieves its full adhesion nearly immediately some have a 24-hour repositioning window.



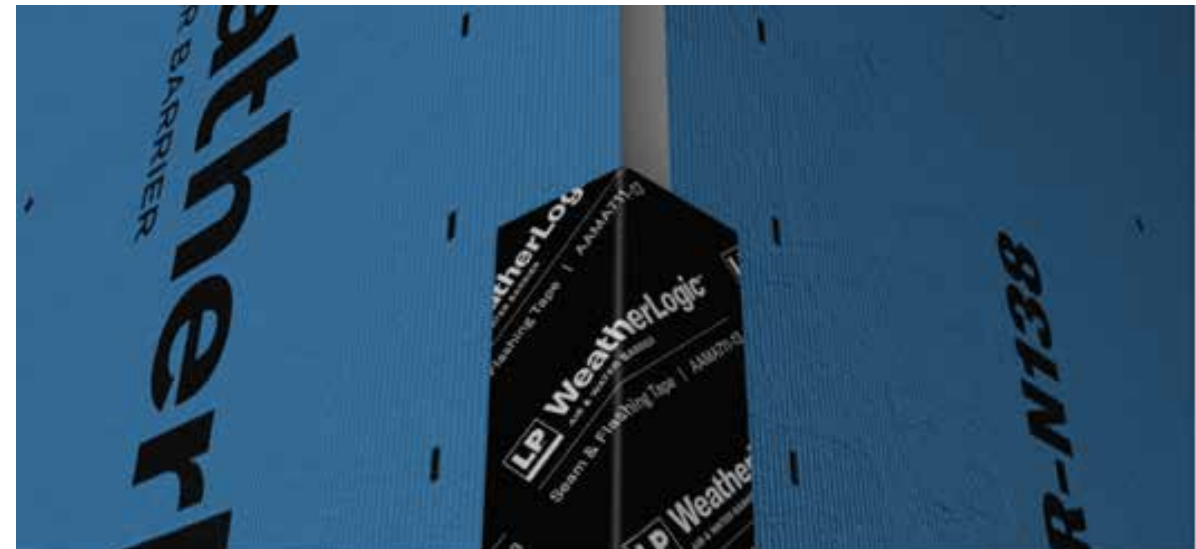
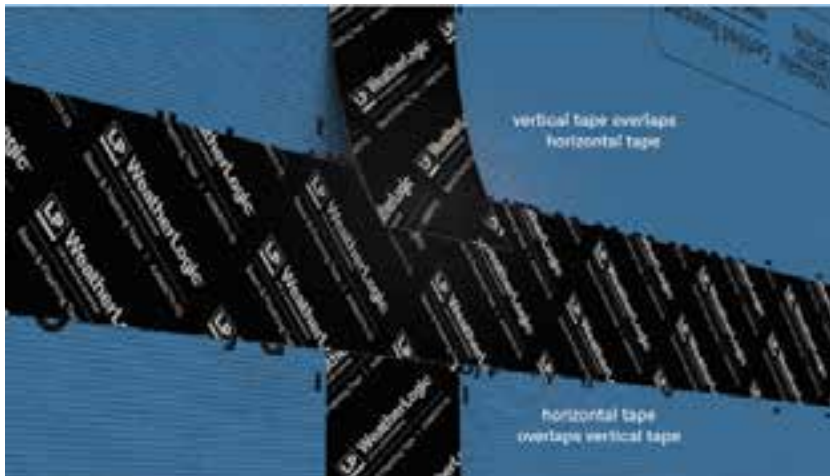
Installation Details

Use full lengths wherever possible- Use squeegee or roller-depending on manufacturers instructions

- Shingle tape when overlapping vertically 2"
- Side to side overlap 2"

Where tapes cross, overlap at least half the thickness

- Shingle vertical tap over horizontal tape
- Where horizontal goes over vertical, vertical tape must go halfway under horizontal.
- Apply tape bottom to top on corners



Tested All Over The Country

- TEWS has survived the following testing conditions in Hilo, Hawaii since 1996
 - 170" annual rainfall
 - Humidity close to 80% year round
 - High Formosan termite population
 - Ideal conditions for fungal decay
- Performs in all climates & weather conditions



Average Annual Rainfall



Treated Engineered Wood Siding used on Commercial Structures and Multi-Family Dwellings

Height Limitations



Besides Residential Construction, Type V Construction is the largest Market for TEWS



Long Term Property Ownership Markets Find Benefit In Engineered Wood Siding

Senior Housing and Student Housing-
50 year Warranty equals profitability

It's not just
for
Clapboard!



Mix and match different product styles

Ideal for Coastal Commercial Projects-

Engineered Wood Siding stands up to 180 MPH winds and 200 MPH Gusts



Prefinished TEWS available with paint warranties from 15-30 years



TEWS Realistic Wood Grain Pairs
Well With Specialty Finishes

Corporate Owned Commercial



Engineered Wood Siding Holds Paint longer, Paint fades slower, zero chance of efflorescence, and hail warranty makes TEWS a perfect product for Corporate owned commercial projects

Easier and Faster to Install

- **Engineered Wood Siding** installs about **18%** faster than fiber cement*
- Per square foot, **Engineered Wood** lap siding weighs roughly **40%** less than typical fiber cement lap siding of a similar width and thickness.
- Can be cut with standard wood saw blades and regular dust masks
- Multiple boards can be carried and cut at one time using standard tools



Engineered Wood products are poised for an enlightening future.

Combining advanced technologies in engineered wood along with air, weather and fire technologies into products will revolutionize how we can bring projects to fruition

Questions?

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