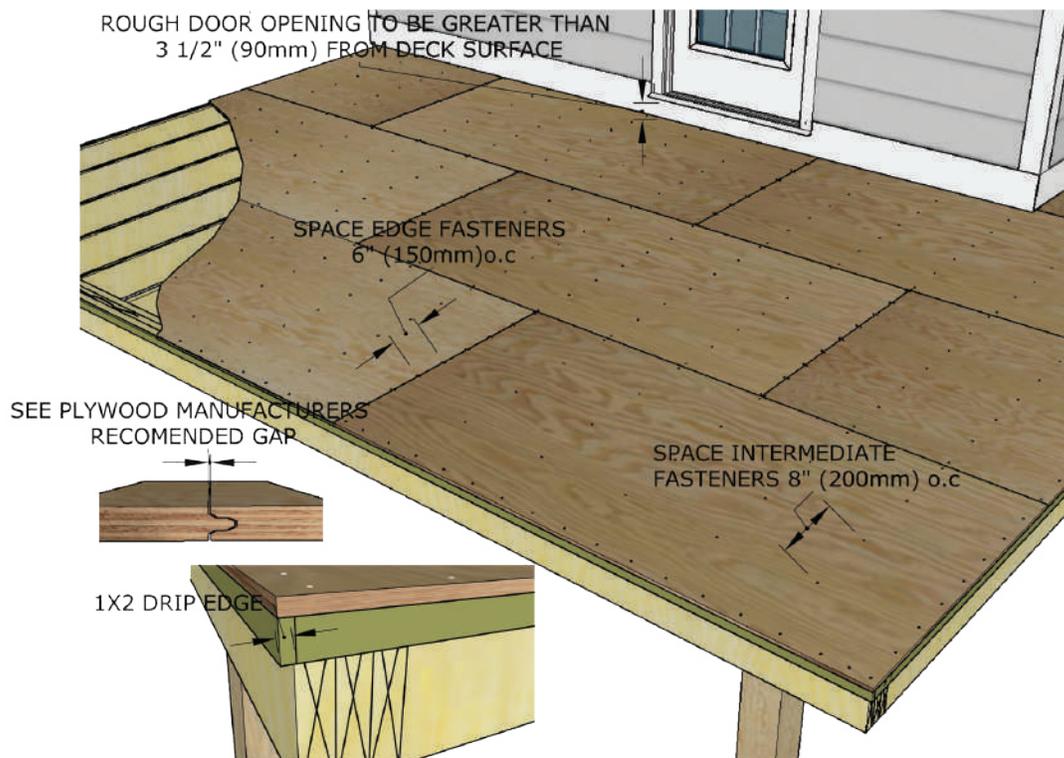


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PLYWOOD SHEATHING & DECK CONSTRUCTION RECOMMENDATIONS



PLYWOOD REQUIREMENTS:

CANADA: TRADEMARK STAMP - CANPLY (Canadian Plywood Association)

Standards - Douglas Fir (FIR) CSA 0121 - DFP & Canadian Softwood (SPF) CSA 0151 - CSP

USA: TRADEMARK STAMP - APA (American Plywood Association). Strudi-Floor Standard: APA PRP-109

Property	Recommended Plywood	Acceptable Plywood
Thickness	23/32" (18.5mm) over joists @16" (400mm) o.c.	19/32" (15.5mm) over joists @ 16" (400mm) o.c.
Grade	Easy T&G - Floor, Select Tight Face (SEL TF)	Easy T&G - Floor, Select Tight Face (SEL TF)
Species	Douglas Fir (FIR)	Canadian Softwood (SPF)
Exposure Durability	Exterior	Exterior or Exposure 1

Fasteners: Recommend 2" #10 exterior wood deck screws either stainless steel or coated with non-staining finish. Slightly recess all fastener heads.

Fastener Spacing: Space fasteners 6" (150mm) o.c. along edges and 8: (200mm) o.c. along intermediate supports.

UNACCEPTABLE SUBSTRATES

Poplar plywood, orientated strand board (OSB), particle board, luaun, panels with medium density overlay (MDO) or high density overlay (HDO), treated plywood (ie: fire treated, pressure treated or panels with field and/or edge sealants) either factory or field applied are not recommended.

Issues arising from improper slope, substrate movement or deflection, etc. are specifically excluded from the Tuff Industries warranty. Please refer to the warranty for further information. The manufacturer or supplier of products (not supplied by Tuff Industries) are responsible for assuring the compatibility and correctness for their use with Tuff Industries PVC Membranes.

General Note: Tuff Industries does not supply framing & sheathing products. Always refer to manufacturer's written instructions & the requirements of authority having jurisdiction before building or altering a deck.

DECK DESIGN & CONSTRUCTION

Structural Design: to governing building code requirements.

FRAMING LUMBER: Install Kiln-dried lumber with crown sides up.

Deflection: minimum allowable deflection of L/360

Joist Spacing: 16" (400mm) o.c. recommended.

Slope: 1/4" per foot (2%) positive to prevent standing water.

Door Openings: Recommend rough door openings to be 3.5" to 6" (90mm to 150mm) above elevation of finished deck. Lower rough openings, as required for handicapped accessible doors, are acceptable. For a comprehensive waterproofing system, the membrane is to be applied into the rough door opening.

Ventilation: Roof joist space or unconditioned areas like crawl spaces to meet governing building code requirements. Adequate ventilation should be provided to the underside of a sundeck when built close to finished grade.

Drains: Place drain(s) at points of maximum deflection, not over columns, beams etc. Any required overflow should be placed in close proximity to the drain(s) and located no more than 2" (50mm) above the deck surface but lower than any other building opening.

PLYWOOD INSTALLATION

Delivery/storage/handling: Avoid damaging plywood panels especially edge surfaces when handling. Store panels in a sheltered place, stacked, separated & with no direct contact with the ground.

Moisture Content: Ideal moisture content of plywood is 12-14% @ 70% relative humidity / 68 deg. F (20 deg.C). To achieve desired MC for new plywood, store panels for 7 days (minimum of 48 hours) as noted above.

Placement: Plywood panels to be installed with the surface grain at right angles to the joists. Install first row of plywood at building side with the "tongue" facing the building. Remove the tongue for tight fit. End joints shall be supported over 2" wood joists. At unsupported joints, install 2" x 4" blocking securely nailed between framing members. Stagger end joints in each succeeding row. Center panels over load bearing beams, wall etc to reduce ridging. Panels to span 3 joists min. At outside drip edge extend plywood to finish line of deck including trims, fascia boards, etc.

Gap: See plywood manufacturer's recommendations

Fasteners: Recommend 2" #10 exterior wood deck screws either stainless steel or coated with non staining finish. Slightly recess all fastener heads.

Fastener Spacing: Space fasteners 6" (150mm) o.c. along edges & 8" (200mm) o.c. along intermediate supports.

Panel Adhesive: Do not apply panel adhesive at any plywood joints or between the panels of a two layer system.

OTHER SUBSTRATE REQUIREMENTS

Two-layer subfloor system is recommended when covering an existing panel that is not a suitable substrate or to achieve a Class "A" rated roof assembly. Do not apply new top layer panel over an existing waterproofed/sealed layer. Existing membrane/sealer must be removed and a new substrate provided.

Recommended Underlayment	Acceptable Underlayment
23/32" (18.5mm) T&G plywood: refer to "Recommended" plywood specifications	19/32" (15.5mm) T&G plywood: refer to "Acceptable" plywood specifications

Two Layer Subfloor Installation: Base layer to be installed as per single layer subfloor instructions as noted above. Top layer to be installed parallel to base layer but offset 1/2 panel in both directions. Fastener, types as noted above, to be of sufficient length to penetrate deck framing at least 1" (25mm).

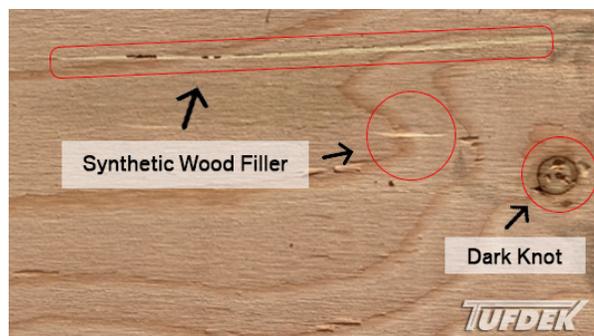
Wall/Parapet/Curb Sheathing requirements: Membrane can be bonded to un-treated dimensional lumber at rough door sill or at curb if the membrane is to be latercovered with metal flashing or wood trim.

Acceptable Wall/Parapet/Curb Sheathing
1/2" (12.5mm) plywood: refer to "Acceptable" plywood specifications

PLYWOOD SURFACE PREPARATION

1. Sand all plywood joints and rows of fasteners with a floor edger or belt sander.
2. Install any necessary flashing or trim ensuring they will not impede the flow of water (recessing drip edge using a planer is best practice).
3. Remove loose knots and pitch pockets then fill all knotholes, depressions or damaged areas of the plywood with Tuff Industries "Deck Patch". Pay particular attention to knots specifically darker colored ones as they can cause discoloration of the vinyl membrane due to pitch and / or adhesive bleeding up into the vinyl.
4. Fill plywood joints as needed.
 - If plywood moisture content is less than 12%: do not fill any gaps.
 - If plywood moisture content is 12% or higher: do not fill gaps 1/16" or less. Double fill gaps 3/32" or more.
 - Membrane may settle into gaps larger than 3/32" which could show under some lighting conditions.
 - "Deck Patch" must never be used on a deck with moisture content above 20%
 - Membrane installer to verify "Deck Patch" bond to substrate prior to installing vinyl.
5. Sand all areas that "Deck Patch" was applied once it has dried. Check patch to confirm bond to substrate.

WARNING: Some plywood grades such as G2S (good two side) and G1S (good one side) contain artificial / synthetic filler material which must be removed prior to installing Tuff vinyl membranes. If removal of synthetic filler material is not an option then they must be covered with two coats of Zinnser Bin Shellac Based Primer Sealer. Pay particular attention to removing, patching or sealing all dark colored plywood knots to reduce risk of discoloration



6. Use a whisk broom or power blower to clean off all debris. Do a final inspection to ensure the deck is suitable for the application of the Tuff Industries membrane. The deck is accepted as being suitable once the membrane installation commences.
7. Installed Spruce-Pine-Fir (SPF) panels should be waterproofed immediately as they are more prone to face checking when left exposed to the elements. Protect plywood from rain & snow after installation to prevent moisture pickup. Do not place tarps directly on wood and use sleepers under tarps to allow for air movement.

Tufdek installers proceed with the expectation that all construction elements of the building/deck meet the building code and if you choose another contractor to prepare the substrate, it complies with our Tuff Industries substrate recommendations.