



BELGARD®
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Tandem® Grid Systems

Tandem® Modular Grid



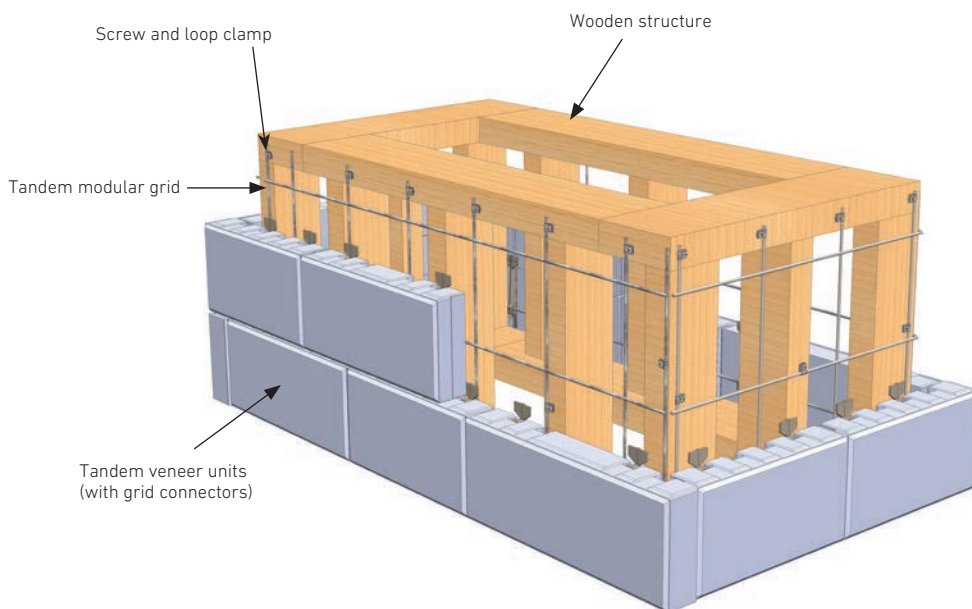
CONSTRUCTION OF OUTDOOR LIVING COMPONENTS (GENERALITY)

The Tandem® system allows you to install different outdoor living components such as outdoor kitchens (barbecue, fridge, bar), patio furniture (bench and table), flower box, outdoor gas fireplace, privacy wall, fencing and deck skirting.

You can easily build all these features if you use the new Tandem modular grid.

OUR SYSTEM HAS MULTIPLE BENEFITS:

- Provides a unified look for all the features of the landscaping design.
- Provides a durable, economical and maintenance-free solution.
- Offers great flexibility and unrestricted creativity regarding the configuration and size of components to be constructed.
- Offers a solution to difficult issues (e.g. deck skirting).
- Eliminates the use of cementitious products (mortar).



Tandem® Modular Grid



BASIC PRINCIPLES

A set of Tandem Modular grids is attached to a treated wood structure. Tandem veneers are then attached to the grids. Since veneer units are manufactured in multiples of 2 5/8", the overall dimensions of outdoor units should always be a multiple of 2 5/8" in order to avoid cuts. The wooden structure should be built taking into account the modular design of Tandem veneers. The same applies to the height, which must be a multiple of 7 1/16". The item is finished off with an appropriate capping module. You can construct a range of outdoor units of various dimensions.

MAIN COMPONENTS OF THE SYSTEM

- Tandem modular grid, 28" × 42 1/2", including stainless steel screws and loop clamps for fastening. A modular grid covers a facing surface of 8.40 sqft. Each modular grid includes a kit of 25 connectors, 10 × 1 1/4" screws and 10 loop clamps.
- Tandem veneer units.
- Galvanized shelf angle (for deck skirting, privacy walls and fences) 2 1/2" × 2 1/2" × 8' (min 10 gauge, Z275 G90 galvanized steel, ASTM A653 Grade 33).
- Concrete capping module (Sold Separately)

OTHER COMPONENTS (SOLD SEPARATELY)

- Treated Wood: 2x4, 2x6 and 2x8 boards, 4x4 or 6x6 posts, 4x8 plywood sheets (all wood should be treated against rot and must be category S-P-F #1 or better). Refer to the various suppliers' specific application sheets for details.
- Fiber cement panels 48" × 96" × 1/2".
- #10 screws of varying lengths, nuts, bolts and washers where required, all in stainless steel. It is not recommended to use treated wood screws (green ceramic) or metal plated screws (zinc, copper or other).
- Hilti Kwik Bolt®-type anchors (for concrete deck skirting).
- Simpson Strong-Tie-type hardware for construction of wood frame for deck.
- Custom countertops made of granite, quartz, marble and natural stone as alternatives to concrete tops.

Tandem® Modular Grid

WOOD FRAMING

You must always take the modular design of Tandem® veneers into account when constructing wood framing. The overall dimensions of outdoor units must always be a multiple of 2 5/8" in length and width and 7 1/16" in height. When installing the framing, remember that grids need a 5/8" space between the veneer and the frame.

Bearing this in mind, the following tables show detailed measurements for the framing of units. These tables are very useful for quickly calculating the actual dimensions of the wood framing and the unit to be constructed to build the component without any veneers cut.

NOTE: When using a Dim A less than 15 13/16 cuts will be needed.

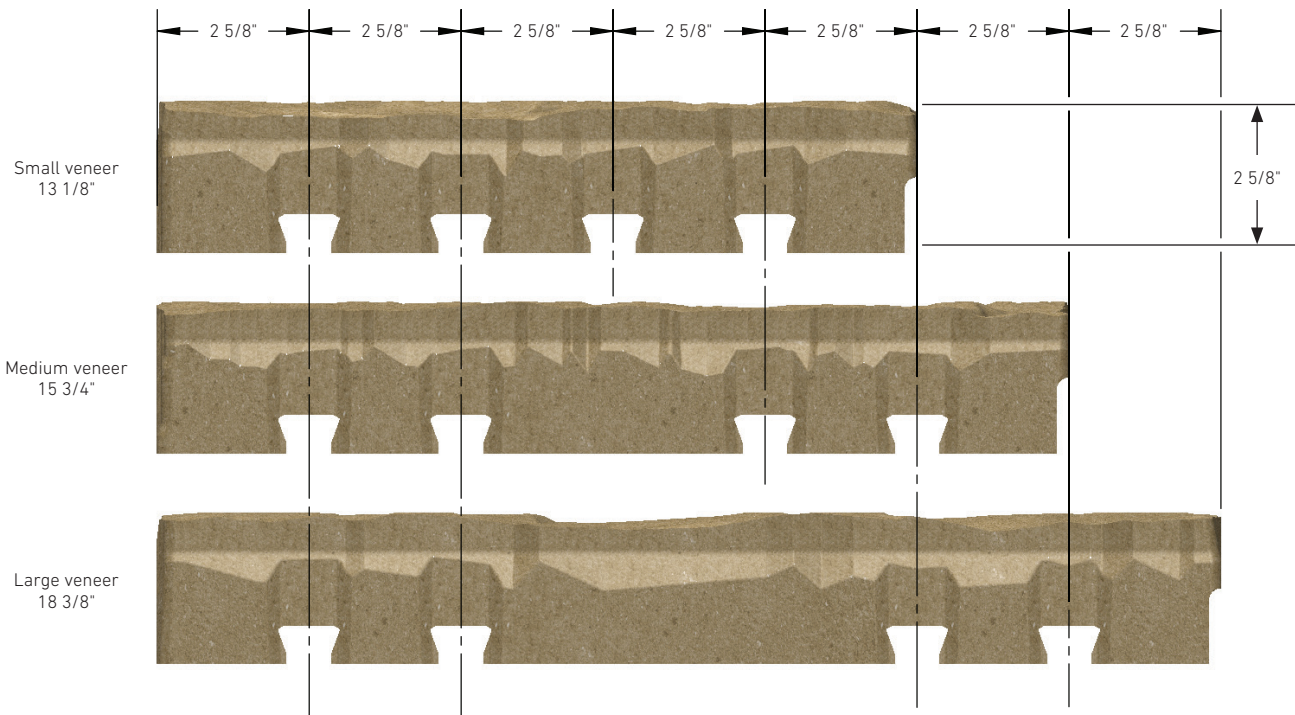
Table of component and its wood frame dimensions based on the modular format of veneers

DIM A (in)	DIM A (mm)	DIM B (in)	DIM B (mm)
7 15/16	201	1 3/8	35
10 9/16	268	4	102
13 3/16	335	6 5/8	169
15 13/16	402	9 5/16	236
18 7/16	469	11 15/16	303
21 1/8	536	14 9/16	370
23 3/4	603	17 3/16	437
26 3/8	670	19 13/16	504
29	737	22 1/2	571
31 5/8	804	25 1/8	638
34 5/16	871	27 3/4	705
36 15/16	938	30 3/8	772
39 9/16	1005	33 1/16	839
42 3/16	1072	35 11/16	906
44 13/16	1139	38 1/4	973
47 1/2	1206	40 15/16	1040
50 1/8	1273	43 9/16	1107
52 3/4	1340	46 1/4	1174
55 3/8	1407	48 7/8	1241
58 1/16	1474	51 1/2	1308
60 11/16	1541	54 1/8	1375
63 5/16	1608	56 3/4	1442
65 15/16	1675	59 3/8	1509
68 9/16	1742	62 1/16	1576
71 1/4	1809	64 5/8	1643
73 7/8	1876	67 5/16	1710
76 1/2	1943	69 15/16	1777
79 1/8	2010	72 5/8	1844
81 3/4	2077	75 1/4	1911
84 7/16	2144	77 7/8	1978
87 1/16	2211	80 1/2	2045
89 11/16	2278	83 1/8	2112
92 5/16	2345	85 3/4	2179
94 15/16	2412	88 7/16	2246
97 5/8	2479	91 1/16	2313
100 1/4	2546	93 11/16	2380
102 7/8	2613	96 5/16	2447
105 1/2	2680	99	2514

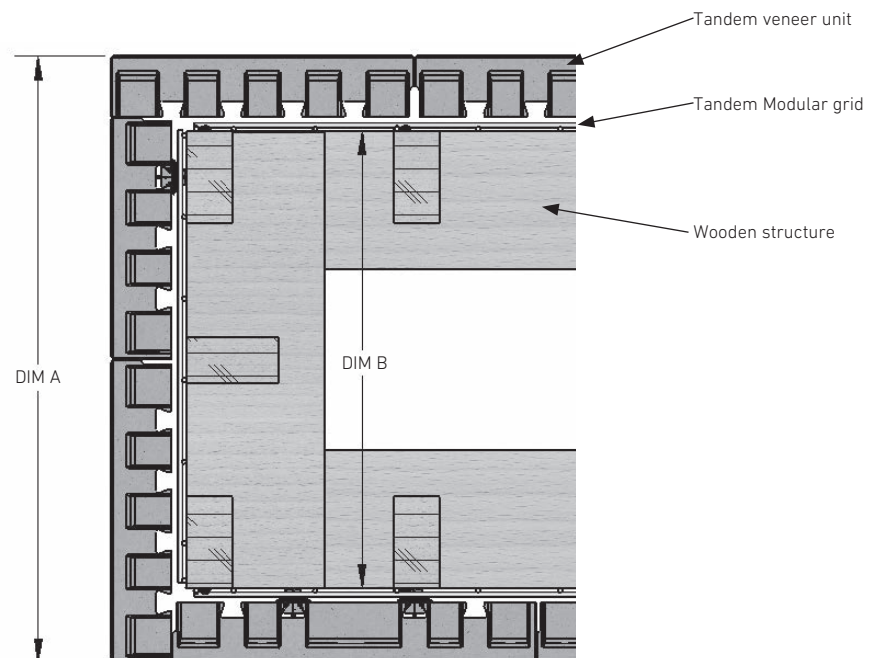
Tandem® Modular Grid



TANDEM VENEER UNITS – MODULAR DESIGN



TYPICAL COMPONENT – PLAN VIEW

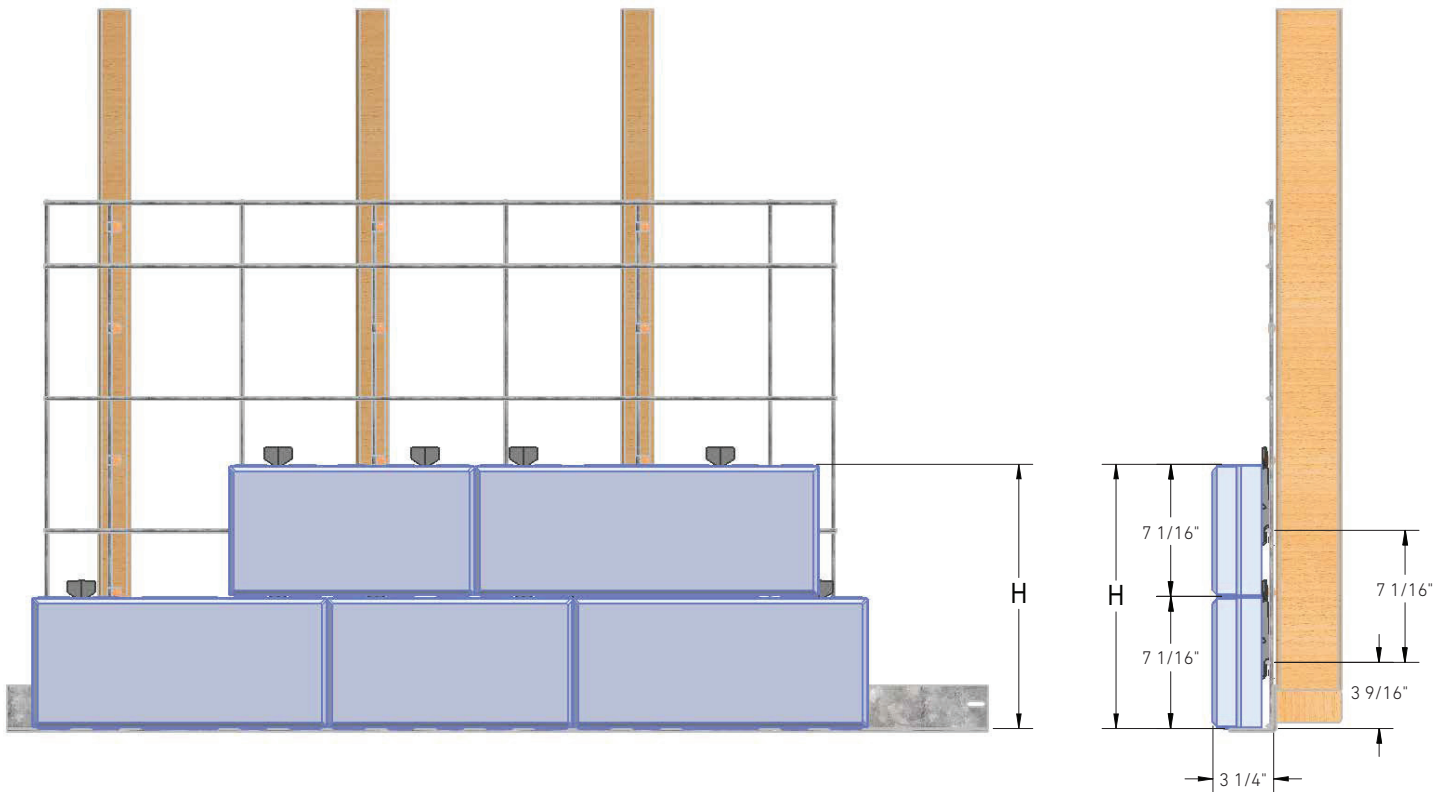


Tandem® Modular Grid

TYPICAL COMPONENT – SIDE VIEW

Table – Height of components and its wood frame according to the modular design of veneer units (90 mm)

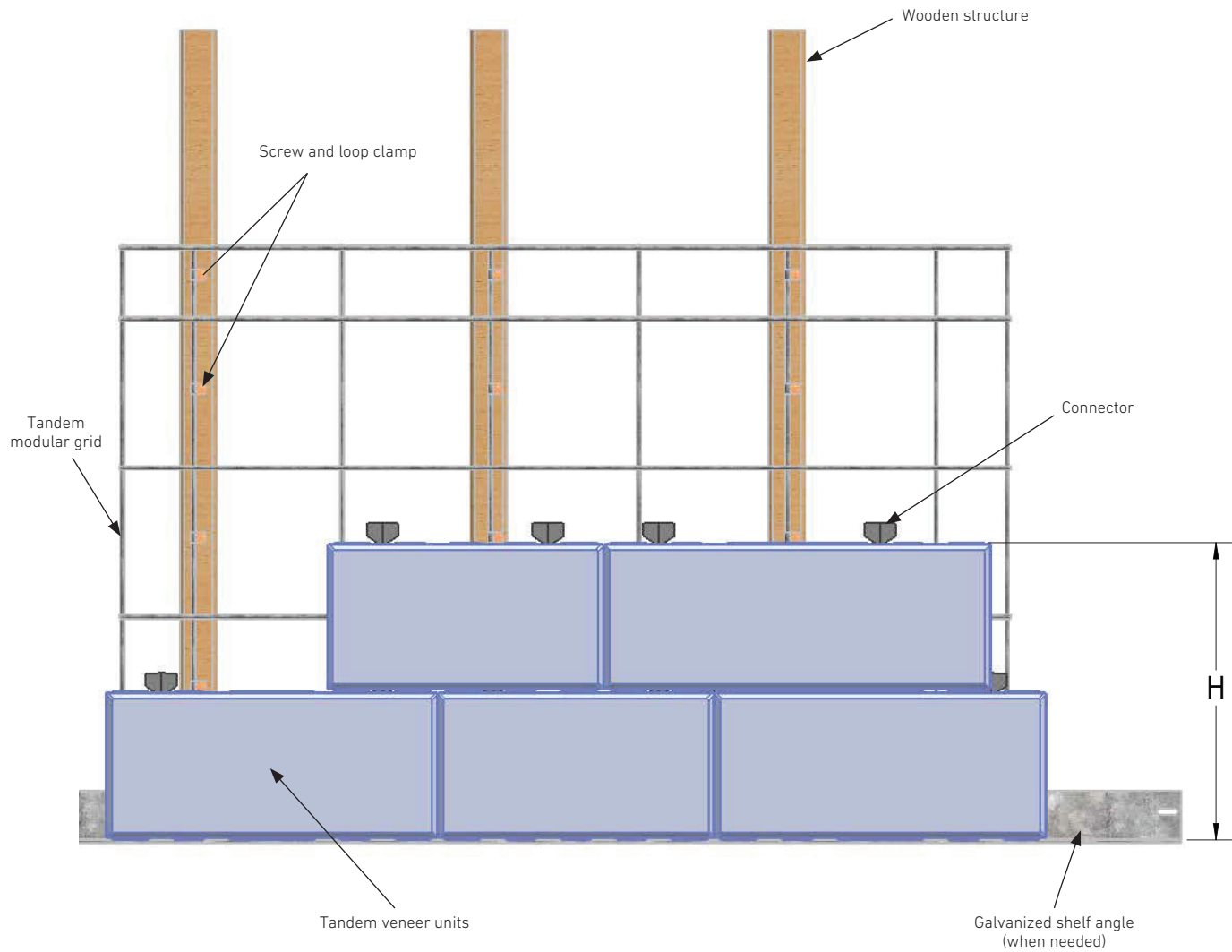
OF ROWS	HEIGHT (in)	HEIGHT (mm)
1	7 1/16	180 mm
2	14 3/16	360 mm
3	21 1/4	540 mm
4	28 5/16	720 mm
5	35 7/16	900 mm
6	42 1/2	1080 mm



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TYPICAL COMPONENT –
FRONT VIEW



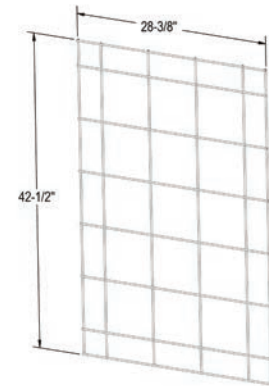
Tandem® Modular Grid

TANDEM MODULAR GRID

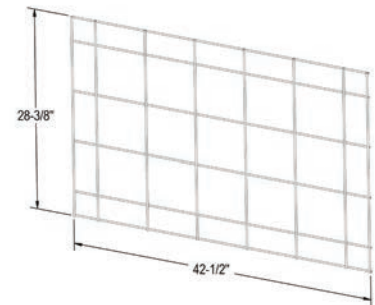
It is important to note that the units to be constructed must always be straight and have corners (inner and outer) forming a 90° angle. Therefore, making a corner is a common element in all construction plans. You can also refer to the plan view detail (page 5) to see how to make a 90° corner, taking into account the modular design of Tandem veneers and grids. When building the wood frame, keep in mind that you have to install Tandem grids. The flexibility of the grids are reversible meaning you can install it either, horizontally or vertically. Being able to rotate the grid increases installation and application versatility.

DETAIL 1

VERTICAL INSTALLATION



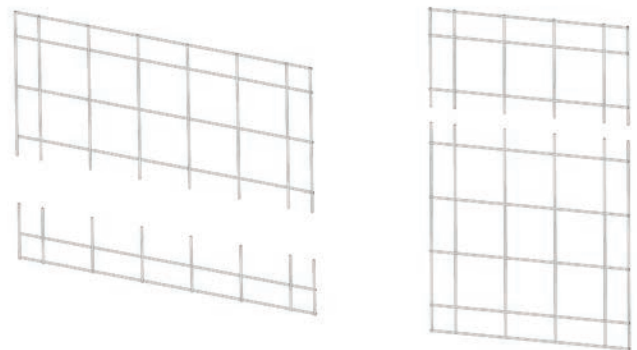
HORIZONTAL INSTALLATION



You have to cut the grids when the unit you're building is smaller in size (height or length) than a complete grid of 28" or 42 1/2". It may be helpful to decide the direction of the grid so as to minimize cuts. To cut a grid, use any suitable tool like a grinder or bolt cutters.

To avoid making cuts in the veneers, simply follow the dimensions based on the modular design of the veneers shown in the previous tables (page 4).

NOTE: Cuts on grids must be made at the top. The first horizontal rod/rung is at mid-height of the veneer. Keep cut grids facing up and do not install a cut grid directly on ground/base layer.



Tandem® Modular Grid

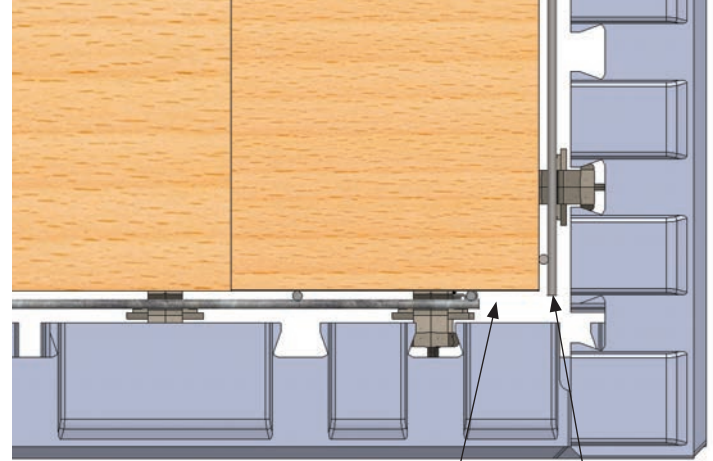


The grid is attached with the loop clamps and screws supplied. Simply place the loop clamps around the vertical rods of the grid and then insert a screw into the wood frame. There are 10 loop clamps per Tandem grid. To secure a grid, the loop clamps should be evenly positioned, starting with the edge of the grid and moving towards the center. To ensure the solidity of the grid, use approximately one fastener (screw and loop clamps) per square foot of grid or 10 fasteners per square meter. To attach a grid to the wood frame, the vertical rods must be placed directly against the structure (see detail 1 on page 8).

Since the metal rods of the grids are spaced every $7 \frac{1}{16}$ ", it's helpful if the intermediate posts of the wood framing are multiples of $7 \frac{1}{16}$ ". This will increase the available attachment area for the grid. A continuous attachment area like plywood sheeting can also be used to provide a larger surface for attaching the Tandem grid.

When a unit requires more than one grid they should be installed one after the other. Install grids above or directly next to the previous grid.

DETAIL 2

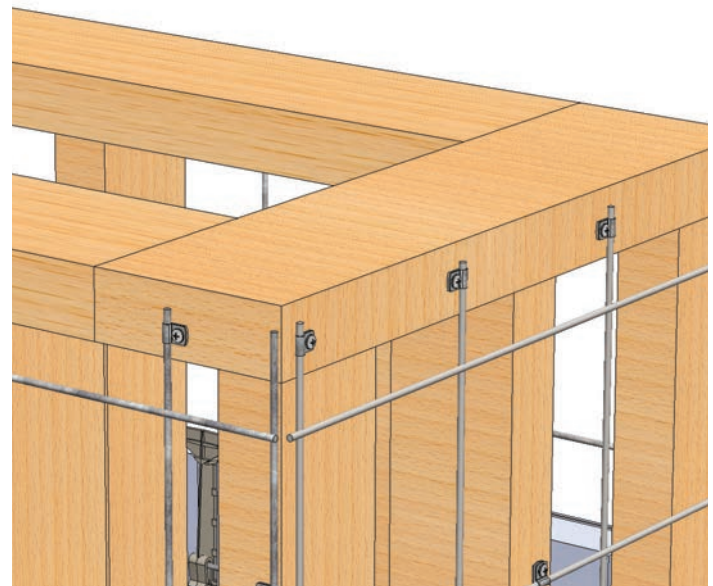


CUTTING INSTRUCTION OF MODULAR GRID (PLAN VIEW)

Keep the last vertical rod intact for better fixation

Leave free space to attach the loop changes

3D VIEW



VERTICAL RODS
PLACED AGAINST
WOOD STRUCTURE



HORIZONTAL RODS
PLACED AGAINST
WOOD STRUCTURE



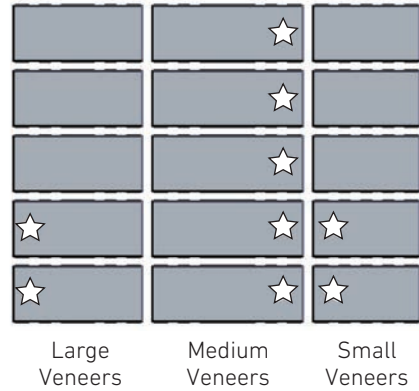
The horizontal rods should always be out.

TANDEM VENEERS

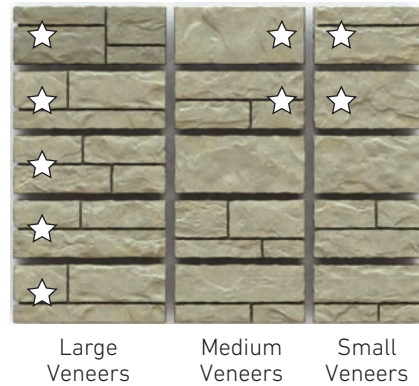
When the grids have been installed, just insert the veneers for the unit using the connectors specially designed for the purpose. We recommend using a minimum of 2 connectors per veneer for a solid job, but sometimes it can happen that a connector can't be inserted because of the grid's geometry. You can then secure the veneer by gluing it around other veneers with a construction adhesive.

Normally, for a standard project, all formats of the veneer units are used randomly. As for retaining walls, always keep in mind the principle of staggering the vertical joints from one row to another to avoid unsightly stack bonds. For the corners, you need corner units just like constructing a pillar with steel grids (see "Building Pillars" section). But it should be noted that sometimes the construction of a short unit requires a larger quantity of the same format veneers, especially corner units (the quantity of corner units supplied comes to approximately one-third of a pallet). It is important to check this when calculating the quantity so as to have enough of the appropriate veneers on hand. Large veneers have a textured finished edge and should be used often. In some instances a small veneer will need to be used; small veneers also have a finished/ textured edge.

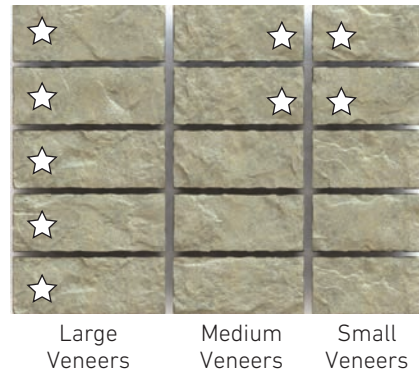
BACK VENEER



TANDEM ASHLAR WALL FRONT VENEER



TANDEM WALL FRONT VENEER



☆ = Corner Unit

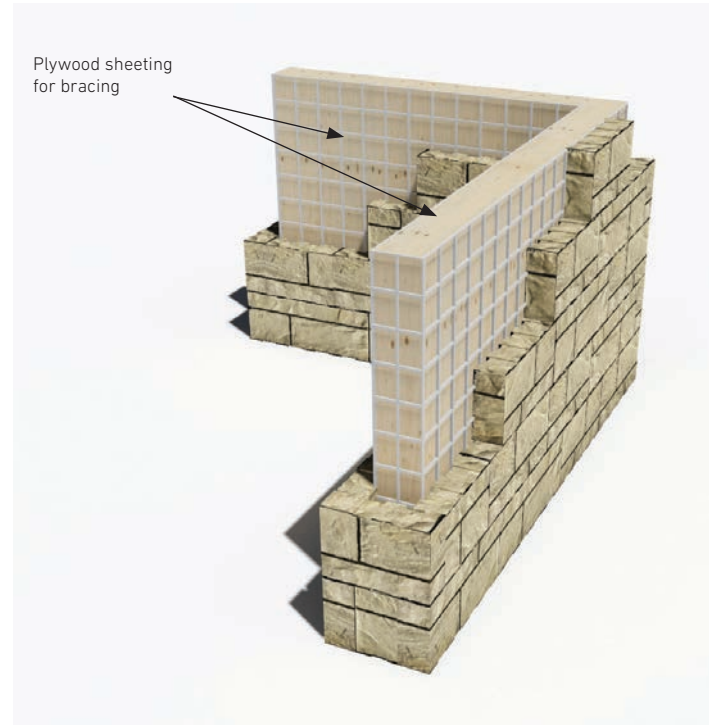
Tandem® Modular Grid



BRACING

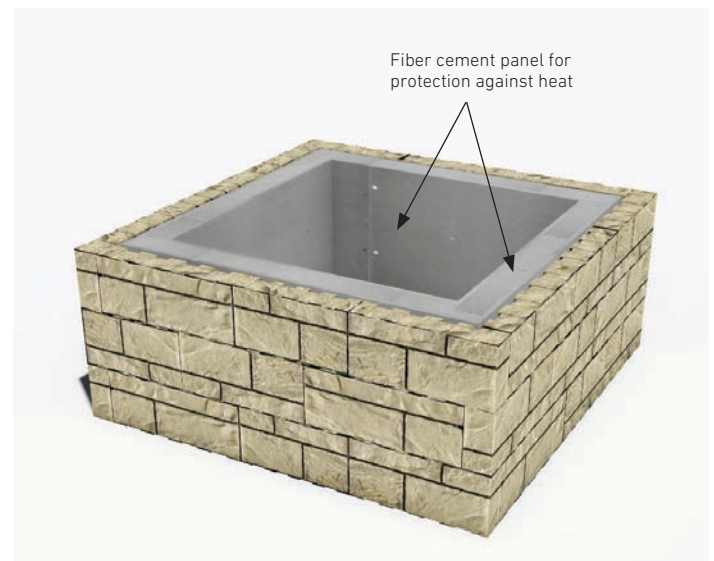
Some items require bracing panels like plywood sheeting, especially for privacy walls, fencing and deck skirting. These panels are needed to strengthen the wooden structure to withstand stress such as wind and to limit distortion under regular loads.

EXAMPLE OF BRACING (PRIVACY WALL)



Other units require the installation of fiber cement panels for heat insulation (barbecues and outdoor gas fireplaces) or as protection against moisture (flower boxes). In these situations, we recommend fiber cement panels of a minimum thickness of 1/2".

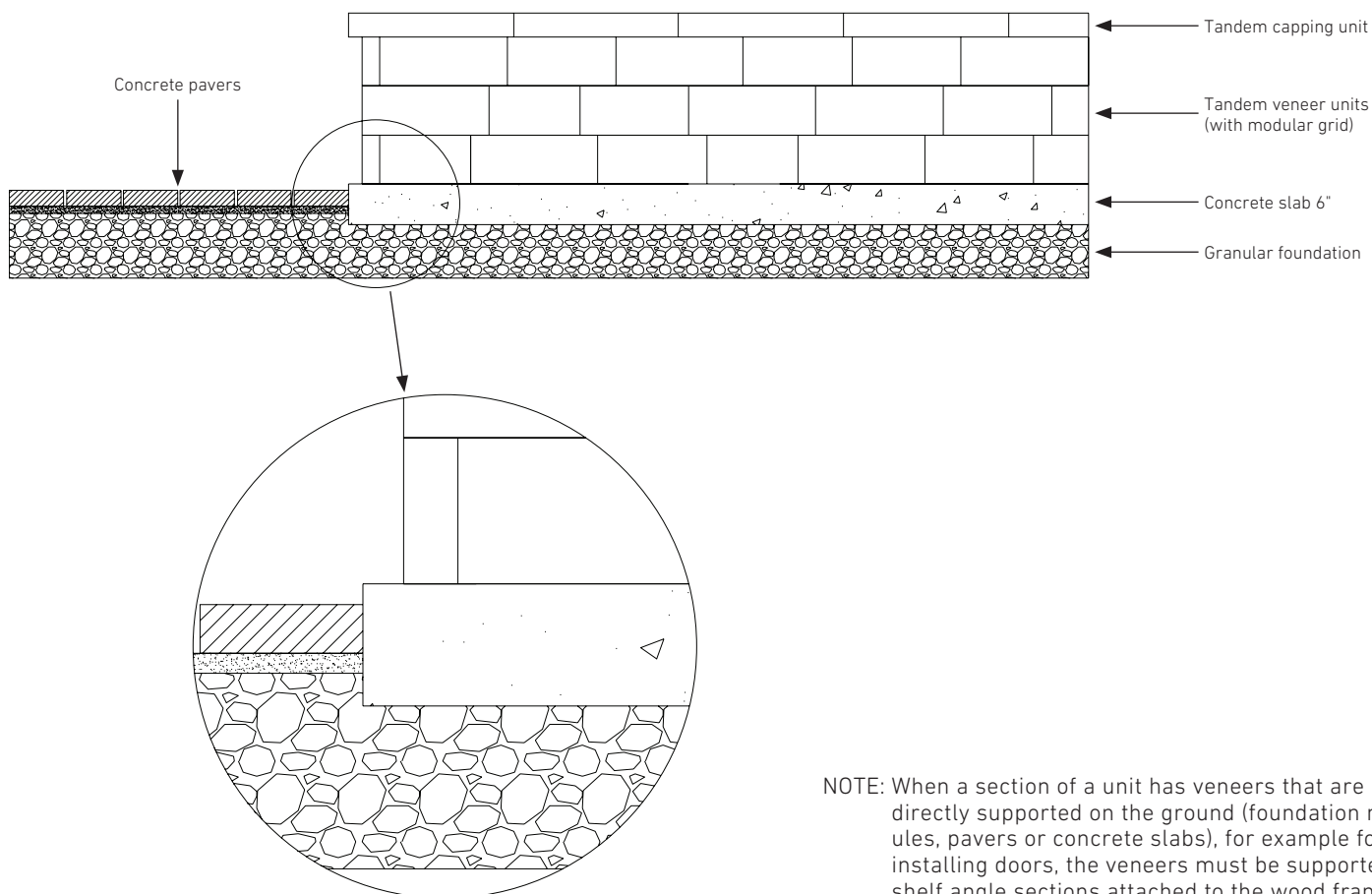
EXAMPLE OF A HEAT PROTECTION SET-UP



BASE SUPPORT FOR OUTDOOR UNITS

Outdoor units like a bench, flower box or outdoor fireplace can usually be built on a base of concrete foundation (starter modules) or placed directly onto concrete pavers. A granular base of compacted crushed stone should be laid before the foundation. However, we recommend that long or heavy units be supported on a concrete slab (minimum thickness of 6"). We also recommend that units like barbecues or tables with a single granite, quartz or marble top over their entire surface be supported on a reinforced concrete slab to prevent the top from breaking if the ground shifts. In each case, a compacted granular base should underlie the concrete slab.

COMPONENTS SUPPORTED ON A CONCRET SLABS – CROSS SECTION



NOTE: When a section of a unit has veneers that are not directly supported on the ground (foundation modules, pavers or concrete slabs), for example for installing doors, the veneers must be supported on shelf angle sections attached to the wood frame.

CONSTRUCTION LUMBER

Building the different units in this guide requires construction lumber for the framing: 2 × 4, 2 × 6 and 2 × 8 boards, 4 × 4 and 6 × 6 posts and plywood sheets. We recommend that all wood used outdoors be treated against rot according to established procedures approved by your local municipality/regional housing association. You should use S-P-F #1 or #2 wood, or better. This type of wood usually has a minimum life of 15 years without maintenance in normal outdoor conditions.

NOTE : Wooden components that have been cut or sawed should be treated with an anti-rot product.

COMPLIANCE WITH CONSTRUCTION STANDARDS

In all circumstances, units to be constructed must always comply with the requirements of the National Building Code (version specific to your region) and local municipal bylaws and regulations.



CONSTRUCTION OF OUTDOOR LIVING COMPONENTS WITH THE TANDEM MODULAR GRID

BUILDING AN OUTDOOR GAS FIRE PIT

Note that the only type of fireplace recommended for this type of construction is a propane gas or natural gas fireplace. A wood fireplace is not recommended.

Construction should begin with laying a solid foundation that is leveled, compacted and well-drained.

The wood framing must be built according to the type of fireplace chosen. Dimensions are calculated using the data on shop drawings provided by the fireplace manufacturer. It may be necessary to add some extra parts like plywood shims for adjusting to the exact modular dimensions of the fireplace (Tandem modular veneers according to the wood frame design).

It is essential to install heat insulation. A fiber cement panel of a minimum thickness of 1/2" is recommended for adequate protection. The panels must be installed all around the heating element (burner).

You must also plan to install conduits in the ground for gas pipes and for electric cables if required.



Tandem® Modular Grid



BUILDING AN OUTDOOR KITCHEN

BARBECUE, REFRIGERATOR, BAR

The wood frame must be constructed according to the type of barbecue chosen. Dimensions are calculated using data on the shop drawings provided by the barbecue manufacturer. Additional accessories such as a refrigerator or integrated cabinet doors are also possible. Naturally, you have to plan on adding pieces of wood to attach accessories to the wooden structure, like a frame in the case of doors. When purchasing supplies and appliances, you will usually find moldings to finish the edges (i.e. flange covering gap between accessories and stones).

It is essential to install protection from heat and sparks. A fiber cement panel of a minimum thickness of 1/2" or a double-skinned steel section if provided by the BBQ manufacturer is recommended for adequate protection. The panels must be installed all around the heating element (burner).

Finish off with concrete coping or panels of granite, quartz, marble or natural stone. The panels must be made to measure by specialized companies. You must make special provisions for handling and installation to avoid possible breakage. The panels are attached on top of the plywood with silicone adhesive to prevent movement.

Provide adequate means for venting gases when constructing the barbecue. (Refer to the barbecue manufacturer's recommendations for the position and size of the ventilation grid required).

You should also plan to install conduits for gas pipes and electric cables. The conduits may in certain cases be installed in the ground.

NOTE: Please refer to the operator's manual of your grill to ensure the correct ventilation is being included/installed. Each unit is different and in some cases vents are needed while in others they are not required. Consult with your grill manufacturer if needed.

BUILDING PATIO FURNITURE (TABLE AND BENCH) AND FLOWER BOX

TABLE

You can make a table by building a Tandem® unit (grid and veneers) to form the base and then adding a tabletop. The tabletop can be wood, granite, quartz, marble or natural stone.

Dimensions may vary. It is essential to leave a minimum space between the table edge and the base. At least 18" is needed for leg room.

Note: Larger overhangs will require supports.

Granite, quartz or marble tabletop: the tabletop must be attached to the veneers with a silicone adhesive. We recommend that a tabletop resting on a Tandem unit be made from a single piece to increase rigidity and stability. This allows you to avoid adding a metal fastener to secure the tabletop to the structure for increased stability and extra protection where necessary. For very large tabletops, it is recommended to install steel supports (angles) to better stabilize the whole unit. You should enquire from the tabletop supplier what are the optimal sizes and thicknesses for stability and security and to avoid possible breakage.



BENCH

You can make a bench by building a structure for the base and simply adding a concrete coping unit for the seat. Bench dimensions can vary, but it may be helpful to make your decision based on available coping units in order to avoid cuts. For a typical bench, the coping will be of the Tandem cap (15" x 24" 3 1/4").



FLOWER BOX

It is recommended to install a fiber cement panel and a geomembrane to protect the wood against deterioration caused by vegetable and mineral materials (plants and soil). You should provide water drainage when building the structure.

For the coping, use Tandem cap (15" x 24" 3 1/4") products for retaining walls.



Tandem® Modular Grid



BUILDING PRIVACY WALLS AND FENCES

When you're building a fence or when you want to hide or conceal various pieces of equipment (e.g. pool filter, heat pump) or utility items (e.g. trashcans or storage bins), the Tandem® modular grid system is just what you need.

Fencing is mostly built with treated wood posts (structural, select quality) supported by cast-in-place concrete foundations (Sonotubes) for the main structure. An intermediate structure in treated wood boards is then installed between the posts to attach the fence components of Tandem modular grids and veneers. A shelf angle is fixed to the base of the structure to provide continuous support for the weight of the veneers. The shelf angle (2 1/2" x 2 1/2" x 8') is attached to the base of the structure (wood poles and boards forming the stringer) with suitable screws (#10 x 3 1/2") every 8". This shelf angle can be cut to the size of the unit under construction.

The wooden structure between the posts, combined with the shelf angle, supports the weight of the walls and transfers it to the foundations. Fences and privacy walls must rest on pillars (Sonotubes) and concrete foundations to transfer the weight of the walls to the ground. The foundations are also necessary to prevent the walls from collapsing due to the force of the wind.

The dimensions of the foundations in this guide were calculated to respect the weight-bearing capacity of the soil and to limit irregular subsidence that could lead to distortions in the wall. Calculations were made for soil conditions of an allowable bearing capacity of ≥ 1800 psf. For different soil conditions, we recommend consulting a qualified engineer. The foundation must be built to withstand local frost conditions. The depth of frost in this guide is 6'. The use of screw piles is not recommended for this type of application.

Privacy walls are made with the same main structure to which a perpendicular section is added to obscure non-aesthetic items.

The maximum height of a fence or a privacy wall is limited to 6 ft.

The maximum length of a wall facade between posts is 8 ft.

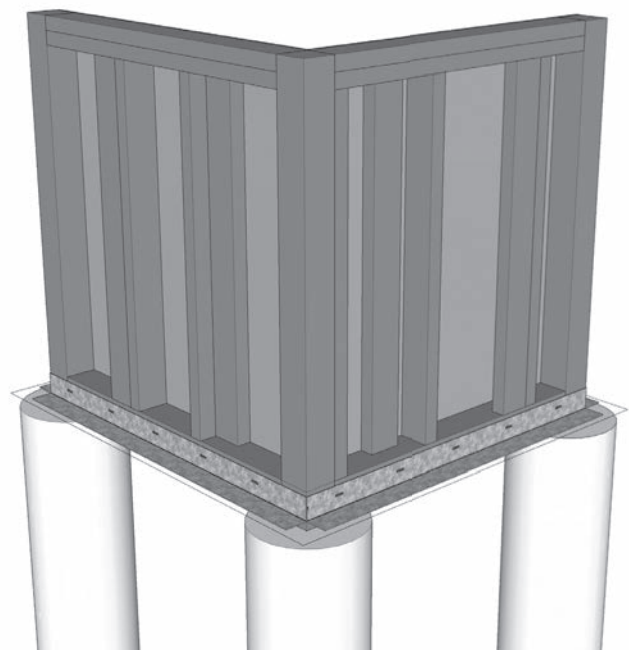
The unit can be built to display its aesthetic appearance on one side or both sides simultaneously.

The wood frame must integrate a bracing panel such as a sheet of 1/2" treated plywood to provide a continuous attachment area and stabilize the structure to withstand loads. To finish the walls, attach a cap on top of the wood frame, either in concrete (sizes to be decided on site) or metal (custom bent by a specialized company). Tandem cap (15" x 24" x 3 1/4") can be used to finish the top of a fence or privacy wall. Only if the top of the wall is roughly 12" wide.

The capping unit is fixed with a suitable concrete adhesive spread on the wooden structure and the top of veneers. It may be useful to fix the wooden structure to the concrete cap with a metal attachment to provide additional wind protection.



PRIVACY WALL ON CONCRETE PILLAR (SONOTUBE) - CONSTRUCTION DETAILS OF WOODEN STRUCTURE



Since unit components will vary according to height from zero to 1.8 m (6'), we present the main minimum requirements in table form.

DESIGN DATA FOR FENCES

Fence with veneer on one side

HEIGHT	Ø PILASTER	FOOTING	EMBEDDING POST	POST	STRUCTURE
0 to 4 ft – Option 1	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	4 × 4*	2 × 4
0 to 4 ft – Option 2	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	4 × 4*	2 × 4
0 to 4 ft – Option 3	24 in / 600 mm	N/A	24 in / 600 mm	4 × 4*	2 × 4
4 to 5 ft – Option 1	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6
4 to 5 ft – Option 2	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	6 × 6**	2 × 6
5 to 6 ft – Option 1	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6
5 to 6 ft – Option 2	12 in / 300 mm	20 in × 20 in / 500 mm × 500 mm	24 in / 600 mm	6 × 6**	2 × 6

Fence with veneer on both sides

HEIGHT	Ø PILASTER	FOOTING	EMBEDDING POST	POST	STRUCTURE
0 to 4 ft – Option 1	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	4 × 4*	2 × 4
0 to 4 ft – Option 2	12 in / 300 mm	20 in × 20 in / 500 mm × 500 mm	24 in / 600 mm	4 × 4*	2 × 4
4 to 5 ft – Option 1	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6
4 to 5 ft – Option 2	12 in / 300 mm	20 in × 20 in / 500 mm × 500 mm	24 in / 600 mm	6 × 6**	2 × 6
5 to 6 ft – Option 1	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6
5 to 6 ft – Option 2	12 in / 300 mm	22 in × 22 in / 550 mm × 550 mm	24 in / 600 mm	6 × 6**	2 × 6

DESIGN DATA FOR PRIVACY WALLS

Wall with veneer on one side

HEIGHT	Ø PILASTER	FOOTING	EMBEDDING POST	POST	STRUCTURE
L1 and L2 Configuration = 1.2 m (4 ft)					
0 to 3 ft	16 in / 400 mm	N/A	24 in / 600 mm	4 × 4*	2 × 4
3 to 6 ft – Option 1	24 in / 600 mm	N/A	24 in / 600 mm	6 × 6	2 × 6
3 to 6 ft – Option 2	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	6 × 6	2 × 6
3 to 6 ft – Option 3	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6	2 × 6
L1 Configuration = 2.4 m (8 ft) and L2 = 1.2 m (4 ft)					
0 to 4 ft – Option 1	24 in / 600 mm	N/A	24 in / 600 mm	4 × 4*	2 × 4
0 to 4 ft – Option 2	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	4 × 4*	2 × 4
4 to 5 ft – Option 1	24 in / 600 mm	N/A	24 in / 600 mm	6 × 6**	2 × 6
4 to 5 ft – Option 2	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	6 × 6**	2 × 6
4 to 5 ft – Option 3	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6
5 to 6 ft – Option 1	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	6 × 6**	2 × 6
5 to 6 ft – Option 2	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6

Wall with veneer on both sides

HEIGHT	Ø PILASTER	FOOTING	EMBEDDING POST	POST	STRUCTURE
L1 and L2 Configuration = 1.2 m (4 ft)					
0 to 4 ft	16 in / 400 mm	N/A	24 in / 600 mm	4 × 4*	2 × 4
4 to 6 ft – Option 1	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	6 × 6**	2 × 6
4 to 6 ft – Option 2	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6
L1 Configuration = 2.4 m (8 ft) and L2 = 1.2 m (4 ft)					
0 to 3 ft	24 in / 600 mm	N/A	24 in / 600 mm	4 × 4*	2 × 4
3 to 4 ft – Option 1	12 in / 300 mm	16 in × 16 in / 400 mm × 400 mm	24 in / 600 mm	4 × 4*	2 × 4
3 to 4 ft – Option 2	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	4 × 4*	2 × 4
4 to 6 ft – Option 1	12 in / 300 mm	20 in × 20 in / 500 mm × 500 mm	24 in / 600 mm	6 × 6**	2 × 6
4 to 6 ft – Option 2	12 in / 300 mm	Ø 24 in / 600 mm	24 in / 600 mm	6 × 6**	2 × 6

N/A: Not Applicable * 4 × 4 SFP Wood Select Structural ** 6 × 6 #1 SFP Wood

PLAN VIEW

L1

L2

It should be noted that the base of concrete pillars should normally have a wider section in the ground for a footing. The footing can take two shapes, square or round. There are round footings on the market, sold as Bigfoot, which can be used for the construction of pillars. Square footings must be made on site with wooden formwork.

Tandem® Modular Grid



DESIGN ASSUMPTIONS

The construction of privacy walls or fences must take into account the following assumptions:

Wall weight (grid and veneers): 28 lbs/sq ft

Wind: 20 lbs/sq ft

Minimum allowable bearing capacity of soil: 1,575 lbs/sq ft

Density of soil around pillars and foundations (γ): 115 lbs/cu ft

Backfill must be compacted around Sonotubes and spread footings

Minimum depth of foundations: 6 ft away from frost (consult an engineer to check the typical depth of frost for your area)

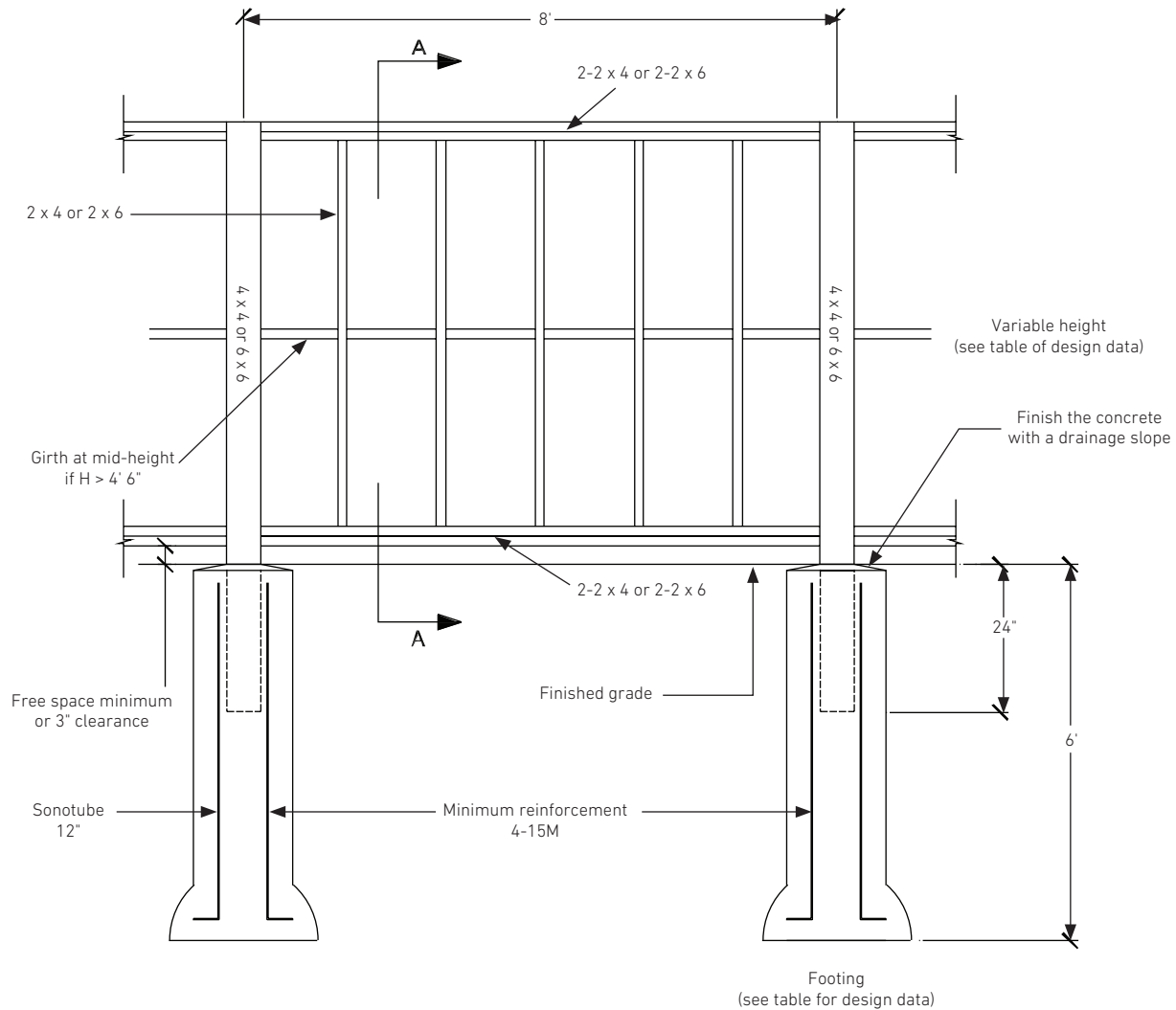
NOTE: Design assumptions do not take into account earthquake effects. It may be necessary to consult an engineer.

Leave a free space under the Tandem® wall of at least 3" to ensure proper ventilation and adequate room for the potential effects of freezing and thawing.



Tandem® Modular Grid

PRIVACY WALLS AND FENCES – TYPICAL FRONT VIEW



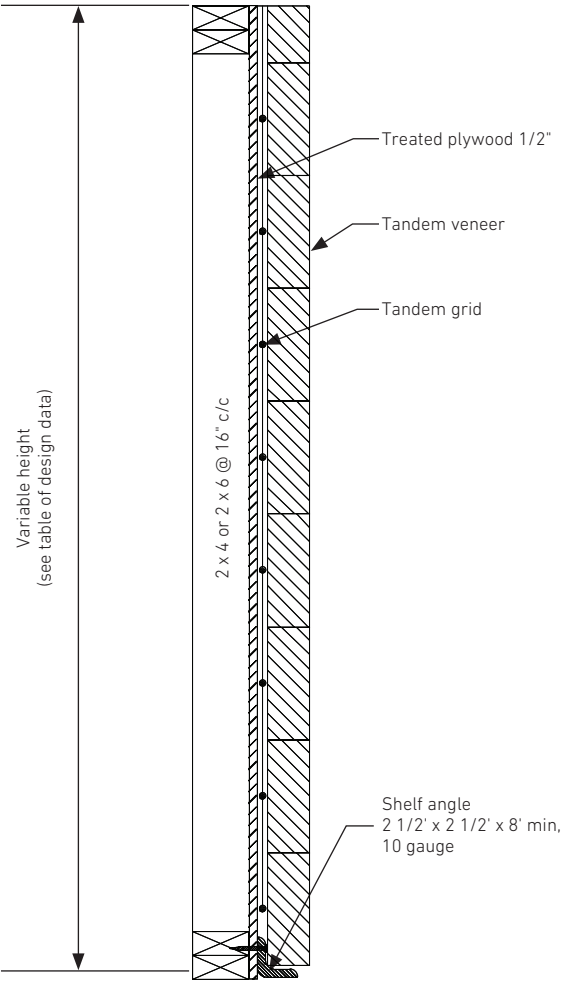
NOTE: The details shown here are only valid for the application suggested in this guide, taking into account the prescribed limitations. You are strongly recommended to engage a structural engineer or specialist in the field to validate structural design details for other configurations or for different soil conditions (lower or higher load capacity, presence of blocks, support on rock, etc.).

Tandem® Modular Grid

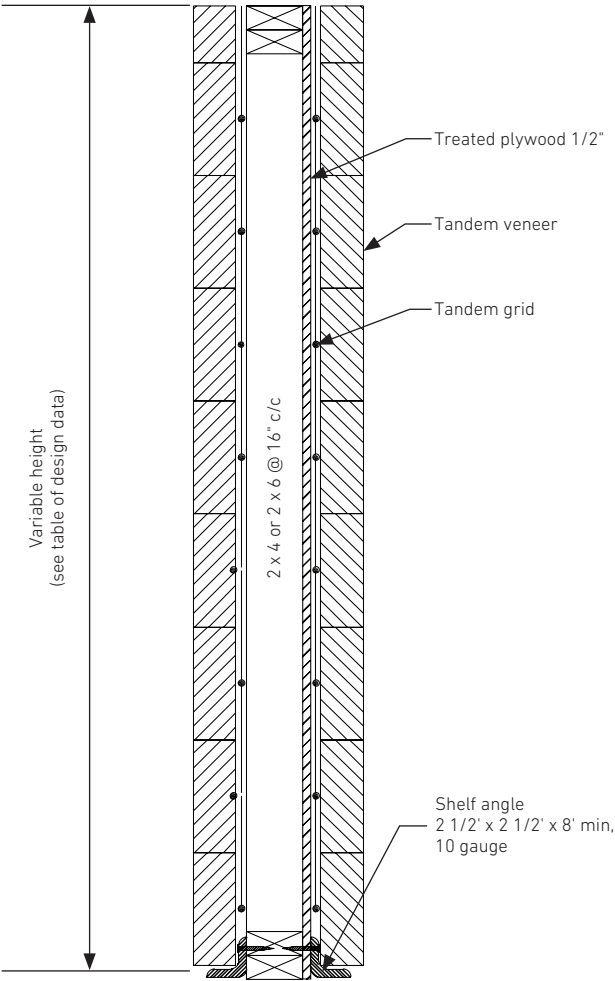


PRIVACY WALLS AND FENCES –
CROSS-SECTION A-A

ONE-SIDED

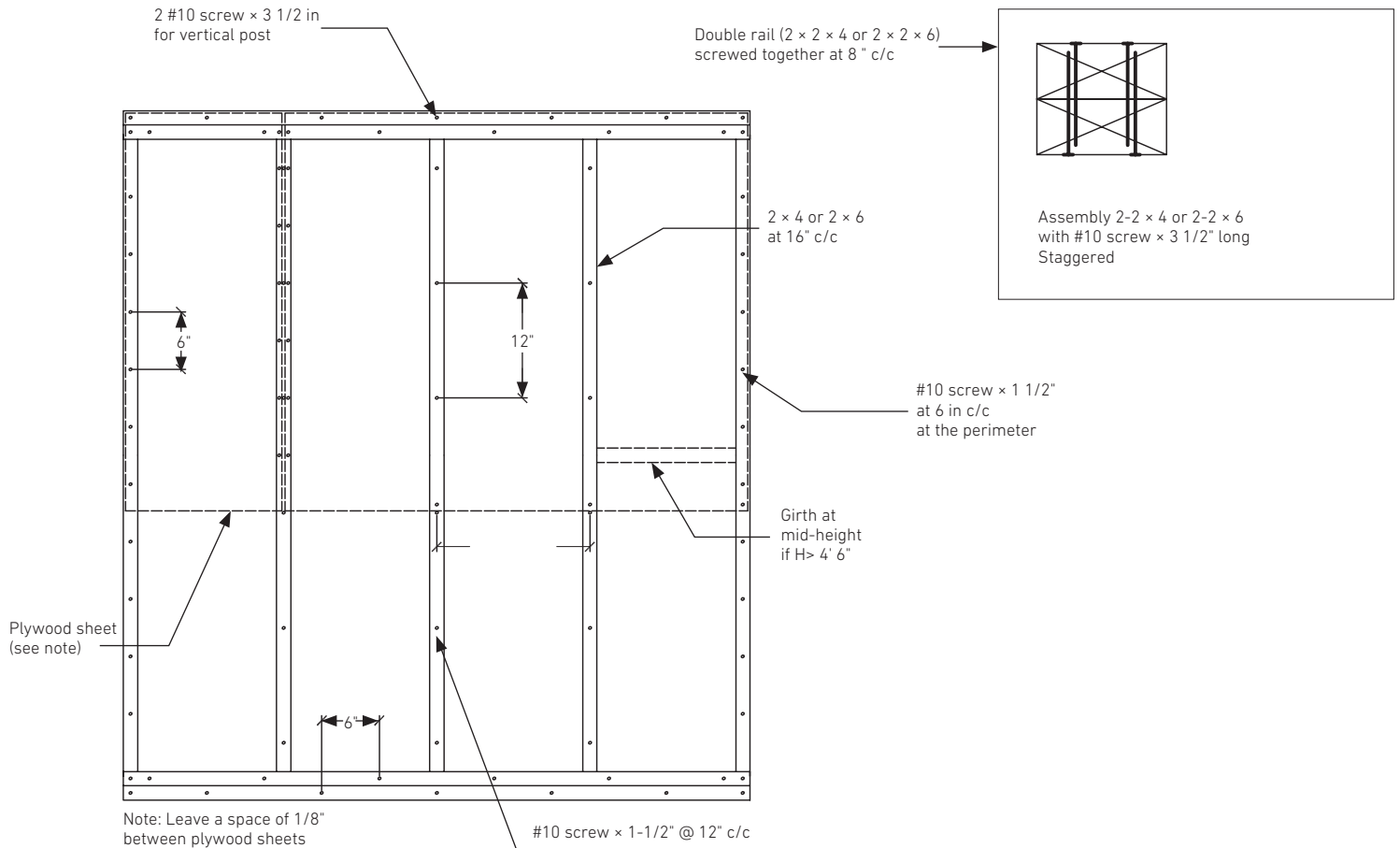


DOUBLE-SIDED



Tandem® Modular Grid

SCREW DIAGRAM OF COMPONENTS OF WOODEN STRUCTURE



Tandem® Modular Grid



BUILDING DECK SKIRTING

Applications: new wood or concrete decks, or existing concrete decks. Another application of the Tandem® grid consists of covering the free space under a deck by building a Tandem wall around it. Tandem veneers are supported by a galvanized shelf angle and a wood frame fixed to the deck (wood or concrete). The wood frame consists of treated plywood to provide a continuous attachment area for the grid, and vertical bracing to stabilize the structure and withstand lateral loads such as the wind. The whole structure is supported by appropriate foundations (screw piles for wooden decks and concrete foundations for concrete decks).

Maximum height of Tandem wall: 5'.

To install deck skirting on existing concrete structures, you must first ensure that the initial structure (the deck itself) can bear the additional weight of new covering components: wooden structure, shelf angle and Tandem veneers. For this kind of project, it is strongly recommended to engage a structural engineer or specialist in the field to validate the structural design details for adequate load bearing.

In all cases, it is necessary to minimally comply with the design criteria shown below:

Wall weight (grid and veneers): 28 lbs/sq ft

Wind: 20 lbs/sq ft

Overload: 40 lbs/sq ft

NOTE: Design assumptions do not take into account earthquake effects. It may be necessary to consult an engineer.

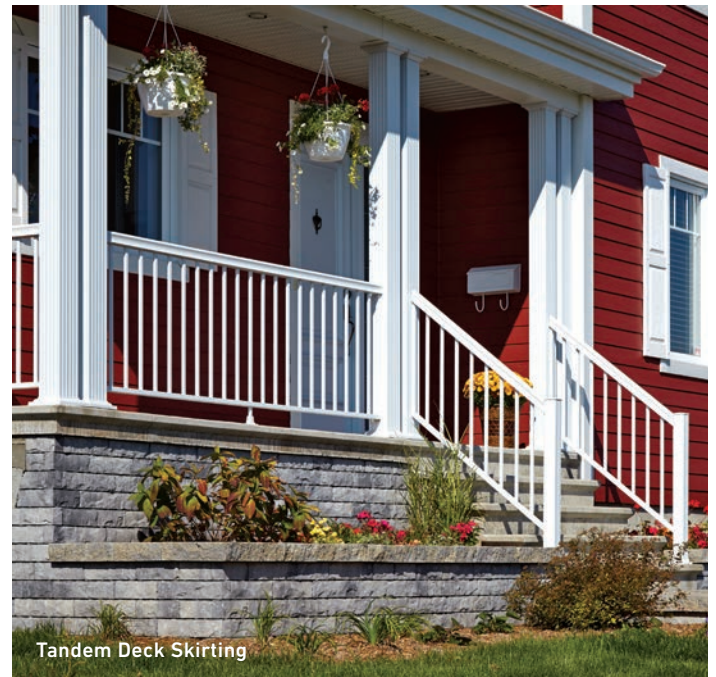
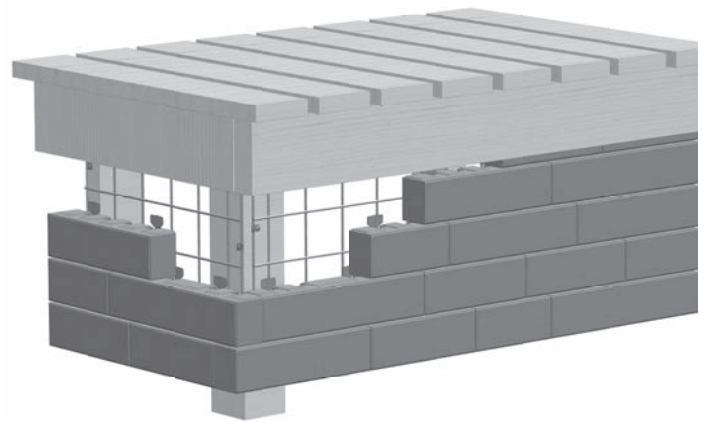
Minimum allowable bearing capacity of soil: 1575 lbs/sqft.

Minimum depth of foundations in soil: 6' away from frost (consult an engineer to check the typical depth of frost for your area).

Leave a free space under the Tandem wall of at least 3".

NOTE: As there is no direct access from the top of a unit (since the Tandem wall is built under the deck), it will be impossible to attach the last row of veneers to the Tandem grid with connectors. Simply glue the last row of veneers to the second-to-last row with a construction adhesive.

The sketches shown here have been designed to withstand the additional loads of Tandem walls. The details shown are valid for applications suggested in this guide. It is strongly recommended to engage a structural engineer or specialist in the field to validate structural design details for other configurations.



CONCRETE DECK

To cover a concrete deck, you must comply with additional minimum design criteria detailed below:

The minimum thickness of the slab should be 5 1/2"

The slab should be reinforced with a minimum 1/2" diameter rebar at 12" c / c in both directions and positioned at the center of the slab. The concrete deck should be supported by pillars of reinforced concrete (Sonotubes), 8" in diameter with a minimum footing of 24" or larger in diameter.

The compressive strength of the concrete (slab and pillars) must be at least 4350 psi with 5% to 8% entrained air.

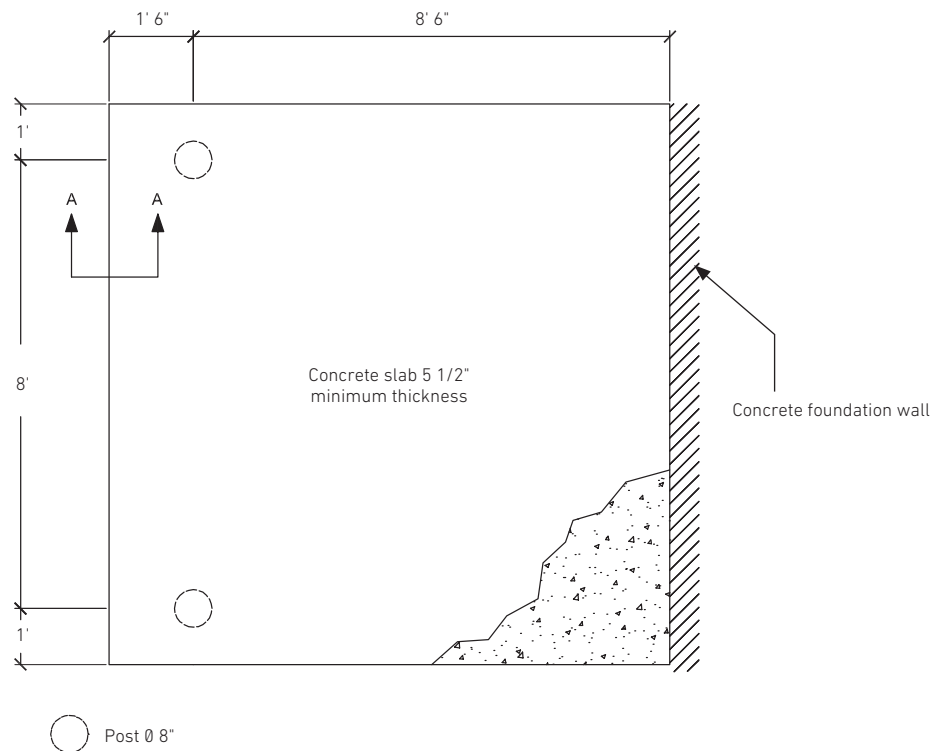
Maximum distance between pillars: 8'

Maximum overhang of concrete slab: 2'

To attach the components of the wooden structure to the concrete slab, you should use mechanical anchors like Hilti Kwik Bolt® TZ (1/2" diameter by 5 1/2" long) or equivalent (not supplied by Belgard).

Leave a space of at least 1/2" between the top of the Tandem® wall and the underside of the concrete slab.

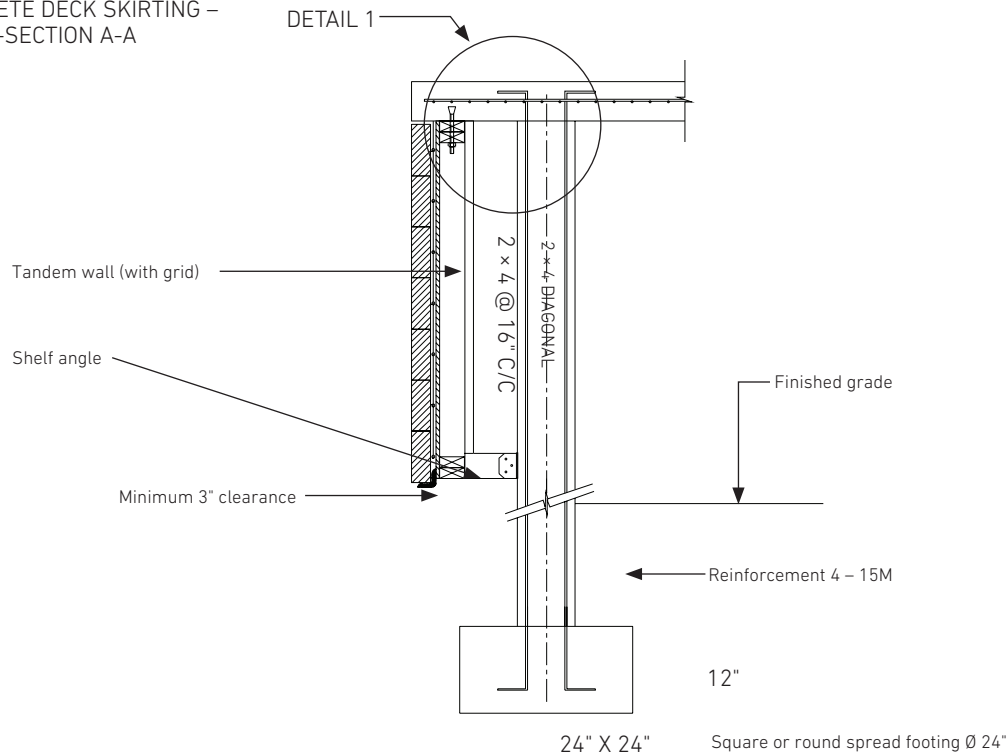
CONCRETE DECK SKIRTING – PLAN VIEW



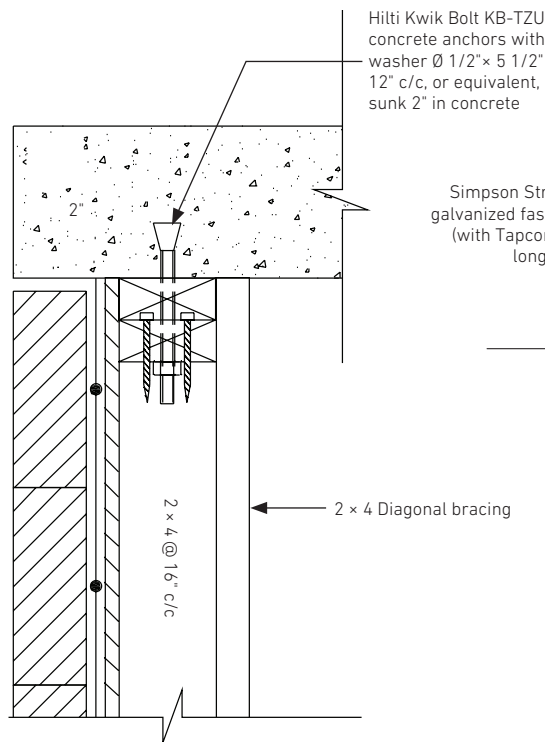
Tandem® Modular Grid



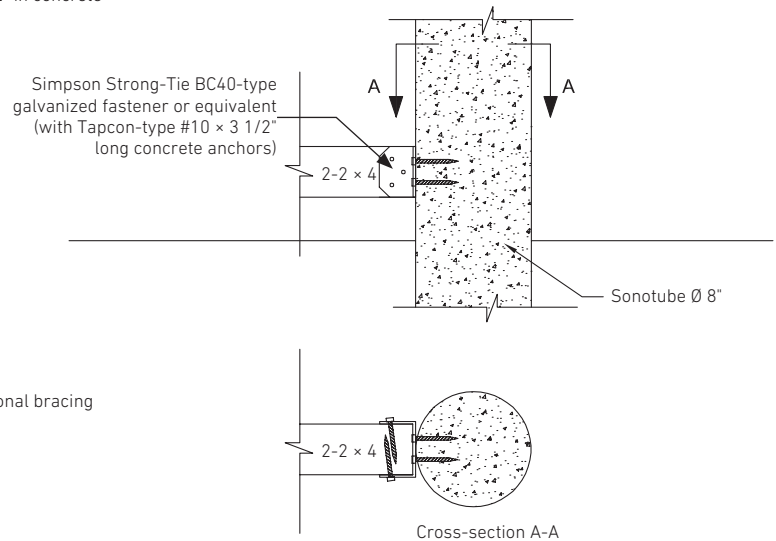
CONCRETE DECK SKIRTING –
CROSS-SECTION A-A



DETAIL 1



DETAIL 2



WOODEN DECK

Warning: We recommend installing a Tandem wall only for new wooden decks to be built according to the minimum specifications and data detailed below.

The wooden deck should be built with a structure composed of 2 × 8 joists spaced every 16" or less. The deck beams must be made of at least two 2 × 8 boards.

The beams are supported on 4 × 4 (89 × 89 mm) wooden posts. The posts themselves are supported on screw piles designed for this purpose (helicoil piles).

Maximum length of wood joists in both directions: 8'.

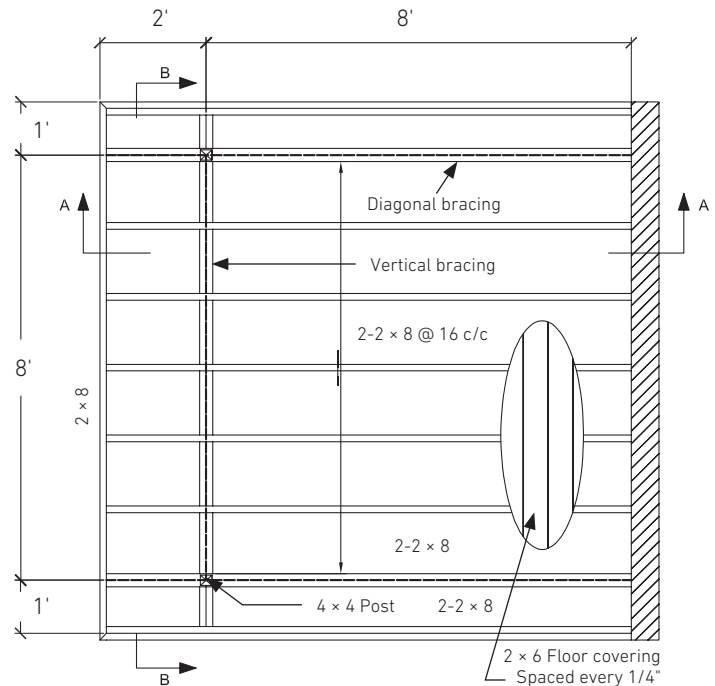
Minimum overhang of 12" and maximum overhang of 24".

To attach the components of the wooden structure to the deck joists, you should use #10 stainless steel wood screws.

Simpson Strong-Tie hardware (or equivalent) should be used.

A waterproofing membrane must be installed on top of the wood frame to protect the wood from water saturation and rot (in the case of wood board flooring with free space). The membrane can be omitted for waterproof deck flooring such as fiberglass.

It is recommended to leave a space of 1/8" to 1/4" between the wooden boards of the deck for ventilation under the deck so as not to trap moisture.



WOODEN DECK SKIRTING – CROSS-SECTION A-A

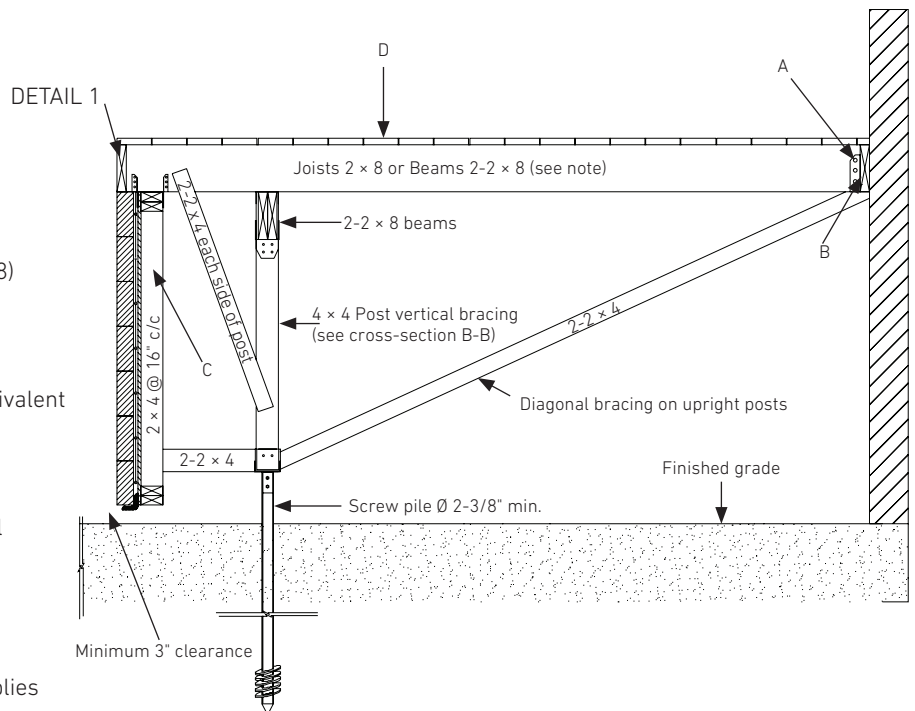
- A** Simpson Strong-Tie LUS 26 and LUS 26-2 (GA 18) galvanized steel joist hangers, or equivalent
- B** 2x8 continuous rail attached to foundation wall with Hilti KB-TZU 1/2 in x 5 1/2" anchors, or equivalent

Alternative: joists resting on foundation wall.

- C** Diagonal brace at mid-height for wall over 4" tall

- D** Floor coverings 2 × 6 spaced at 1/4"

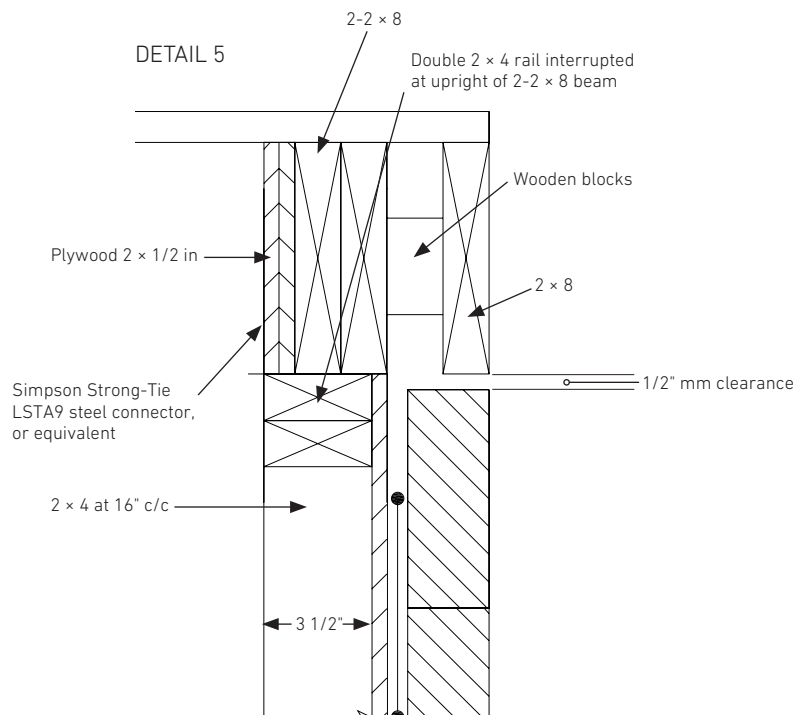
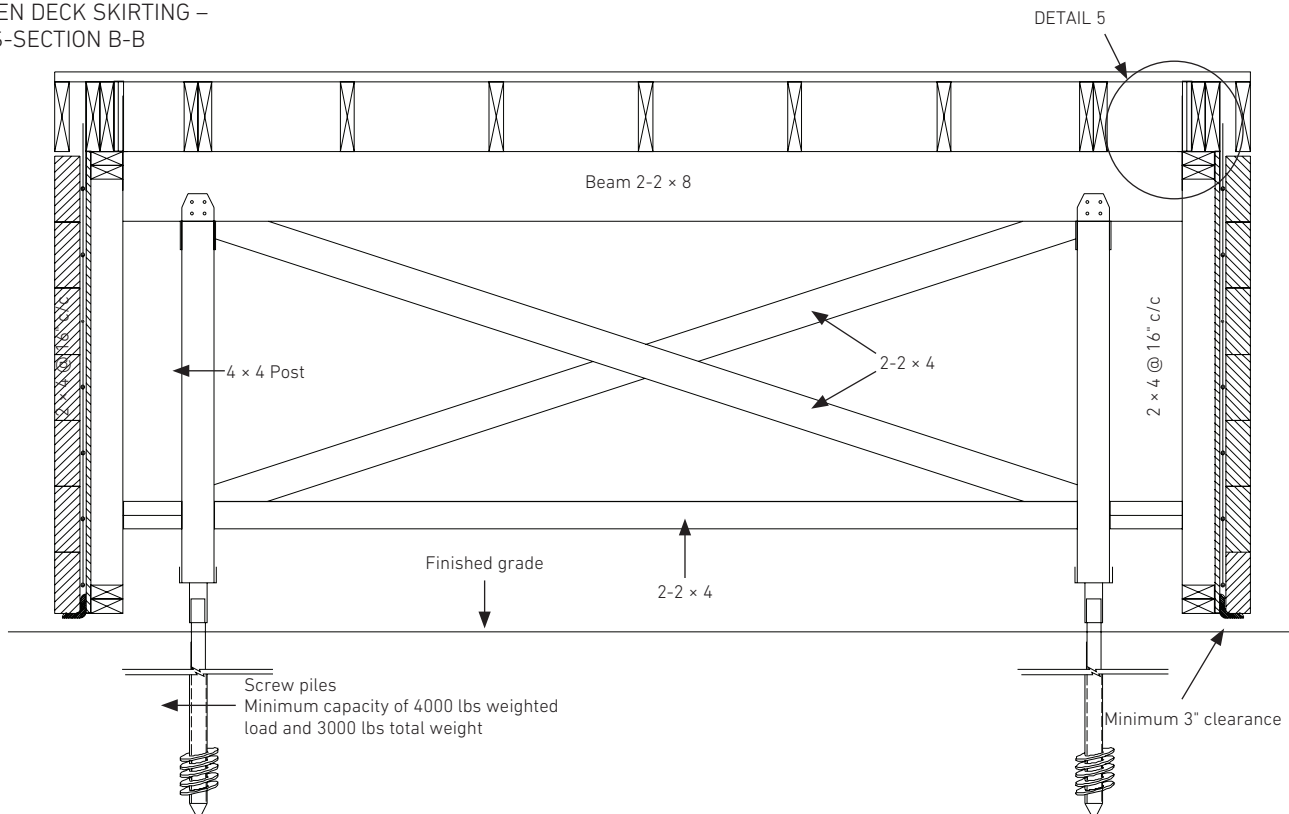
NOTE: During construction, 2 × 4 posts should face floor joists to enable construction of assemblies



Tandem® Modular Grid

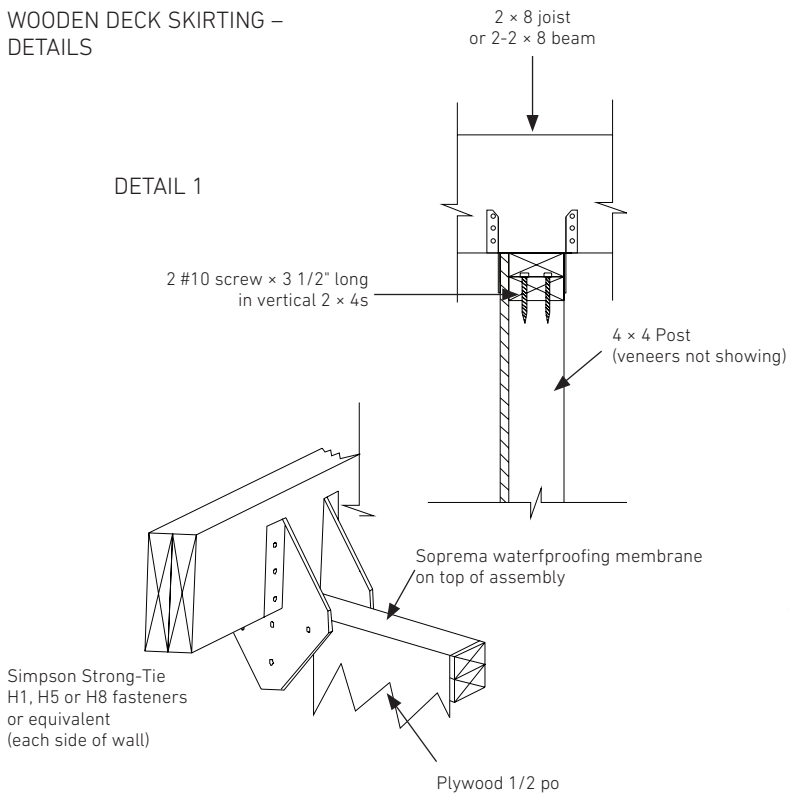


WOODEN DECK SKIRTING –
CROSS-SECTION B-B

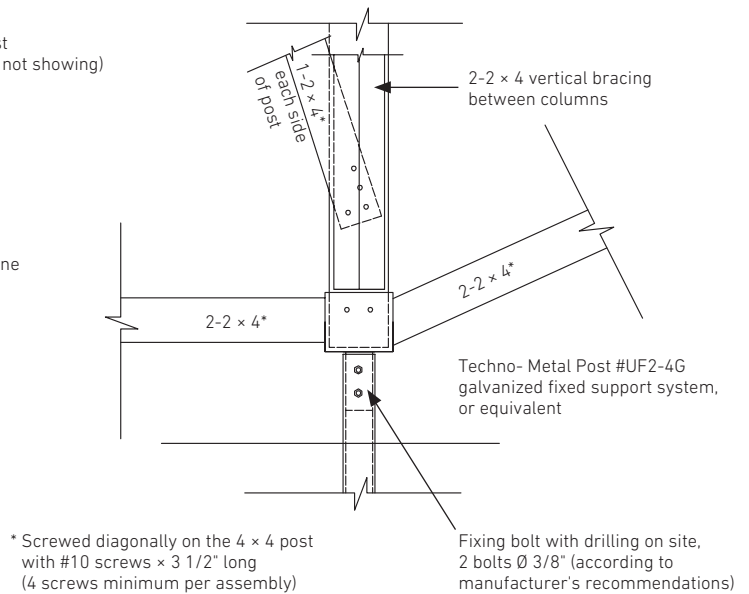


WOODEN DECK SKIRTING – DETAILS

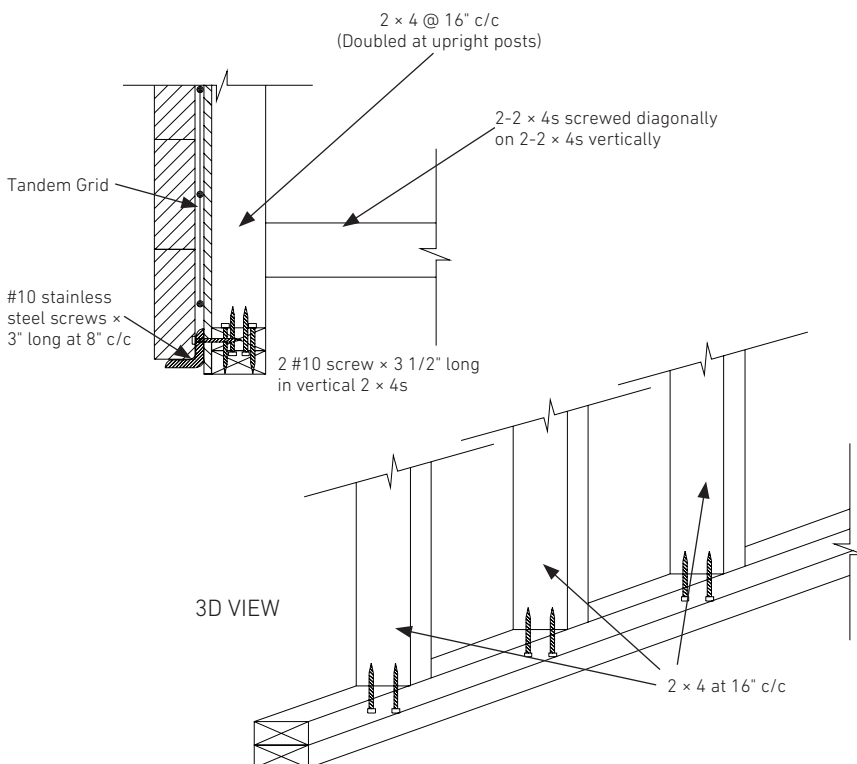
DETAIL 1



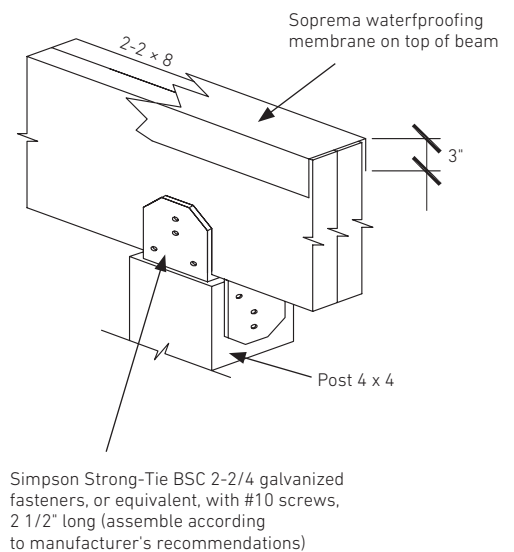
DETAIL 2



DETAIL 3



DETAIL 4



Tandem[®] Column Kit



BUILDING COLUMNS

Building different types of columns can be achieved using the Tandem[®] system. Easily construct Tandem columns with the steel grid to add an aesthetic touch to a wall, add columns to the end of a driveway or entryway or dress-up an existing deck post/wooden pillar with a stone-faced column.

TANDEM COLUMN WITH COLUMN GRIDS

Tandem Column is built with Tandem textured, ashlar and lamina veneer units only. The building of this column begins with the use of a steel column grid which provides structural support for the veneer units. The veneers are fastened to the column grid using specially-designed connectors.

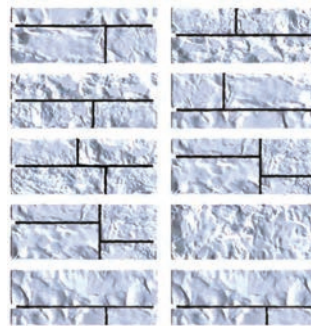
MATERIALS NEEDED



1 Column grid
Final height: 42"



Connectors:
50 connectors per bag.
(Enough for 1-42" column.)



Pallet of panels
21.8 square feet needed per column.
Use modules G only (Lg Unit 18.5" w)
24 of the long pieces are needed
(21.6 sf)

Large Unit	Standard, Smooth, Ashlar Wall
Approx. Dimensions	7"H x 18 1/2"W x 2 3/4"D
Approx. Weight*	25 lbs.



24" x 24" Cap Unit (Sold Separately)
Tandem Column Cap available
October 2015

24" W x 24" W x 3 1/4" H
150 lbs.

With the above material you can construct one column. One column is 42 1/2" in height. One column requires the use of 28 ft² of veneer units

NOTE: All Tandem veneer column units come with one textured end (corner units)

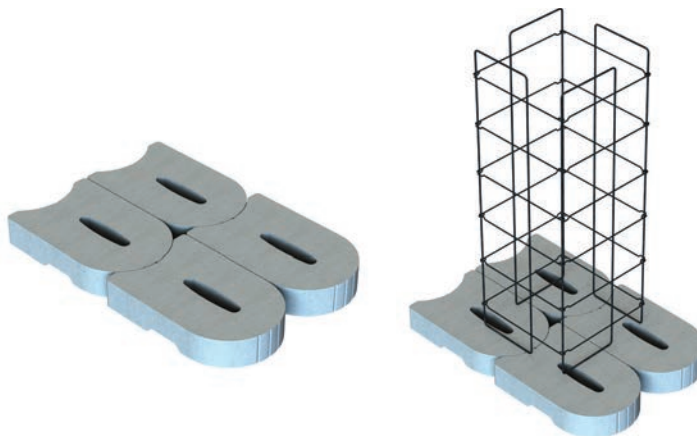
One cube/pallet contains 12 column grids and 12 bags of 50 grid connectors (600 total connectors)



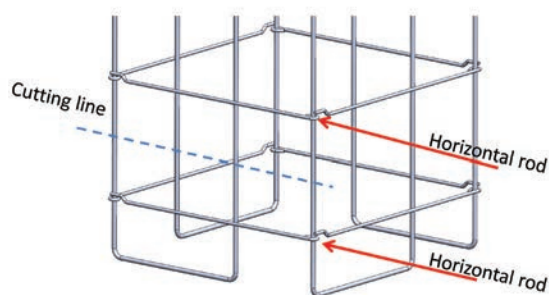
BUILDING COLUMNS

STEP 1 & 2

Begin by placing 4 U Start Base Block™ on a base of compacted crushed stone. Unfold the steel column grid and place it on the prepared surface.

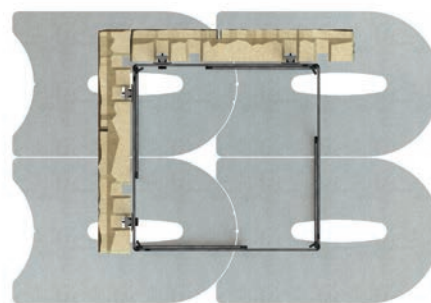


NOTE: If you would like to cut the grid to a shorter height (shorter than the 42 ½ in. height), you must cut the vertical rod at mid-distance between the two horizontal rods as shown. Use a grinder when cutting to make a smooth cut through the steel grid. If the cut ends of the wire are at the bottom of the column, they are more exposed to water and humidity, and rust will appear faster.



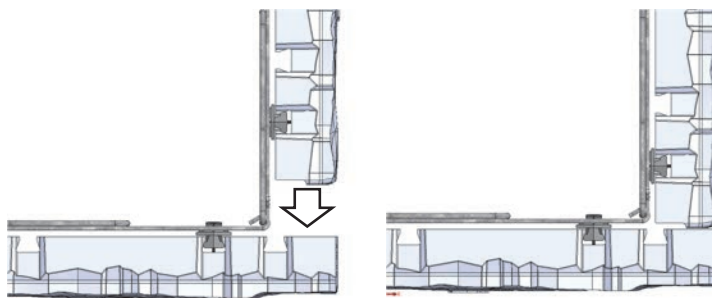
STEP 3 & 4

Insert the connectors into the dovetail on the veneer units that will form the first row of the column (2 connectors per veneer unit). Connect the veneer units to the steel column grid, making sure to "click the connectors onto the horizontal wires. Repeat the same process to complete the entire first row.



CORNERS

For the corners, be sure to use a corner stone to finish the column's edge with a textured look. If needed, slide the corner veneer along the horizontal axis to ensure all previously installed veneers lineup with the corner unit.

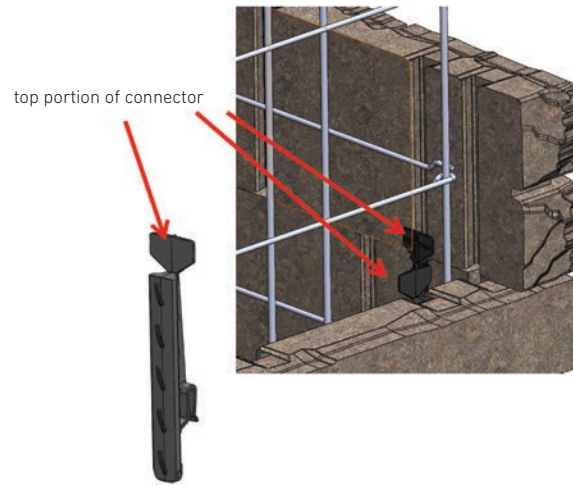


Tandem® Column Kit



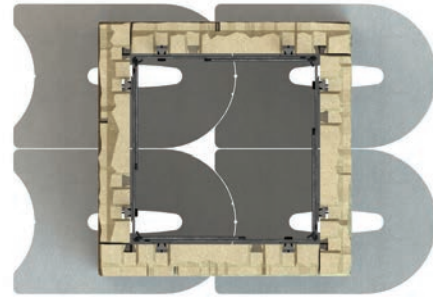
STEP 5

When you are starting the second row, make sure the base of the top veneer hits the top portion of the connector.



STEP 6

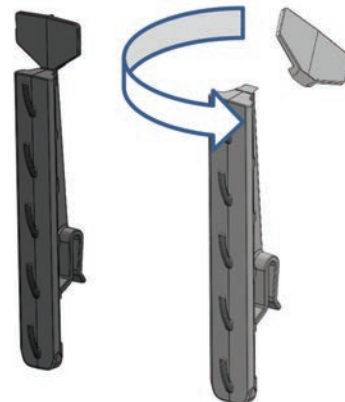
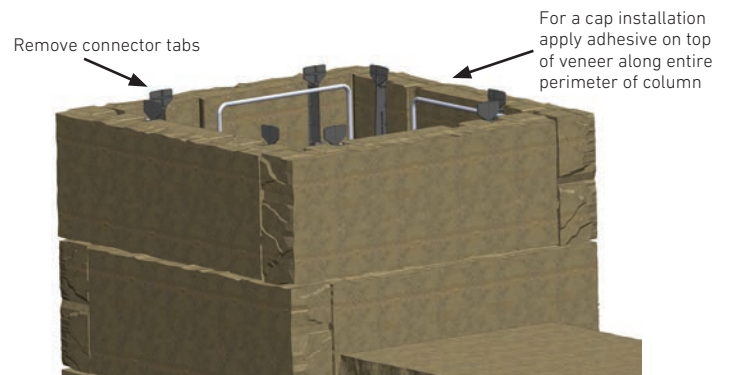
Once the first two rows have been completed, fill the interior space with clean $\frac{3}{4}$ in. aggregate. Use a square to ensure that the corner units are perpendicular to each other. Repeat this step after each row has been completed; filling the empty space with aggregate and ensuring the corners are square.



STEP 7

When the last row is reached, cut off the tops of the connectors with a sheet-metal shear or twist them off by hand. Then install the capping unit on the column, adhering it in place with glue.

NOTE: The capping unit must rest on the veneer units and not on the steel column grid.

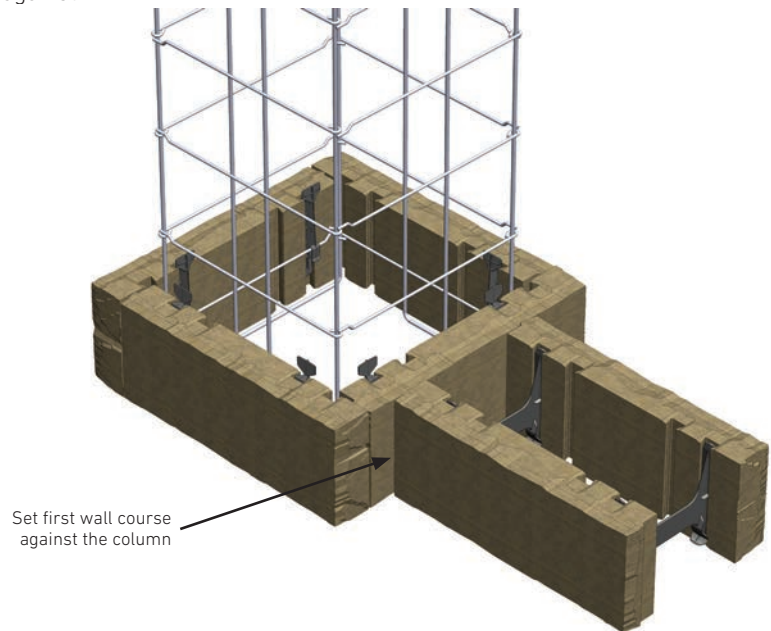


Tandem® Column Kit

JOINING A COLUMN WITH TANDEM® WALL

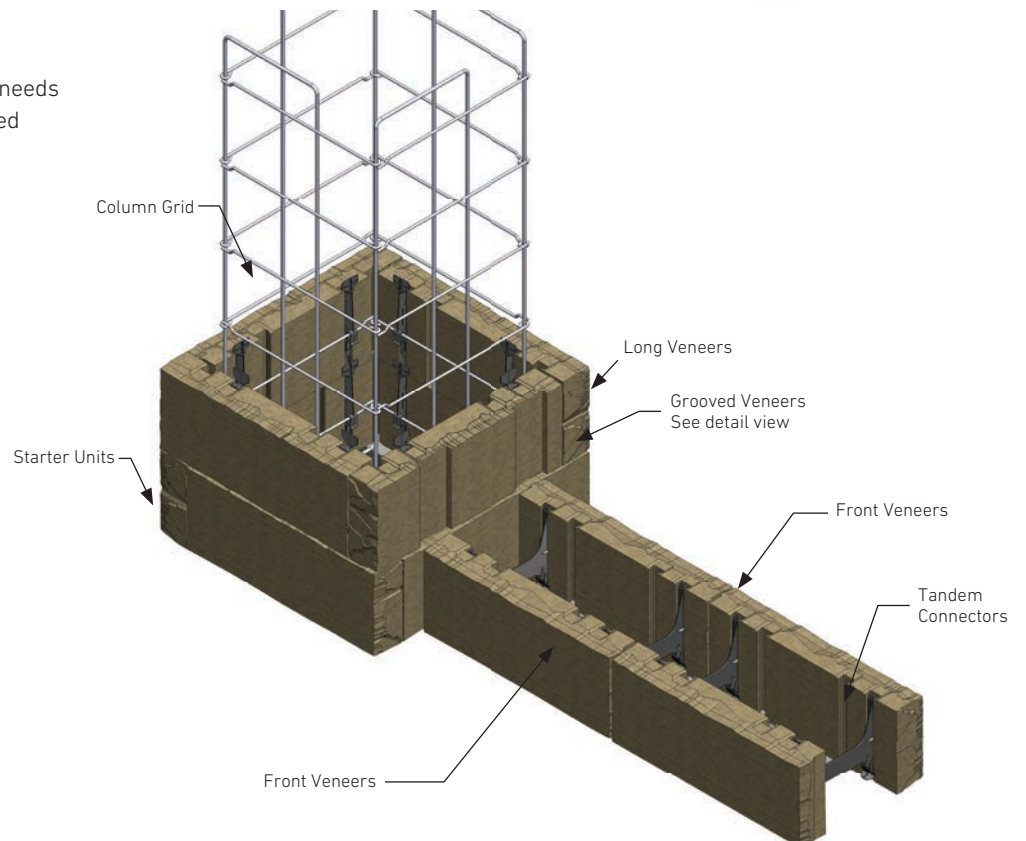
STEP 1

To integrate a wall into the column, set the first course up against the column.



STEP 2

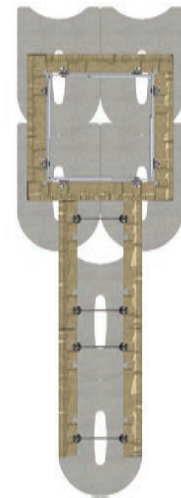
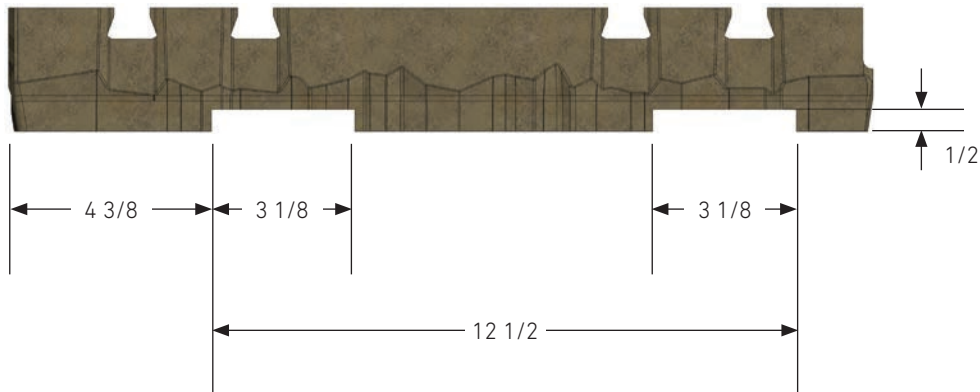
At the second column row, the long veneer needs to be grooved. Set wall block into the grooved veneer for a tight connection.



Tandem® Column Kit

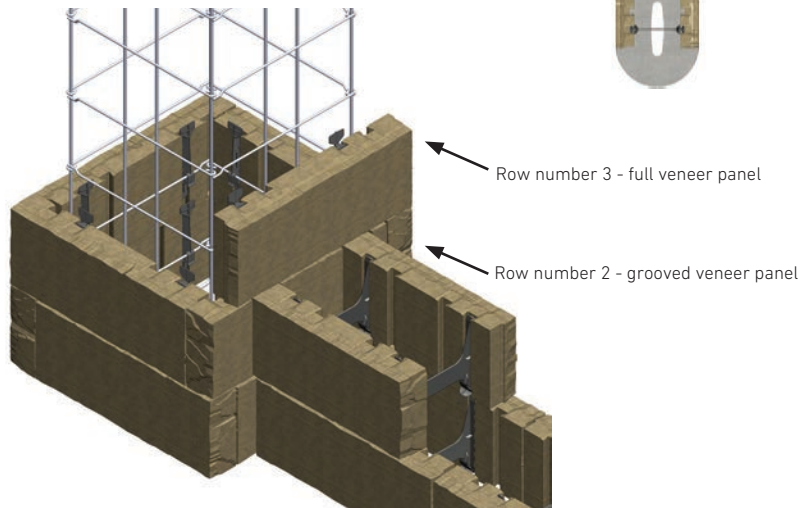


NOTE: Every other row will need to be grooved.

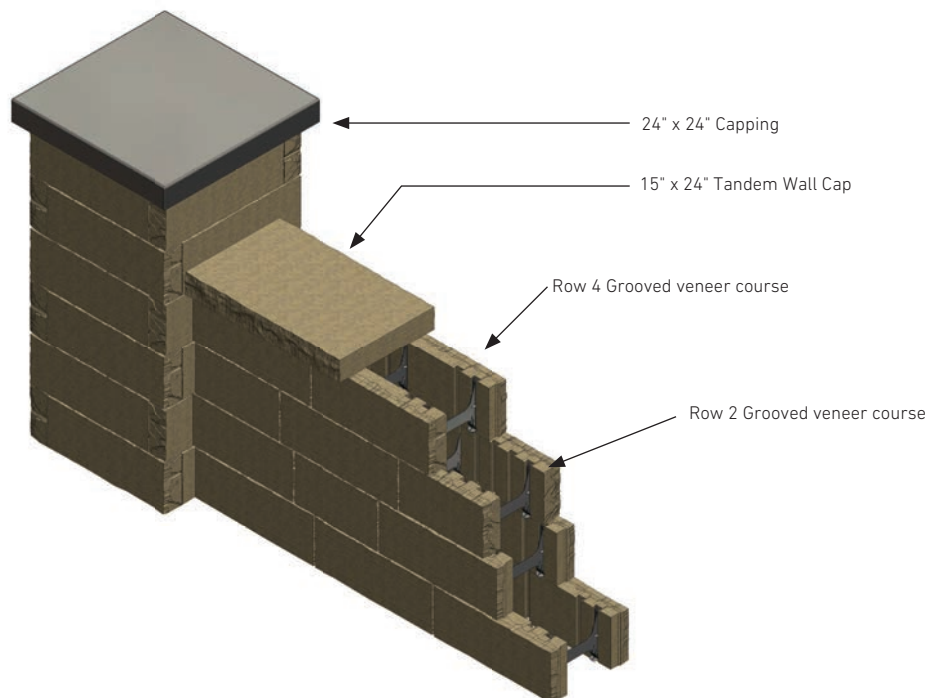


STEP 3

When starting the your third row of column veneers, place a full veneer panel across the top of the grooved panel. The wall block in row 3 will butt up against the column similar to how the connection is on row one.



FINISHED WALL DETAIL

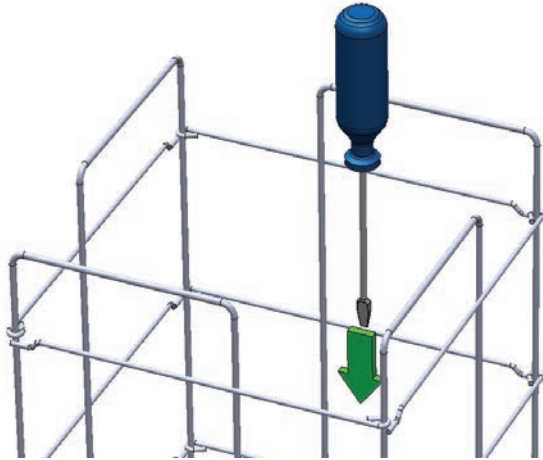


Tandem® Column Kit

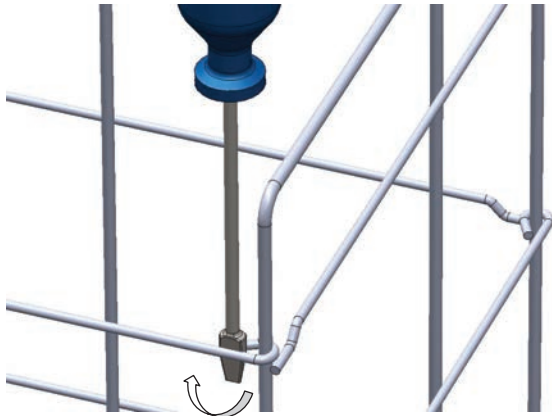
CREATING A COLUMN AROUND AN EXISTING POST

STEP 1

To integrate a column into an existing post, first use a flathead screwdriver to unclench the corners of the grid.

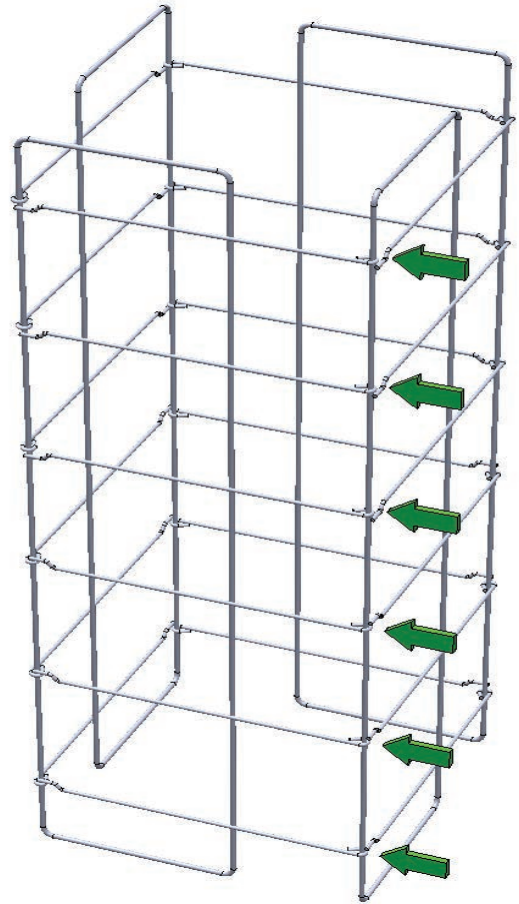


Torque/twist until opening is big enough to clear the vertical rod



STEP 2

Repeat the previous steps and do for all corners on one side.



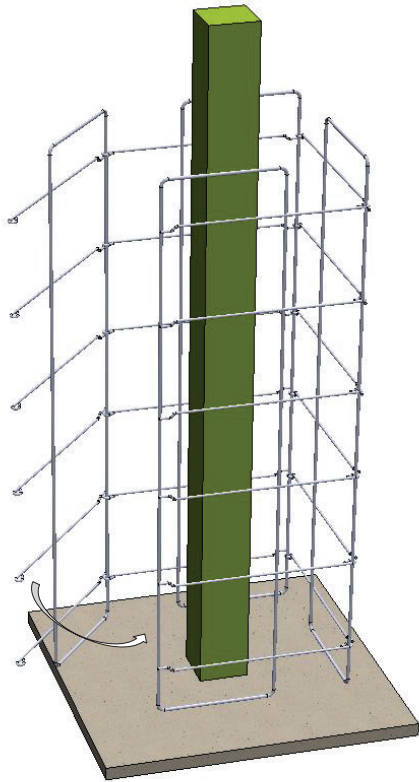
Tandem® Column Kit



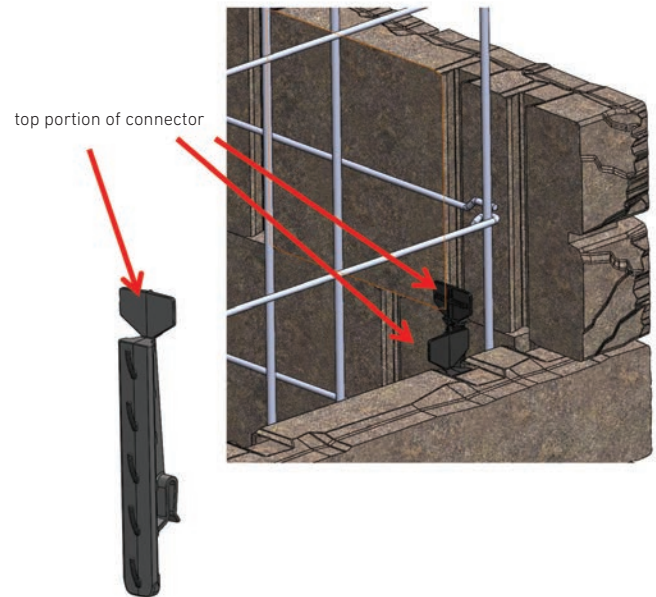
STEP 3

Surround the post with the column grid.

NOTE: Ensure your post is on a level and sturdy base prior to installing the column grid and veneers.

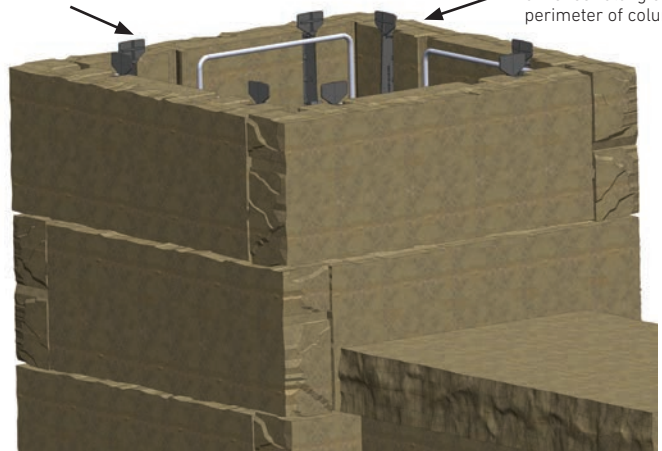


Follow the instructions for installing the Tandem® veneers associated with building a column (previous pages).



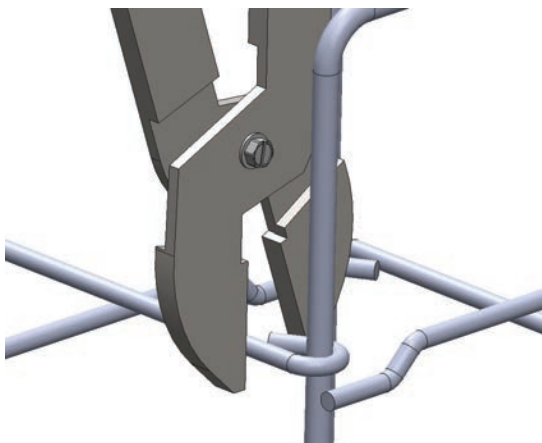
Remove connector tabs

For a cap installation apply adhesive on top of veneer along entire perimeter of column



STEP 4

Once the grid is around the post, cinch the corners back together, closing the grid again at all points.





Expocrete an Oldcastle® company

British Columbia, Alberta, Saskatchewan, Manitoba

For more info visit: Belgard.com | Expocrete.com

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