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Tandem® Wall System
designed by Belgard® provides the natural appearance of chiseled stone that will complement any hardscape. The innovative, versatile system can be used to create attractive, curved or straight retaining and freestanding landscape walls. Great for use in a wide range of residential and light commercial hardscape projects.

Visit Belgard.com for more details

TANDEM® WALL SYSTEM COMPONENTS

DIMENSIONS

<table>
<thead>
<tr>
<th>Component</th>
<th>Textured &amp; Ashlar</th>
<th>Approx. Dimensions</th>
<th>Approx. Weight*</th>
<th>Coverage</th>
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</thead>
<tbody>
<tr>
<td>Small Unit</td>
<td></td>
<td>7&quot;H x 13 ¾&quot;W x 2 ¾&quot;D</td>
<td>18 lbs.</td>
<td>.64 sq. ft.</td>
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<td>Medium Unit</td>
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<td>7&quot;H x 15 ¾&quot;W x 2 ¾&quot;D</td>
<td>22 lbs.</td>
<td>.77 sq. ft.</td>
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<tr>
<td>Large Unit</td>
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<td>7&quot;H x 18 ¼&quot;W x 2 ¾&quot;D</td>
<td>25 lbs.</td>
<td>.90 sq. ft.</td>
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<tr>
<td>Tandem Cap</td>
<td>Textured</td>
<td>3 ¾&quot;H x 24&quot;W x 15&quot;D</td>
<td>91 lbs.</td>
<td>.54 sq. ft.</td>
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CONNECTING MEMBER PRODUCT DATA

<table>
<thead>
<tr>
<th>ASTM Standards</th>
<th>Property</th>
<th>Test Method</th>
<th>Value</th>
<th>Units</th>
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<tbody>
<tr>
<td>Physical</td>
<td>Specific Gravity</td>
<td>ASTM D 792</td>
<td>.930</td>
<td>G/CC</td>
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<td></td>
<td>Melt Mass Flow Rate</td>
<td>ASTM D 1238</td>
<td>20</td>
<td>g/10 min</td>
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<tr>
<td>Mechanical</td>
<td>Tensile Strength</td>
<td>ASTM D 638</td>
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<td>psi</td>
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<td></td>
<td>Tensile Elongation</td>
<td>ASTM D 638</td>
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<td></td>
<td>Flexural Modulus</td>
<td>ASTM D 790</td>
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<tr>
<td>Impact</td>
<td>Notched Izod Impact</td>
<td>ASTM D 256</td>
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<td>ft.-lb./in.</td>
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<td></td>
<td>Deflection Temperature Under Load</td>
<td>ASTM D 648</td>
<td>175</td>
<td>°F</td>
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*Weight may vary. Please check with your local Belgard representative for exact product specifications. Above values may change with materials.
TANDEM® WALL SYSTEM

Features & Benefits

**BENEFITS BY THE NUMBERS:**
- Minimum outside radius of 6'
- Free Standing walls up to 28”
- Exceeds 5,000 PSI compressive strength concrete
- Engineered 90° corners
- Gravity walls up to 3 feet
- Reinforced walls up to 8 feet
- Panel sizes:
  - 7” x 13 1/8” x 2 5/8” – 18 lbs./panel
  - 7” x 15 1/8” x 2 5/8” – 22 lbs./panel
  - 7” x 18 1/2” x 2 5/8” – 25 lbs./panel

**BENEFITS OF BELGARD® TANDEM® WALL:**
- Meets the material requirements of ASTM C-1372
- Classic look of natural stone
- 24 different facial textures
- Build curved or straight walls
- Free Standing
- Three color blends

**CONNECTING MEMBERS**

BELGARD’S CONNECTOR DESIGN CREATES STRUCTURAL INTEGRITY IN CURVED OR STRAIGHT WALLS.

- Gravity wall height up to 3 feet without surcharge and reinforced walls up to 8’
- 2.6 connectors per sq. ft. of wall
- Polypropylene Copolymer
- 2 connectors per unit
- 3 bags of connectors for every pallet of panels
TANDEM® WALL SYSTEM
Installation Instructions

STEP 1: Remove all surface vegetation and debris. Select the length of the wall and excavate a trench the length of the wall and approximately 12” from top of final grade. Then place a dense graded aggregate and compact to 95% standard density or modified. It’s not recommended to use a pea rock or a rounded type of material on the base.

STEP 2: Place the U Start Base Block™ on the compacted gravel. Level the U Start units front to back as well as side to side. Making sure the units are fully level.

STEP 3: Assemble the Tandem® Wall units by inserting the Tandem Wall connectors into the dove tails. Make sure the front and rear panels are the same length.

STEP 4: Place the assembled Tandem® Wall unit on the top of the U Start Base Block™, making sure that the first course is centered on the base block. Check to make sure units are kept level.
STEP 5: Once the Tandem Wall units have been placed, run a string line along the back of the front or rear panel to assure you are keeping the wall units straight in line.

STEP 6: Place 3/4” crushed rock in between the panels to provide frictional connection and proper internal drainage.

STEP 7: Lightly hand compact the gravel in between the panels for proper compaction.

STEP 8: Place 12” of 3/4” drainage rock behind the rear panel of the wall. This will provide for proper drainage behind retaining walls.
TANDEM® WALL SYSTEM
Installation Instructions

STEP 9: Set additional courses of the Tandem® Wall. Making sure that you are keeping the wall in proper alignment. Backfill and compact each additional course.

STEP 10: When placing the cap on top of Tandem® Wall, use a construction adhesive to secure the cap to the top of the wall.

STEP 11: Finished Project.
**TANDEM® WALL SEGMENTAL RETAINING WALL GUIDE:**

**NOTE:**

1. The base shall be made of **U Start Base Blocks™**.
2. Center Tandem panel units on starter units.
3. The base foundation shall be approved by the site geotechnical engineer prior to placement of the starter units.
4. Backfill is typically on site soil unless otherwise shown on the plans.

---

**TANDEM® WALL SEGMENTAL RETAINING WALL SECTION VIEWS:**

**NOTE:**

1. Base material shall be constructed of crushed stone. Center Tandem units on leveling pad or **U Start Base Blocks™** or 2,000psi unreinforced lean concrete leveling pad.
2. The base foundation shall be approved by the geotechnical engineer prior to placement of the leveling pad.
3. Upper level of wall units not showing infill material in order to show connectors.
4. Backfill is typically onsite soil unless otherwise shown on the plans.
5. **4 degree batter (0.5'' setback per course).**

---

**NOTE:**

1. The drainage system shall consist of a 4'' diameter perforated pvc pipe wrapped with a geotextile fabric.
2. Provide rodent screen in 4'' diameter non-perforated pipe daylighting through wall.
3. See contract plans for additional requirements and details.

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**TANDEM® WALL SYSTEM**

**Design Details**
TANDEM® WALL SEGMENAL RETAINING WALL TYPICAL DETAIL VIEWS:

NOTE:
Geotextile fabric shall be placed where the retaining wall abut to existing foundations as shown on the retaining wall site plans. Overlap all abutment joints 12” with minimum 24” fabric.

TANDEM® WALL STEP DETAIL VIEWS:

NOTE:
1. The base shall be made of starting blocks
2. Center Tandem face units on starting units.
3. The base foundation shall be approved by the site geotechnical engineer prior to placement of the starting blocks.
4. Backfill is typically on site soil unless otherwise shown on the plans.
TANDEM® WALL STEPS & CORNERS:

TOP VIEW OF STEPS INTEGRATED INTO WALL

USE A STONE WITH ONE LENGTH LONGER THAN FRONT PANEL

USE A STONE WITH ONE LENGTH SHORTER THAN FRONT PANEL

TEXTURED END STONE

CUT VENNER AT 6 ½ "

STEPS & CORNERS

CORNER DETAIL
CONNECTORS IN CORNERS AND ENDS OF WALL MUST BE FLIPPED TO AVOID INTERFERENCE

TYPICAL STEP INTEGRATION INTO WALL

USE A STONE WITH ONE LENGTH LONGER THAN FRONT PANEL

TYPICAL CORNER WALL

USE A BACK PANEL WITH ONE LENGTH SHORTER THAN FRONT PANEL

CUT VENNER AT 12"

TYPICAL END OF WALL

USE AN END TEXTURED STONE TO CLOSE THE END OF THE WALL

DETAIL G

DETAIL H

DETAIL J
**TANDEM® WALL SYSTEM**

**Design Details**

**TANDEM® WALL FREE STANDING WALLS:**

**NOTE:**

1. The base foundation shall be constructed of crushed stone or 2,000 psi unreinforced concrete or U Start Base Blocks.
2. Center Tandem panel units on starter units.
3. The base foundation shall be approved by the site geotechnical engineer prior to placement of the leveling pad.

**TYPICAL STRAIGHT FREE STANDING WALL BASE PAD ISOMETRIC VIEW**

**NOTE:**

1. Retaining Wall – 4 degree batter (0.5" setback per course)

**TYPICAL CROSS SECTION VIEW**

**MAX HEIGHT OF DOUBLE FACE WALL OVER RETAINING WALL**

**TYPICAL FREE STANDING CURVED WALL BASE PAD ISOMETRIC VIEW**
TANDEM® WALL POST DETAIL VIEWS:

NOTE:
1. Geogrid shall be placed on level backfill and extended over connector and up to the face of the unit, pull grid taut and backfill. Stake as required.
2. Backfill is typically onsite soil unless otherwise shown on the plans.
3. Geotextile fabric as specified by the designing engineer and should be placed at the back of the stone, it is recommended to be used to prevent native soils from infiltrating into the infill material.

TYPICAL FENCE CROSS SECTION

NOTE:
1. Redirect geogrid above drainage pipes as required to avoid obstructions with drainage pipes extending transversely through the reinforced zone.
2. Reinforce the walls at the vertical obstruction as shown.
3. Backfill is typically onsite soil unless otherwise shown on the plans.
REINFORCEMENT PLACEMENT FOR CONCAVE CURVES
TANDEM WALL TYPICAL GEOGRID INSTALLATION IN CURVES:

REINFORCEMENT PLACEMENT FOR CONVEX CURVES
GEO SYNTHETIC OVERLAPPING MUST BE SEPARATED BY A MINIMUM OF 3" (76mm) OF SOIL. IF REINFORCEMENT PLACEMENT IS SPECIFIED FOR SUCCESSIVE LIFTS, ENSURE GAPS IN REINFORCEMENT ARE COVERED WITH REINFORCEMENT PRIOR TO BACK FILLING.
REINFORCEMENT PLACEMENT FOR CONCAVE CURVES
TANDEM® WALL TYPICAL GEOGRID INSTALLATION IN CORNERS:

**NOTES:**
- Alternate placement of reinforcement extension on specified reinforcement elevations.
- Alternate reinforcement extension on opposite corner specific reinforcement elevations.

**SPECIFIED REINFORCEMENT ELEVATIONS**

**SPECIFIED REINFORCEMENT DESIGN LENGTH**

**H:** TOTAL FINISH WALL HEIGHT

**REINFORCEMENT PLACEMENT FOR OPEN CORNERS**

**NOTES:**
- Requires overlap of each row for a total overlap of 6 in. prior to backfilling.
- If reinforcement placement is specified for successive lifts, ensure gaps in reinforcement are covered with reinforcement prior to backfilling.

**MATERIALS OVERLAPPING IN A SINGLE COURSE: REINFORCEMENT COULD BE PLACED IN OVERLAPPING LAYERS AND NOT IN INTERSECTION OF THE CROSSOVER AREA ON THE SUBSEQUENT COURSE**

**SPECIFIED REINFORCEMENT DESIGN LENGTH**
TANDEM® WALL TYPICAL WALL TREE PLANTING DETAILS:

NOTE:
1. All planting offsets shall be a minimum of 2 feet + the opening diameter as measured from face of the wall.
2. Lateral spacing between openings shall be a minimum of 3 times the opening diameter.
3. Soil reinforcement shall be carefully cut to avoid disturbance of adjacent reinforcement.
4. Only top two layers of reinforcement may be cut to allow planting of tree root ball.
5. Extreme care shall be taken if installing irrigation systems to not damage soil reinforcement.
6. Numbers in parenthesis are for example only.

PLAN VIEW

SECTION VIEW
REPLACEMENT OF A BROKEN VENEER

BEFORE REPLACING THE BROKEN VENEER, REMOVE ALL THE VENEERS AND COPINGS FROM TOP OF IT IN A “V” SHAPE. ONCE THE AGGREGATES ARE DRAINED FROM THAT SPACE, REPLACE THE BROKEN VENEER AND PUT BACK THE OTHER VENEERS BEFORE REFILLING THE WALL.
**TANDEM® WALL COLUMN LAYING GUIDE:**

**TANDEM® COLUMN COMPONENTS**

- **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 5/8”w)
  - 24 of the long pieces are needed (21.6 sf)

- **24” x 24” Cap Unit**
  - (Sold Separately)

---

**STEP 1**

Take a panel and slide the supplied connectors into the dovetails until they snap onto the horizontal rod of the grid.

**STEP 2**

Place the grid on a prepared surface
Make sure the outside perimeter of the grid is clear

**STEP 3**

**STEP 4**

Take another stone and repeat the same process. Make sure you have a corner stone to finish the corner. Once installed, slide the stone along the horizontal axis to adjust the corner.
TANDEM® WALL SYSTEM
Design Details (CONTINUED)

TANDEM® WALL COLUMN LAYING GUIDE (CONTINUED):

**STEP 5**

Once you have completed the first two rows, use a square to make sure the column is square and then fill the space with 3/4" clear aggregate. Fill the empty space with aggregates at every row.

**STEP 6**

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

**STEP 7**

At the second row the long veneer on the column needs to be grooved. Set wall block into grooved veneer.

**NOTE:** You must groove a panel every other row.

**STEP 7: GROOVED VENEER DETAIL**

Every other row will require a grooved veneer.

**STEP 8**

When starting row 3 place full veneer panel across the top of grooved panel. The wall block in row 3 will butt up against column similar to row 1.

**OPTIONAL**

If you have to cut the grid before installation on the base, you must cut the vertical rod at mid distance between two horizontal rods as shown below.
TANDEM® WALL SYSTEM
Design Details (CONTINUED)

TANDEM® WALL COLUMN LAYING GUIDE (CONTINUED):

**STEP 9**

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

**STEP 10**

**IMPORTANT**
When you have reached the last row, cut the top portion of the connectors with pliers snippers or just by twisting the top portion with your hands.

**STEP 11**

**FINISHED WALL DETAIL**

Apply glue on the top of the panels before putting on the capping.

**IMPORTANT:** The capping must lay on the panels, not on the grid.
TANDEM® WALL SYSTEM
Design Details (CONTINUED)

TANDEM® WALL COLUMN AROUND A POST GUIDE:

**STEP 1**
- Insert flat screwdriver onto clinched corner
- Torque until opening is big enough to clear vertical rod

**STEP 2**
- Do the same for all the corners

**STEP 3**
- Surround the post with the cage

**STEP 4**
- Clinch back all the opened corners using a vise
### REINFORCED GEOGRID DEPTHS (NO-SURCHARGE)

<table>
<thead>
<tr>
<th>Height</th>
<th>7.86' - 7.27'</th>
<th>6.69' - 5.52'</th>
<th>4.93' - 4.35'</th>
<th>3.76' - 3.18'</th>
<th>2.59'</th>
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</thead>
<tbody>
<tr>
<td>Sandy Lean Clay 26°</td>
<td>MIN GRID DEPTH 7.0'</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 5.0'</td>
<td>MIN GRID DEPTH 5.0'</td>
<td>MIN GRID DEPTH 4.0'</td>
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</table>

<table>
<thead>
<tr>
<th>Height</th>
<th>7.86' - 7.27'</th>
<th>6.69' - 5.52'</th>
<th>4.93' - 4.35'</th>
<th>3.76' - 3.18'</th>
<th>2.59'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silty Sand 30°</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 6.0'</td>
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</table>

<table>
<thead>
<tr>
<th>Height</th>
<th>7.86' - 6.69'</th>
<th>6.10' - 5.52'</th>
<th>4.93' - 3.18'</th>
<th>2.59'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select Granular 34°</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 5.0'</td>
<td>MIN GRID DEPTH 6.0'</td>
<td>MIN GRID DEPTH 2.59'</td>
</tr>
</tbody>
</table>

**BELGARD® - TANDEM WALL™ REINFORCED GEOGRID DEPTHS (NO SURCHARGE)**

Notes: Calculations assume a unit weight of 120 LBS/CF. Assumed for all soil types. Assumed \( \phi \) angles for earth pressure calculations are: Select Granular = 34° Silty Sand = 30° and Sandy Lean Clay = 26°. Non-critical structures with safety factor >1.5. Sliding calculations assume 6" crushed stone leveling pad as compacted foundation material. The information provided is for preliminary design use only. A qualified Professional Engineer shall be consulted. Belgard accepts no liability for the improper use of these tables.
REINFORCED GEOGRID DEPTHS (250 PSF LIVE LOAD)

SANDY LEAN CLAY $26^\circ$ $\phi$ ANGLE AND 250 PSF SURCHARGE. WALLS UNDER 2.01' TOTAL HEIGHT MAY BE CONSTRUCTED AS GRAVITY WALLS.

MIN GRID DEPTH

HEIGHT

7.86' - 7.27'
6.69' - 6.10'
5.52' - 4.93'
4.35' - 3.76'
3.18' - 2.59'
2.01'

SILTY SAND $30^\circ$ $\phi$ ANGLE AND 250 PSF SURCHARGE. WALLS UNDER 2.01' TOTAL HEIGHT MAY BE CONSTRUCTED AS A GRAVITY WALL.

MIN GRID DEPTH

HEIGHT

7.86' - 7.27'
6.69' - 6.10'
5.52' - 4.93'
4.35' - 3.76'
3.18'
2.59'

SELECT GRANULAR $34^\circ$ $\phi$ ANGLE AND 250 PSF SURCHARGE. WALLS UNDER 2.59' TOTAL HEIGHT MAY BE CONSTRUCTED AS GRAVITY WALL.

MIN GRID DEPTH

HEIGHT

7.86' - 7.27'
6.69' - 6.10'
5.52' - 4.93'
4.35' - 3.76'
3.18'
2.59'

BELGARD® - TANDEM WALL™ REINFORCED GEOGRID DEPTHS
(250 PSF LIVE LOAD)

Notes: Calculations assume a unit weight of 120 LBS/CF Assumed for all soil types. Assumed $\phi$ angles for earth pressure calculations are: Select Granular = $34^\circ$, Silty Sand = $30^\circ$ and Sandy Lean Clay = $26^\circ$ Non critical structures with safety factor >1.5. Sliding calculations assume 6” crushed stone leveling pad as compacted foundation material. The information provided is for preliminary design use only. A qualified Professional Engineer shall be consulted. Oldcastle accepts no liability for the improper use of these tables.
### Reinforced Geogrid Depths (3H:1V Back Slope)

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<th>Min Grid Depth</th>
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<tbody>
<tr>
<td>7.86' - 7.27'</td>
<td>5.52' - 4.93'</td>
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<tr>
<td>6.69' - 6.10'</td>
<td>6.35' - 5.76'</td>
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<td>5.69' - 5.10'</td>
</tr>
<tr>
<td>4.35' - 3.76'</td>
<td>4.5' - 3.93'</td>
</tr>
<tr>
<td>3.18' - 2.59'</td>
<td>3.0' - 2.43'</td>
</tr>
<tr>
<td>2.01'</td>
<td>1.8'</td>
</tr>
</tbody>
</table>

**GEO-GGRID STRENGTH SHALL BE EQUIVALENT TO MIRAFI 2XT OR GREATER**

**SELECT GRANULAR 34° Ø ANGLE AND 3H:1V BACK SLOPE. WALLS UNDER 2.59' TOTAL HEIGHT MAY BE CONSTRUCTED AS A GRAVITY WALL.**

**SILTY SAND 30° Ø ANGLE AND 3H:1V BACK SLOPE. WALLS UNDER 2.01' TOTAL HEIGHT MAY BE CONSTRUCTED AS A GRAVITY WALL.**

**BELGARD® - TANDEM WALL™ REINFORCED GEORGRID DEPTHS (3H:1V BACK SLOPE)**

Notes: Calculations assume a unit weight of 120 LBS/CF Assumed for all soil types. Assumed $\phi$ angles for earth pressure calculations are: Select Granular = 34°, Silty Sand = 30° and Sandy Lean Clay = 26° Non critical structures with safety factor >1.5. Sliding calculations assume 6" crushed stone leveling pad as compacted foundation material. The information provided is for preliminary design use only. A qualified Professional Engineer shall be consulted. Oldcastle accepts no liability for the improper use of these tables.