

**TATA BLUESCOPE STEEL LIMITED
PRODUCT SPECIFICATION LANGUAGE
FOR PRE ENGINEERED STEEL BUILDING
(BUTLER® BUILDING SYSTEM- WITH BR-II™ ROOF SYSTEM)**

Section 1: General Product specification Language

Item language

Item No.	Description	EX. Works Supply Price	Freight	Erection	Taxes & Duties	Total Amount
Item 1	<p>Structural Members Supply of BUTLER® Building System manufactured from :</p> <p>a) Frame: Supply of Primary (Built-up) sections are fabricated from hot rolled steel plates conforming to ASTM A 572M Grade 50 or equivalent with minimum yield strength of 345 MPa. Flanges are welded to the web by a continuous single side fillet weld deposited by an automatic submerged arc welding process. The Built up frame shall be shot blast & primed with one coat of primer paint applied as per Tata BlueScope steel standards.</p> <p>Supply of Hot rolled sections confirming to ASTM A36 M Grade 36 or equivalent with minimum yield strength of 250 MPa.</p> <p>Supply of Galvanized secondary members are cold-formed from steel coils conforming to ASTM A 653M – 04a Gr. 50 or equivalent , with zinc coating to Z120 designation (120 g/m²) on both surfaces & having a minimum yield strength of 345 MPa.</p> <p>b) Roofing panels : Supply of colour coated trapezoidal BR-II™ 900 profile sheeting of nom 900 mm effective cover width and nominal 38.5 mm deep ribs with nominal pitch of 300 mm centre to centre and two stiffeners in between the ribs for strength. The end rib shall be designed for anti-capillary action, to avoid any seepage of water through the lateral overlap. The feed material is manufactured out of nominal 0.45 mm Base Metal Thickness (BMT), Hi-strength steel with min. 550 MPa yield strength, metallic hot dip coated with Aluminium-Zinc alloy (55% Aluminium, 45% Zinc) as per AS 1397 - Zinalume AZ150 (Min. 150 gms/sq.mt total on both sides) with Colorbond steel quality paint coat as per AS/NZS 2728 type 3-4 of Tata BlueScope Steel make. The paint shall have a total coating thickness of nominal 35 µm, comprising of nominal 20 µm exterior coat on top surface and nominal 5 µm reverse coat on back surface over nominal 5 µm</p>					

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<p>primer coat on both surfaces of approved colour shade by concern authority. The steel manufacturer's test certificate for the chemical and mechanical properties of steel must be submitted for approval by the concerned authority prior to installation. The sheet shall have brand marking of the manufacturer giving product details on the back of the sheet at every 1 meter c/c for confirming genuinity of the material. The steel sheet shall be fastened with nominal 40 µm zinc coated or nominal 25 µm zinc-tin alloy coated, Hex head, self-drilling screw as per AS 3566-2002 Class 3 fasteners of approved make (Buildex or equivalent) with EPDM washer as per the requirement considering the profile shape and design load. The fastener size shall be calculated as per the design or manufacturers recommendations.</p> <p>The Skylight shall be Amplite panel of nominal 1.5 mm thick, composed of a translucent, thermosetting polyester resin with a thoroughly impregnated glass fiber reinforcing mat (FRP) with or without an integrally bonded translucent film on the weathering face comply with AS/NZS 4256. The profile should match with cladding profile. The fixing shall be done with specially designed Lapseal and weather-tight washer for fixing the translucent sheeting. The profile sheet, fastener size etc. shall be approved by the concern authority. All the accessories like gutter/ flashing / capping shall be made from the same material ((or manufacturer's recommendation)) which is used for main cladding application.</p> <p>c). Wall Panels –</p> <p>Supply of Trimdek 1015 OR Shadowrib 900 panels are roll formed from nominal 0.45 mm base metal thickness of minimum yield strength of 550 MPa, coated with an aluminum /zinc alloy (i.e. Zinalume Steel), AZ150 (min 150 gm/m² total on both side), conforms to Australian standard AS1397, pre-painted with Colorbond steel quality paint coat as per AS/NZS 2728 Class 3 of Tata BlueScope Steel make. The paint finish thickness shall have a total coating thickness of nominal 35 µm, comprising of nominal 20 µm on exterior face and nominal 5 µm reverse coat on interior face over nominal 5 µm epoxy primer coat on both surfaces of approved colour shade by concern authority. The steel manufacturer's test certificate for the chemical and mechanical properties of steel shall be submitted for approval by the concerned authority prior to</p>				
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	<p>installation. The sheet shall have brand marking of the manufacturer giving product details on the back of the sheet at every 1 meter c/c for confirming genuinity of the material.</p> <p>Profile dimensions: Trapezoidal type LYSAGHT TRIMDEK profile sheet shall have 1015 mm effective cover width, nominal 28 mm deep ribs with subtle square fluting in the five pans at nominal 203 mm centre to centre. The end rib shall be designed for anti-capillary action, to avoid any seepage of water through the lateral overlap.</p> <p style="text-align: center;">OR</p> <p>SHADOWRIB rib profile of 900 mm effective cover width, min. 35 mm deep ribs at pitch of min. 300 mm centre to centre distance with two stiffeners between the ribs.</p> <p>d). Trims & Gutters Wall flashing and trims (gable, corner, framed opening, accessories, etc.) are manufactured from same material (color, finish and thickness) as wall panels or manufacturers recommendation) Roof flashing and trims (parapet flashing, transition trims, expansion joint trims and ridge caps) are manufactured from the same material (color, finish and thickness) as roof panels or manufactures recommendation) Eave gutters and downspouts are manufactured from the material as recommended by manufacturer.</p> <p>e): Protection accessories: Skyweb II type protection net shall be provided as per manufacturer's recommendation.</p> <p>Note: The contractor shall prepare the general approval drawings based on the drawings supplied by the engineer-in-charge or the concern authority. These shall be submitted in five sets sufficiently in advance to the concern authority for approval.</p>				
<p>Item 2</p>	<p>Fixing of Item 1. The erection and installation shall be done by approved Tata BlueScope steel builder or specialized agency approved by the engineer-in-charge. Manufacturer's recommended installation methodology shall be adopted for installation of item 1. The contractor is to take approval on the sheet profile, design and installation methodology before installation of the sheets from the concern authorities. All material used for installation of item 1 shall be compatible with cladding material. The installation includes profiled sheet, capping, trims,</p>				

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<p>flashing, gutter and all type of accessories considered for the installation of item 1. The installation measurement shall be based on finished surface area.</p>				
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Section 2: Detailed Product specification Language

General

Structural Members

Frame: Supply of Primary (Built-up) sections are fabricated from hot rolled steel plates conforming to ASTM A 572M Grade 50 or equivalent with minimum yield strength of 345 MPa. Flanges are welded to the web by a continuous single side fillet weld deposited by an automatic submerged arc welding process. The Built up frame shall be shot blast & primed with one coat of primer paint applied as per Tata BlueScope steel standards.

Supply of Hot rolled sections confirming to ASTM A36 M Grade 36 or equivalent with minimum yield strength of 250 MPa.

Supply of Galvanized secondary members are cold-formed from steel coils conforming to ASTM A 653M Grade 50 or equivalent, with zinc coating to Z120 designation (120 g/m²) on both surfaces & having a minimum yield strength of 345 MPa.

Roofing panel:

Supply of colour coated trapezoidal BR-II™ 900 profile sheeting of nominal 900 mm effective cover width and nominal 38.5 mm deep ribs with nominal pitch of 300 mm centre to centre and two stiffeners in between the ribs for strength. The end rib shall be designed for anti-capillary action, to avoid any seepage of water through the lateral overlap. The feed material is manufactured out of nominal 0.45 mm Base Metal Thickness (BMT), Hi-strength steel with min. 550 MPa yield strength, metallic hot dip coated with Aluminium-Zinc alloy (55% Aluminium, 45% Zinc) as per AS 1397 - Zinalume AZ150 (Min. 150 gms/sq.mt total on both sides) with Colorbond steel quality paint coat as per AS/NZS 2728 type 3-4 of Tata BlueScope Steel make. The paint shall have a total coating thickness of nominal 35 µm, comprising of nominal 20 µm exterior coat on top surface and nominal 5 µm reverse coat on back surface over nominal 5 µm primer coat on both surfaces of approved colour shade by concern authority. The steel manufacturer's test certificate for the chemical and mechanical properties of steel must be submitted for approval by the concerned authority prior to installation. The sheet shall have brand marking of the manufacturer giving product details on the back of the sheet at every 1 meter c/c for confirming genuinity of the material. The steel sheet shall be fastened with nominal 40 µm zinc coated or nominal 25 µm zinc-tin alloy coated, Hex head, self-drilling screw as per AS 3566-2002 Class 3 fasteners of approved make (Buildex or equivalent) with EPDM washer as per the requirement considering the profile shape and design load. The fastener size shall be calculated as per the design or manufacturers recommendations.

The Skylight shall be Amplite panel of nominal 1.5 mm thick, composed of a translucent, thermosetting polyester resin with a thoroughly impregnated glass fiber reinforcing mat (FRP) with or without an integrally bonded translucent film on the weathering face comply with AS/NZS 4256.

The profile should match with cladding profile. The fixing shall be done with specially designed Lapseal and weather-tight washer for fixing the translucent sheeting. The profile sheet, fastener size etc. shall be approved by the concern authority. All the accessories like gutter/ flashing / capping shall be made from the same material ((or manufacturer's recommendation)) which is used for main cladding application.

Wall Panels

Supply of Trimdek 1015 OR Shadowrib 900 panels are roll formed from nominal 0.45 mm base metal thickness of minimum yield strength of 550 MPa, coated with an aluminum /zinc alloy (i.e. Zinalume Steel), AZ150 (min 150 gm/m² total on both side), conforms to Australian standard AS1397, pre-painted with Colorbond steel quality paint coat as per AS/NZS 2728 Class 3 of Tata BlueScope Steel make. The paint finish thickness shall have a total coating thickness of nominal 35 µm, comprising of nominal 20 µm on exterior face and nominal 5 µm reverse coat on interior face over nominal 5 µm epoxy primer coat on both surfaces of approved colour shade by concern authority. The steel manufacturer's test certificate for the chemical and mechanical properties of steel shall be submitted for approval by the concerned authority

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prior to installation. The sheet shall have brand marking of the manufacturer giving product details on the back of the sheet at every 1 meter c/c for confirming genuinity of the material.

Profile dimensions: Trapezoidal type LYSAGHT TRIMDEK profile sheet shall have 1015 mm effective cover width, nominal 28 mm deep ribs with subtle square fluting in the five pans at nominal 203 mm centre to centre. The end rib shall be designed for anti-capillary action, to avoid any seepage of water through the lateral overlap.

OR

SHADOWRIB rib profile of 900 mm effective cover width, min. 35 mm deep ribs at pitch of min. 300 mm centre to centre distance with two stiffeners between the ribs.

Trims & Gutters

Wall flashing and trims (gable, corner, framed opening, accessories, etc.) are manufactured from same color, finish and thickness as wall panels (or manufacturer's recommendation).

Roof flashing and trims (parapet flashing, transition trims, expansion joint trims and ridge caps) are manufactured from same color, finish and thickness as roof panels (or manufacturer's recommendation).

Eave gutters and downspouts are cold-formed from the same material as wall panels. (Or manufactured recommendation)

Water-resistant louvers (Louvremax) shall be manufactured from high strength ZINCALUME steel or COLORBOND steel.

Protection accessories:

SKYWEB II type protection net shall be provided as per manufacturer's recommendation.

Note: The contractor shall prepare the shop drawings based on the drawings supplied by the engineer-in-charge or the concern authority. These shall be submitted in five sets sufficiently in advance to the concern authority for approval.

Accessories:

Anchor bolts are manufactured from rods conforming to ASTM A 36M Grade 36 or equivalent with minimum yield strength of 240 MPa and an ultimate strength of 400 MPa.

Bracing rods, used in sidewalls of buildings supporting cranes are solid plain round steel bars conforming to ASTM A36 M or equivalent with minimum yield strength of 240 MPa.

Flange braces used to stabilize the inner flanges of main frame columns and rafters are 50 mm x 50 mm x 4 mm steel angles conforming to ASTM A 36M (or equivalent) with a minimum yield strength of 240 MPa

Panel Endlap: The panel lap shall be joined by means of a two-piece clamped connection consisting of a bottom reinforcing plate and a top panel strap as per manufacturers recommendations and approved by concern authority. All other special accessories should also be factory fabricated including flashings, ridge cap, gutter, downpipe or any other covering shall be as per manufacturers recommendations.

Sealant: Special grade of silicon sealant non-hardening, neutral cure type of approved make and grade shall be applied at all side laps and endlaps (with flowable mastic) as per manufacturer's recommendation and approval by engineer-in-charge.

Bead mastic is an extruded elastomeric butyl rubber based sealant supplied in rolls on silicon release paper conforming to Federal Specification TT-C-1796 A Type II Class B (or equivalent).

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Flowable mastic (caulking sealant) is a neutral cure silicone rubber sealant that is chemically inert and non-corrosive. It is UV resistant and suitable for exterior applications against weathering and rainwater. When cured it is non-toxic and will accommodate high thermal and shrinkage changes in structural movement joints.

Foam closures match the panel profile. They are made of expanded polyurethane or similar material.

Fasteners: The panel clip shall be fastened to structural members with Scrubolt fastener as per manufacturer's recommendation. The size of the fastener shall be as per the manufacturers' recommendation and approved by concern authority.

Insulation: The insulation shall be vinyl membrane supported fiberglass blanket of thickness 50 mm with density min 12 kg/m³ (or as per design requirement) shall be approved by concern authority.

Erection and Fixing:

Note: the erection and fixing has to be done through approved Tata BlueScope Steel Builder

- The installation shall be done in accordance to the standard practices as specified by the manufacturer and as approved by the concern authority. All sheets and accessories must be stored and finally erected without any damage.
- **Fastening sheet to support:** The sheet installation has to be done by using AS3566 class 3 fasteners with EPDM washer. In case of roof, it shall be placed at each crest of sheets connecting with Purlin (or as per design) perpendicular to the sheeting and in the centre of the corrugation or rib. For walling, you may use either crest- or valley-fixing the fastener size shall be calculated as per the design requirement. Do not place fasteners less than 25 mm from ends of sheets
- **End Lap:** All the sheet end lap (roof) shall have an over lap of 150 mm to 250 mm for a slope more than 15 degree (1 in 4) and 200 mm to 300 mm for slope less than 15 degree. The silicon sealant shall be applied at both the ends of the sheet at the overlap with stitch fasteners as per manufactures recommendations and conforming to AS 3566-2002 Class 3.
- **Side lap:** The edge of BR- II with the anti-capillary groove is always the underlap. It is generally considered good practice to use fasteners along side-laps however, when cladding is supported as indicated in maximum support spacing, side-lap fasteners are not usually needed for strength
- **Ends of Sheets:** It is usual to allow roof sheets to overlap into gutters by about 50mm. If the roof pitch is less than 25° or extreme weather is expected, the valleys of sheets should be turned down at lower ends, and turned up at upper ends by about 80°
- **Lay sheets toward prevailing weather :** It is much easier and safer to turn sheets on the ground than up on the roof. Before lifting sheets onto the roof, check that they are the correct way up and the overlapping side is towards the edge of the roof from which installation will start.
Place bundles of sheets over or near firm supports, not at mid span of roof members.
To align the first sheet uses a level on the gutter-end.
- **Sheet ends on low slopes :** When BR II is laid on slopes of 5° or less, cut back the corner of the under-sheet, at the downhill end of the sheet, to block capillary action.
- The contractor will be required to submit design calculation in support of the proposed profile of the sheet and standard loading etc. to the satisfaction of the design consultant and the concern authority. The contractor shall also submit methodology for fixing and also a maintenance manual for routine maintenance.
- The contractor shall ensure that panel erector is familiarized with the erection procedure and all the supporting members are straight, level and true (according to AISC) before starting panel erection. Panels shall be erected according to approved shop drawings by the concern authorities.
- Erection practices shall be as per the approved erection manual submitted by the manufacturer.

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Measurement:

- The payment shall be done on the lump sum basis for complete buildings and as per the mutually agreed payment instrument for item 1 and item 2.
- No separate payment will be made for the laps of sheet and accessories, bolts, nuts, washers, adjustable bolts and supports for gutters and other fixtures. These are assumed to be included in the quoted rates.

Notes:

Optional Items specifications:

If required the optional item specification can be added to section 1 & section 2 of product specification language. For details, it is advised to contact nearest Tata BlueScope Steel office before selecting optional items.

Specification language for Skylight Translucent sheeting-

The panel shall be nominal 1.5 mm thick (or as per manufacturers recommendation), composed of a translucent, thermosetting polyester resin with a thoroughly impregnated glass fiber reinforcing mat with or without an integrally bonded translucent film on the weathering face. The profile should match with cladding profile. The fixing shall be done with specially designed Lap seal and weather- tight washer for fixing the translucent sheeting. The profile and properties shall be approved by Engineer-in-charge before installation.