

**TATA BLUESCOPE STEEL LIMITED  
PRODUCT SPECIFICATION LANGUAGE  
FOR PRE ENGINEERED STEEL BUILDING  
(BUTLER® BUILDING SYSTEM- WITH MR-24® 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><b>Structural Members</b> <b>Supply of BUTLER® Building System manufactured from :</b></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 &amp; 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/m<sup>2</sup>) on both surfaces &amp; having a minimum yield strength of 345 MPa.</p> <p>b) Roofing panels : Supply of MR-24 monolithic roofing system, factory pre-punched profiled sheet of nominal 600 mm effective cover width with two major corrugations, 50 mm high (80 mm including seam). The flat of the panel shall contain cross flutes 430 mm on the pan centre perpendicular to the major corrugations over the entire length of the panel. The feed material is manufactured from 0.60 mm Base Metal thickness (BMT), min. 345 MPa yield strength coated with hot dip metallic Aluminium /Zinc alloy coating, Zinalume AZ150 as 150 gms/ sq.mt total on both sides of Aluminium (55%) &amp; Zinc (43.50 %) &amp; Silicon (1.50%), conforms to ASTM792M or AS1397 from BlueScope Steel. The steel manufacturers test certificate for the chemical and mechanical properties of steel shall be submitted for approval by the concerned authority prior to installation. The sheet shall have brand marking of the manufacturer on the back of the sheet at every</p>					

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1 m c/c for confirming genuinity of the material. Specially designed roof clips shall be used to hold MR-24 roof panels to the supporting structural member. The clip is designed to move freely in both directions to take care of thermal expansion and contraction. The supporting structural member (galvanized purlins) shall be factory pre-punched as per design requirements. Panel side laps shall be field-seamed by roof runner seaming machine which is self-propelled and portable electrical lock-seaming machine. The machine field forms the final 180 degrees of a 360 degree MR-24 double-lock standing seam, all side lap sealant shall be factory applied butyl rubber hot metal sealant. The insulation shall be vinyl membrane supported fiberglass blanket of thickness 50 mm with density 12 kg/m<sup>3</sup> (or as per design requirement) shall be approved by concern authority. The panel end lap shall be joined by mean of a two piece clamped connection consisting of a bottom reinforcing plate and top panel strap. Manufacturers recommended specially designed ridge capping, flashing; trims, gutter and down pipe shall be used for fixing MR-24 roof system which shall be approved by concerned authority. Scrubolt type fastener shall be used for fixing MR-24 roof system as per manufacturer's recommendation.

c). 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/m<sup>2</sup> 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 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 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.

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	<p><b>Profile dimensions:</b> 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 &amp; 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><b>Item 2</b></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, 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 65 or equivalent , with zinc coating to Z275 designation (275 g/m<sup>2</sup>) on both surfaces & having a minimum yield strength of 345 MPa.

**Roofing panel:**

Supply of MR-24 monolithic roofing system, factory pre-punched profiled sheet of nominal 600 mm effective cover width with two major corrugations, 50 mm high (80 mm including seam). The flat of the panel shall contain cross flutes 430 mm on the pan centre perpendicular to the major corrugations over the entire length of the panel. The feed material is manufactured from 0.60 mm Base Metal thickness (BMT), min. 345 MPa yield strength coated with hot dip metallic Aluminium /Zinc alloy coating, Zinalume AZ150 as 150 gms/ sq.mt total on both sides of Aluminium (55%) & Zinc (43.50 %) & Silicon (1.50%), conforms to ASTM792M or AS1397 from BlueScope Steel. The steel manufacturers test certificate for the chemical and mechanical properties of steel shall be submitted for approval by the concerned authority prior to installation. The sheet shall have brand marking of the manufacturer on the back of the sheet at every 1 m c/c for confirming genuinity of the material. Specially designed roof clips shall be used to hold MR-24 roof panels to the supporting structural member. The clip is designed to move freely in both directions to take care of thermal expansion and contraction. The supporting structural member (galvanized purlins) shall be factory pre-punched as per design requirements. Panel side laps shall be field-seamed by roof runner seaming machine which is self-propelled and portable electrical lock-seaming machine. The machine field forms the final 180 degrees of a 360 degree MR-24 double-lock standing seam, all side lap sealant shall be factory applied butyl rubber hot metal sealant. The insulation shall be vinyl membrane supported fiberglass blanket of thickness 50 mm with density 12 kg/m<sup>3</sup> (or as per design requirement) shall be approved by concern authority. The panel end lap shall be joined by mean of a two piece clamped connection consisting of a bottom reinforcing plate and top panel strap. Manufacturers recommended specially designed ridge capping, flashing; trims, gutter and down pipe shall be used for fixing MR-24 roof system which shall be approved by concerned authority. Scrubolt type fastener shall be used for fixing MR-24 roof system as per manufacturer's recommendation.

**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/m<sup>2</sup> 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 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 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.

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**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** (Lysaght 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

**Roof Fixing Clip:** Specially designed roof clips shall be used to hold MR-24 roof panels to the supporting structure member. The clip shall be design to move freely in both direction to take care of thermal expansion and contraction. The supporting structural member (galvanized Purlin) shall be factory pre-punched as per design requirements.

**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 mastick) 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/m<sup>3</sup> (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.
- 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.
- Special flashing, ridge capping and trims shall be fixed as per manufacturer's recommendation. The shape and girths shall be as per design requirement and shall be approved by the concern authority.
- Panel clips shall be positioned by matching the hole in the clip with the factory-punched holes in the secondary structural members.
- Panel shall be positioned and properly aligned by matching the factory punched holes in the panel end with the factory punched holes in the eave structural member and by aligning the panel with the panel clip.
- Panel sidelap shall be field-seamed by a self-propelled and portable electrical lock-seaming machine. The machine field forms the final 180 degrees of a 360 degree MR-24 double-lock standing seam; all side lap sealant shall be factory applied.
- Panel endlap, when required, shall be at least 150mm sealed with neutral-cure sealant and fastened together by clamping plates. Sealant shall contain hard nylon beads which prevent it from flowing out due to clamping actions. 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. The panel endlap shall be located directly over, but not fastened to, a supporting secondary roof structural member and be staggered, so as to avoid a four panel lap splice condition.
- 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.

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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.