

## Sectional Overhead Door



| Door type                                  | Sectional Overhead Door  |
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| <b>DESCRIPTION</b>                         | The work covered by this section comprises furnishing all lab our, equipment, appliance and materials and performing all operations in connection with sectional over head doors.  |
| <b>REQUIREMENTS OF REGULATORY AGENCIES</b> | All work shall be in accordance with the requirements of the authorities having jurisdiction and all applicable codes, rules and regulations, and ordinances.  |
| <b>QUALIFICATIONS</b>                      | <ol style="list-style-type: none"> <li>1. Each sectional overhead door as a complete unit produced by one manufacturer, including electrical motor, sections, brackets, tracks, counterbalance mechanisms, hardware, and installation accessories, to suit openings and headroom available and mixing of different components from different manufacturers is not allowed.</li> <li>2. The supplier shall have a minimum of 20 years working experience in Qatar for installation and maintenance of sectional overhead doors. The supplier shall have an authorized exclusive agreement with the manufacturer confirming the authorized representation in Middle East and availability of spare parts and factory trained technicians.</li> <li>3. The manufacturer must have a minimum of 30 years' experience in the manufacture, installation and maintenance of industrial doors and the installation technicians of service agent in Qatar shall be trained by the manufacturer.</li> <li>4. The supplier must guarantee in writing ready stock availability of parts and skilled technicians for 10 years.</li> <li>5. The manufacturer must be ISO 9001 &amp; 14001 certified. The doors must be manufactured in compliance with European standard E. N. 12445 and comply with CEN standards.</li> </ol> |
| <b>SUBMITTALS</b>                          | <p>A .Manufacturer's Data</p> <ol style="list-style-type: none"> <li>1. Copies of manufacturer's specifications and installation instruction for each type of rolling door to show compliance with these specifications.</li> </ol> <p>B. Samples</p> <ol style="list-style-type: none"> <li>1. Samples of door sections.</li> <li>2. Engineer's review of samples shall be for design only.</li> </ol>  |

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|  | <p>a. Requirements are the exclusive responsibility of the contractor.</p> <p>C .Shop Drawings</p> <ol style="list-style-type: none"> <li>1. 1 .Detailed drawings of special components required for the proper installation including anchoring and supporting systems.</li> <li>2. Prepare details at 1:4 minimum scale as approved by the Engineer and show details of adjacent wall and ceiling finishes</li> <li>3. Number all doors in accordance with a plan agreed with the Engineer.</li> </ol> <p>D. Operation and Maintenance manuals</p> <p>Six copies of the manufactures operation and maintenance manuals including parts lists and all other information needed for proper operation and maintenance of sectional Over Head Doors.</p>   |
| <p><b>DELIVERY, STORAGE AND HANDLING</b></p> | <p><b>A Delivery</b></p> <ol style="list-style-type: none"> <li>1. Deliver Sectional Over Head Doors and accessories completely identified for installation procedure.</li> <li>2. Use care in handling to prevent damage.</li> </ol> <p><b>B Storage</b></p> <p>The main contractor is to store, box in and protect specialist materials and plant as required, including the correct storage of flammable material.</p> <p>Store in accordance with manufactures instructions, above grade on dunnage, properly protected from the weather, construction activities and other possibility of damage or loss.</p> <p><b>C Before dispatch</b> from the manufactures works all exposed surfaces shall be protected with a suitable low tack tape or other means of protection recommended by the manufacturer.</p> |
| <p><b>Manufacturers</b></p>                  | <p><b>A. Manufacturers</b></p> <ol style="list-style-type: none"> <li>1. Products and manufacturers specified hereinafter are specified for the purpose of establishing minimum quality standards and are based on CRAWFORD model 542 Aluminium.</li> <li>2. Products equal in quality to or better than those specified, may be acceptable subject to the Engineers approval</li> </ol> <p><b>B. Features:</b> The door shall be designed in such a way that it doesn't consist of any protruding parts affecting personal safety in site.</p>  |
| <p><b>Door Leaf</b></p>                      | <p>The door leaf consists of process laminated, 42mm thick, 600mm high sections, Insulated by means of CFC-free polyurethane. The specific height of the Door is achieved by trimming the top section.(mixing up of different height sections not permitted) The sandwich panel has a micro rilled design of Aluminum sheet material, which is combined with a glossy finish to ensure a modern and attractive appearance. The door has side, bottom top and section joint seals. The door section consists of the following layers (from inside to outside): primer, Aluminum, primer and polyester coating.(Steel skin for sandwich panel is not acceptable)</p>   |

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|                                   | <p><b><u>Exterior Pre-painted Polyester;</u></b></p> <ul style="list-style-type: none"> <li>- Embossed (non-embossed, not possible)</li> <li>-Polyester 203 or shop painted in synthetic paint 200um in gloss 60+/.2 RAL 1016(DIN 67530).</li> <li>-Primer 5um.</li> <li>-Aluminum Sheet 0.5mm.</li> </ul> <p><b><u>Interior Natural Aluminium;</u></b></p> <ul style="list-style-type: none"> <li>-Embossed (non-embossed, not possible)</li> <li>-Aluminium sheet 0.5mm.</li> </ul>   |
| <b>Wind Resistance</b>            | The wind resistance is min. 700N/m <sup>2</sup> according to norm pr EN 12424 class 3 for a closed door with or without pass door.  |
| <b>Insulation</b>                 | The U-value for a closed (4 x 4m)- installed door without pass door is 1,1W/m <sup>2</sup> C, according to norm pr EN 12428. The mean average U value of door section = 0.45 W/m <sup>2</sup> C. Density of panel shall be minimum 46 Kg/m <sup>3</sup>   |
| <b>Water penetration</b>          | Resistance to water penetration is 70PA according to norm pr EN12425 Class 3 (exceptional) for a closed door with or without pass door.   |
| <b>Air Tightness</b>              | <p>At 50 Pa m<sup>3</sup> is approx. 8.5m<sup>3</sup>/m<sup>2</sup>/h according to norm pr EN 12426.</p> <p>Track</p> <p>A .For door weight up to 550 Kg, track shall be 50mm heavy gauge galvanized steel designed for stipulated clearances. Door weight more that 550 kgs, track shall be 76 mm.</p> <p>B Provide complete track including brackets, bracing and reinforcements for rigid support of the track for the required door type and sizes .Aligning tracks at proper angle from vertical to ensure light closure at jambs when the door is closed.</p> <p>C Wall tracks and roof track shall be 2.0mm thick.</p> |
| <b>Reinforcement and supports</b> | <p>A. Provide galvanized steel track reinforcement and support members. Secure, reinforce, and support tracks as required for size and weight of door to provide strength and rigidity, and to ensure against sag. Sway and detrimental vibration during opening and closing of door.</p> <p>B. Support and attach tracks at opening jambs with continuous angle in accordance to manufactures specification for size and weight of door.</p> <p>C. Roof hanger to support horizontal tracks to be hot dip galvanized steel angle bolted to the track for adjustments.</p>  |
| <b>Door Balancing system</b>      | <p>A. All doors shall be equipped with helical wound torsion springs that are tensioned as door closes.</p> <p>B. Springs shall be made of high tensile steel wire (DIN 17223/C) protected against corrosion by an aqua liquid layer.</p> <p>C. Springs shall be rated for 20,000 full operations as standard. Higher rating up to 150,000 cycles shall be provided wherever heavy duty application is required.</p>  |
| <b>Torsion Shaft</b>              | All doors shall be supplied with a Hex-shaped or round min. 35 mm steel shaft having a continuous keyway for looking the spring retainer.   |

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| <b>Bottom Corner Brackets</b>   | All bottom corner brackets shall be equipped with adjustable rollers (except when equipped with re-in forced heavy –duty bottom corner brackets). All brackets shall feature the safe locking of the lifting cable.   |
| <b>ROLLERS</b>                  | Provide heavy duty, lubrication free rollers, with steel ball bearings. Extend roller shaft through both brackets where double brackets are required. Provide Nylon roller tires to suit size of track.   |
| <b>Cable Drums</b>              | Provide cable drums designed to receive the proper diameter of cable and the weight of the door. The cable shall be attached to the drum by two extra safety turns and dual cable locking screws  |
| <b>Door Plates</b>              | Attach a permanent, corrosion-resistant doorplate stating the manufacturer’s name, Telephone number and serial number on each unit.   |
| <b>Step handles</b>             | Provide nylon cast recessed step plate on outside of door with attaching lift handle for inside of door.  |
| <b>Lifting Cables</b>           | Provide galvanized steel cables with a minimum safety factor of 5:1 for each cable.   |
| <b>Hardware</b>                 | Provide heavy duty fully adjustable roller brackets attached to the integrated reinforcement strip per manufacturer’s recommendation. The adjustable roller brackets are to provide perfect adjustment of door to the jamb to achieve a proper sealing function. Self-tapping fasteners shall be used to secure brackets to the door sections. Provide heavy duty, corrosion-resistant hardware, with galvanized fasteners, to suit type of door  |
| <b>Wall Angle</b>               | The wall angle shall have provision to allow movements of the door sections due to the temperature differences between inside and outside.  |
| <b>Weather seals</b>            | Doors shall be provided with intermediate sealing between the sections, top, bottom and sides of EPDM rubber as follows. <ol style="list-style-type: none"> <li>1. EPDM rubber tube seal with a tongue shall be fitted between the sections to prevent air filtration.</li> <li>2. Top section of the door shall have EPDM rubber sealing strip to provide firm seal against the weather when the door is in closed position.</li> <li>3. HD Polythene-jamb seal shall be provided on the wall angle to prevent direct contact to sections and to reduce friction.</li> <li>4. EPDM rubber tongue shall be fitted to the jamb seal to form a weather-light seal towards the outside skin of the door.</li> <li>5. EPDM Tube Bottom Sealing with double flanges shall conform to minor irregularities in the floor.</li> </ol> |
| <b>WIND LOAD &amp; TRUSSING</b> | <ol style="list-style-type: none"> <li>1. Doors shall be manufactured to meet a minimum wind load of 0.7KN/m<sup>2</sup>. Higher ratings up to 1.2KN/m<sup>2</sup> should be provided if required according to the design requirements.</li> <li>2. Doors which are wider than 4.2 meters to be re-in forced by stiffener strips (truss) to resist wind forces and counteract to deflection when the door is open. The wind stiffener is fitted to the steel reinforcement strip integrated in the door panel.</li> </ol>   |
| <b>SAFETY</b>                   |   |

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| <b>Spring Break Device</b>           | Doors to be provided with a spring break device, which will hold the door in position, in the event of breakage of the balancing springs.  |
| <b>Cable Break Device (optional)</b> | Doors to be provided with a cable break device, which will hold the door in position, in the event of breakage of the lifting cables.  |
| <b>R.P.M Control for motor</b>       | No mechanical RPM control, instead there is an adjustable current control system.  |
| <b>Finger Pinch Protection</b>       | The section joints to be designed to provide finger pinch protection.  |
| <b>Safety Pull Unit</b>              | When the horizontal track is less than 600 mm above the opening doors must be provided with safety pull unit. (The weigh of the door leaves vertical part is low in relation to the weight of the horizontal part when the door is fully open). The safety pull unit comprises wires, which provide a force in the opposite direction to the doors lifting wires. When the door is to be closed the safety pull unit pulls the door leaf downwards.  |
| <b>Pneumatic Safety Edge</b>         | <p>Bottom section of the door shall be fitted with a pneumatic device.</p> <ol style="list-style-type: none"> <li>1. Safety device shall be a pneumatic working in conjunction with the operator control.</li> <li>2. A compressible strip shall be mounted along the bottom section weather seal of each sectional door.</li> </ol> <p>Strip shall compress, activating the electrical control that will automatically stop and return the door to its fully raised position.</p> <p>Compressible strip shall also serve as weather strip along the bottom of the door.</p>   |
| <b>Electric Power Operations</b>     | <p><b>Motor</b></p> <ol style="list-style-type: none"> <li>A. Doors shall be provided with an electrically operated motor and controls wired for operation on voltage indicated on the electrical drawings complies with .</li> <li>B. The operator complies with the following EN safety standards: prEN12453, prEN12445 and prEN 12978,EN 13241-1,EN 61000-6-2 EN 61000-6-3,EN 60335-2-103 and relevant parts of EN 60204-1</li> <li>C. Operator inside shall be 03 phase with 1phase 230V/50Hz input supply, IP 55 protected, bracket mounted and connected directly to the balancing assembly by direct drive. Indirect chain driving operators are not acceptable. Machinery input shall be 230V single phase, which after rectification and filtration, operates on 03 phase AC motor fitted inside the mechanical unit. Mechanical unit shall be single dose lubricated.</li> <li>D. Motor shall be heavy duty industrial standard type. Drive unit shall be connected with main control through a 7 core cable.</li> <li>E. Operator shall be provided with a pulse counter(RPM Control) connected to a self braking worm gear which senses an obstruction in either downward or upward travel and stops the door movement; this device shall override all other safety equipment.</li> <li>F. Operators shall be equipped with an auto/manual change over device, to quickly change to manual operation in case of power failure or removal of the motor for inspection or servicing.</li> <li>G. The motors shall have an optional facility to provide battery back up.</li> </ol> |

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| <b>Operating Environment</b>      | <p>Temperature Range :-20 to +60</p> <p>Chemical Environment : Appropriate for different industrial environments except for high content of chlorine gas or sulphuric acid in the ambient air not prepared for explosive environment.</p> <p>Space Requirements :As per separate description for different method of installation.</p> <p>Installation Position :Left, Right or centre</p> <p>Hardware:External support bearings required on door shaft for door weights &gt; 200Kg (side positioned machinery).</p> <p>Attachments : The tensile force in the moment stay does not exceed 300 N(30Kg) , Limit Switches : Electronic Limit positions which automatically adjusts during programming.</p> <p>Disengagement : Mechanical</p>   |
| <b>Controller</b>                 | <ol style="list-style-type: none"> <li>1. Doors shall be controlled by a momentary contact, 3-button pushbutton station marked OPEN, CLOSE, STOP.</li> <li>2. Pushbutton stations shall be housed in BS 60529 enclosures. Enclosure class: IP 55.</li> <li>3. Electrical Safety: Complies with EN requirements for insulation and screen protection for connection to mains cables with control electronics on circuit board.</li> <li>4. The control circuit board shall be micro processor based design with built in automatic closing, three button operation, one button operation &amp; open function as standard and safety features like rev monitor, pinch guard, delay time interval and overload.</li> <li>5. Additional push button station shall be provided in the central control room with the following control options. <ol style="list-style-type: none"> <li>1. Individual push button unit for each door.</li> <li>2. Common push button which operates one row of doors</li> <li>3. Common push button which operates all doors .</li> </ol> </li> <li>6. Traffic Lights: Red and green traffic lights to be provided by sectional door supplier and integrated with the door control system and central control room operation.</li> <li>7. Fire alarm integration: Sectional doors shall be provided with an additional function of FA integration. All doors connected to FA system shall open automatically in case of FA activation.</li> </ol> |
| <b>Operators</b>                  | <p>A. Operators shall be designed to transmit motion to the door without shock.</p> <p>1 Automatically release motor from drive unit to stalling, so as to prevent damage to unit from overload.</p> <p>B. An efficient heat and current-sensing overload protective device, installed integrally with the unit shall break the control circuit to eliminate damage to motor windings.</p>   |
| <b>Motor Power Rating</b>         | <p>Motor shall be the manufacturers standard power, except motors shall be not less than 0.37 KW</p> <p>Electrical Motor shall have a minimum lifting capacity of 400Kg and opening speed of 0.25m/s.</p>  |
| <b>Emergency Manual Operation</b> | <p>Separate geared chain hoist mechanism to be provided for manual operation. Auxiliary chain mechanism shall be in operation even after the operator is removed for maintenance. Emergency chain supplied as a part of the operator is not</p>  |

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|                                | acceptable due to the critical nature of the building.  |
| <b>Glazing(Vision Panel)</b>   | All the sectional overhead doors shall be provided with 03 rows of double acrylic panes. Standard size glazing to be rectangular DARP (602 x 292mm).Number of panes and location as indicated in manufacturer's specification. Panes shall be locked to door section by a black rectangular or oval plastic frame (DARP) to provide weather tightness.  |
| <b>FINISH</b>                  | Steel components shall be galvanized in accordance with BS 14713.<br>Shop coat with a rust inhibitive primer on galvanized and non-galvanized surfaces and operating mechanisms.<br>Finish coat to be Polyester 203 or shop painted in synthetic paint 200um in gloss 60+/.2 (DIN 67530).   |
| <b>EXECUTION INSTALLATION</b>  | A Install doors in accordance with manufacturer's instruction. <ol style="list-style-type: none"> <li>1. Anchors and inserts for guides, brackets, motors, controls, switches and other work shall be accurately located.</li> <li>2. Install counter balance mechanism with manufacturer's fully adjustable ball bearing brackets at each end of the shaft. Furnish torsion shaft centre support bearings as required for size and weight of the doors.</li> <li>3. Fasten vertical track assembly to framing. Hang horizontal track from structural overhead framing with angle or channel hangers bolt-fastened in place. Provide sway bracing, diagonal bracing, and re-enforcing as required for rigid installation of track and door operating equipment.</li> <li>4. Upon completion, doors shall be free from warp, twist or distortion and shall be lubricated and adjusted to operate freely acceptable to the Engineer.</li> </ol> |
| <b>CLEANING AND PROTECTION</b> | Protection <ol style="list-style-type: none"> <li>1. After installation, protect doors from damage during subsequent construction activities.</li> <li>2. Damage work will be rejected and shall be replaced with new work without any additional cost to the Employer.</li> </ol>  |
| <b>CLEAN-UP</b>                | A. Upon completion, metal surfaces that are factory-finished shall be thoroughly cleaned and touched up as recommended by the manufacturer.<br>B. Do not use abrasives, caustic or acid cleaning agent.   |
| <b>MANUFACTURERS SERVICES</b>  | <ol style="list-style-type: none"> <li>1. Furnish the services of the electric door operator manufacturer's field service technician to inspect each final installation and supervise initial operation of the units.</li> <li>2. Manufacturer's certificate shall be submitted to the Engineer prior to testing the equipment.</li> <li>3. Furnish the services of the electric door operator manufactures trained representative for a minimum 1 trip a day to instruct plant personnel on proper operation and maintenance procedures</li> <li>4. Service may be combined with the inspection services specified above.</li> <li>5. Manufacturer should ensure availability of spare parts and trained technicians for period of minimum 10 years.</li> </ol>  |