




LIST OF ACCEPTED TRAFFIC CONTROL DEVICE


Delineators

System Type	System Name/Reference	Detail Description	Post Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Delineator Post	 <p><i>Impact Recovery Delineator</i></p>	<p>Delineators are designed to aid motorists in identifying the alignment of the roadway when utilized in roadside or centerline applications</p> <p>Ideal for using in parking lots and indicating alignment in roadway</p>	<p>42" (≥80 KPH)</p> <p>36" (<80 KPH)</p>	U.S.A.	<p>IMPACT RECOVERY SYSTEM 4955 Stout Dr. San Antonio, Texas 78219</p> <p>Tel : (800) 736 5256 Fax : (210) 734 6448</p> <p>www.impactrecovery.com</p>	<p>Emaras Impact System M39, S No.2 Mussaffah Industrial City Abu Dhabi U.A.E</p> <p>Tel: +971 2677 2258 Fax: +971 2677 2259</p>	Meets MUTCD Specifications
Delineator Post	 <p><i>Flexi</i></p>	<p>Delineators are designed to aid motorists in identifying the alignment of the roadway when utilized in roadside or centerline applications</p> <p>Ideal for using in parking lots and indicating alignment in roadway</p>	<p>42" (≥80 KPH)</p> <p>36" (<80 KPH)</p>	K.S.A	<p>Flexi Delineator P.O Box 136672 Jeddah KSA Tel : +966 12 2622165</p>	<p>Electro Industries PO Box: 24425 Doha,Qatar Tel: +974 4444 8402 Fax: +974 4450 2290</p>	



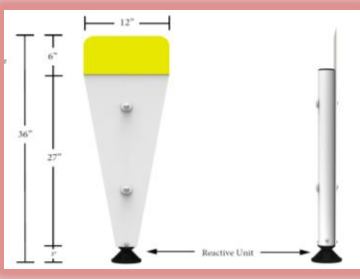
Delineators Cont'd

System Type	System Name/Reference	Detail Description	Post Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Delineator Post (Guide Post-Drivable type)	 <i>Shur-Tite</i>	Shur Flex is a multi-hit, Omni-directional and self-righting delineator.	42" (≥80 KPH) 36" (<80 KPH)	U.S.A	SHUR – TITE P.O. Box 2283 Round Rock, TX 78680 Tel : 512 218 9500 Fax :512 218 0417 www.shur-tite.com	Aurora Trading & Contracting P. O. Box 13828 Doha, Qatar Tel : 44624490 Fax: 44118075 k.lbrik@aurotagulf.com	Comply with FHWA and NCHRP 350 – Category 1 Traffic Control Device.
Tuff Curb type	 <i>Impact Recovery</i>	High Performance Traffic separator Curb having Quick release base. Ideal for using in curves, medians, edge lines, work zones & toll booth	40"	U.S.A	IMPACT RECOVERY SYSTEM 4955 Stout Dr. San Antonio, Texas 78219 Tel : (800) 736 5256 Fax : (210) 734 6448 www.impactrecovery.com	Emaras Impact System M39, S No.2 Mussaffah Industrial City Abu Dhabi U.A.E Tel: +971 2677 2258 Fax: +971 2677 2259	NCHRP 350 accepted # WZ – 243 MASH 2009 accepted # WZ -318 Comply with FHWA and NCHRP 350 – Category 1 Traffic Control Device.
Shur Curb type	 <i>Shur Tite</i>	-same as above-	40"	U.S.A	SHUR – TITE P.O. Box 2283 Round Rock, TX 78680 Tel : 512 218 9500 Fax :512 218 0417 www.shur-tite.com	Aurora Trading & Contracting P. O. Box 13828 Doha, Qatar Tel : 44624490 Fax: 44118075 k.lbrik@aurotagulf.com	

Delineators Cont'd

System Type	System Name/Reference	Detail Description	Post Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Delineator Post (High Performance Channelizer)	 <p style="text-align: center;"><i>Tuff Post</i></p>	<p>Tuff Post is a high performance channelizer designed to meet the harsh demands of high speed, high traffic areas. Tuff Post has been tested to sustain 50 impacts at 80 km/hr. with little damage to the unit</p> <p>Ideal when increased visibility and channelization is needed</p>	<p>42" (≥80 KPH)</p> <p>36" (<80 KPH)</p>	U.S.A.	<p>IMPACT RECOVERY SYSTEM 4955 Stout Dr. San Antonio, Texas 78219</p> <p>Tel : (800) 736 5256 Fax : (210) 734 6448</p> <p>www.impactrecovery.com</p> <p>SHUR – TITE P.O. Box 2283 Round Rock, TX 78680</p> <p>Tel : 512 218 9500 Fax :512 218 0417</p> <p>www.shur-tite.com</p>	<p>Emaras Impact System M39, S No.2 Mussaffah Industrial City Abu Dhabi U.A.E</p> <p>Tel: +971 2677 2258 Fax: +971 2677 2259</p> <p>Aurora Trading & Contracting P. O. Box 13828 Doha, Qatar Tel : 44624490 Fax: 44118075 k.lbrik@aurotagulf.com</p>	<p>Meets MUTCD Specifications</p> <p>Comply with FHWA and NCHRP 350 – Category 1 Traffic Control Device.</p>


Hazard Markers

System Type	System Name/Reference	Detail Description	System Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Hazard Marker	 <p><i>Sergent type</i></p>	<p>Sergeant Stripes are used when more target value is required, or any area where traffic is directed around two sides of an object</p> <p>Ideal for using in marking island, gore areas</p>	8"x 24", 12"x 24", 12"x 36"	U.S.A	<p>IMPACT RECOVERY SYSTEM 4955 Stout Dr. San Antonio, Texas 78219</p> <p>Tel : (800) 736 5256 Fax : (210) 734 6448</p> <p>www.impactrecovery.com</p>	<p>Emaras Impact System M39, S No.2 Mussaffah Industrial City Abu Dhabhi U.A.E</p> <p>Tel: +971 2677 2258 Fax: +971 2677 2259</p>	Meets MUTCD Specifications
Hazard Marker	 <p><i>Stripe type</i></p>	<p>Ideal for marking obstructions within or adjacent to the roadway</p> <p>Ideal for using in bridge and culvert approaches.</p>	12" x 24", 18" x 36"	U.S.A	<p>IMPACT RECOVERY SYSTEM 4955 Stout Dr. San Antonio, Texas 78219</p> <p>Tel : (800) 736 5256 Fax : (210) 734 6448</p> <p>www.impactrecovery.com</p>	<p>Emaras Impact System M39, S No.2 Mussaffah Industrial City Abu Dhabhi U.A.E</p> <p>Tel: +971 2677 2258 Fax: +971 2677 2259</p>	Meets MUTCD Specifications
Object Marker	 <p><i>Type II</i></p>	<p>Type II Object Markers may be used on island approach noses to indicate the presence of a raised curb or other obstruction.</p> <p>Ideal for using in marking island, gore areas.</p>	36"	U.S.A.	<p>IMPACT RECOVERY SYSTEM 4955 Stout Dr. San Antonio, Texas 78219</p> <p>Tel : (800) 736 5256 Fax : (210) 734 6448</p> <p>www.impactrecovery.com</p>	<p>Emaras Impact System M39, S No.2 Mussaffah Industrial City Abu Dhabhi U.A.E</p> <p>Tel: +971 2677 2258 Fax: +971 2677 2259</p>	




Pavement (Line) Marking

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Cold Applied Plastic	 <p>Reference picture only</p>	Cold applied plastic is a cold hardening 2-part poly methyl methacrylate (PMMA) resin material. This is tailored for specific applications like audio-tactile profiled (ATP) markings, structured markings and plain flat markings. All types come in white or lead free yellow and are catalyzed by benzoyl peroxide	Netherlands	VELUVINE Ramshoom 11, 4824 AG Breda, Netherlands Tel : +31 76 542 1200 Fax: +31 76 542 0288 Email : info@veluvine.nl	Al Jaber W.L.L P.O Box 23007 Doha, Qatar Tel: +974 444 11880 Fax: +974 444 11885	
Thermoplastic	 <p>Reference picture only</p>	Thermoplastic is a hot-applied road marking compound for the creation of highly reflective striping with long-term performance. Thermoplastic is based on either alkyl or hydrocarbon resins and contains a significant portion of premix glass beads.	KSA UAE Turkey	REDA International Co P.O. Box 5451 Riyadh 11422, KSA Tel: +966 11 4980888 Prismo Sector M14, Industrial Area Abu Dhabi – UAE Tel: +971 2 555 5939 KISSAN Insaat Muhendislik San Ve Tic A.S Turkey	Al Jaber W.L.L P.O Box 23007 Doha, Qatar Tel: +974 444 11880 Fax: +974 444 11885 & Open to all Prismo -Same address- SMS Module System Qatar (SMS) P.O Box 23528 Tel: 4451 3212 Fax : 4496454	


Pavement (Line) Marking

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Thermoplastic	 <p><i>Reference picture only</i></p>	Thermoplastic is a hot-applied road marking compound for the creation of highly reflective striping with long-term performance. Thermoplastic is based on either alkyd or hydrocarbon resins and contains a significant portion of premix glass beads.	Kingdom of Saudi Arabia (KSA)	M/S Saudia Road Marking Materials KSA	Unigulf Electro Mechanical Services Co Doha Qatar Fax: 4423553	






Road Studs

System Type	System Name/Reference	Description	Dimension	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Road Studs (Reflective)	 <p>SR 5500</p>	<p>Road Stud with high reflective glass elements</p> <p>Cast Aluminium alloy body with highly reflective glass elements; 31 or 43 glass elements on single panel.</p>	100mm X 100mm X 84.5 mm,	Portugal	<p>SERNIS Quinta do Carreiro,Lote 9/14 Portugal Tel: +351 253300440</p>	<p>Sign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454</p>	<p>Rural roads, ≥80 KPH roads,</p> <p>Recommended using in dual carriageways, expressways, bridges and wherever high traffic volume applies.</p>
Road Studs (Reflective)	 <p>NRS</p>	<p>Road Stud with high reflective glass elements</p> <p>Cast Aluminium alloy body with highly reflective glass elements; 31 or 43 glass elements on single panel.</p>		KSA	<p>NRS Studs Dammam First Industrial city- P.O.BOX.817 Dammam, KSA. Tel: +966 13-847-1830 Fax: +966 13-847-1834</p>	<p>UNIGULF PO.Box.3312 Doha, Qatar Tel: +974 44434523 & Open to all</p>	<p>Recommended using in Local roads, Low traffic Volume roads, short/long term traffic management and along with speed humps and Road chevron markings or else</p>
Road Studs (Reflective)	 <p>Reda</p>	<p>High Quality Aluminum Silicate Alloy (die-cast alloy with excellent resistance to corrosion). Conforming to BS 1490 standard.</p> <p>Reflectors:-3 plastic discs each with 7 highly reflective glass elements or 31 or 43 glass elements on single panel.</p>	<p>Permanent ALU STUDS: 1)15cm x 15cm single face or double face 2) 10cm x 10 cm single face or double face. 3) 10cm x 10cm Single face or double face. (high reflective index Ratio) Temporary (6 to 7 months reflection performance serviceable life for work zone) ALU STUDS: 1) 10cm x 10cm Single face or double face with prismatic Reflectors</p>	K.S.A	<p>REDA INTERNATIONAL CO. Zone B Street No 8 2nd Industrial Area P.O.Box 5451 Riyadh 11422 KSA Tel : +966 1 4980888/4981144</p>	<p>Al Jaber W.L.L P.O Box 23007 Doha, Qatar Tel: +974 444 11880 Fax: +974 444 11885 & Open to all</p>	<p>Recommended using in Local roads, Low traffic Volume roads, short/long term traffic management and along with speed humps and Road chevron markings or else</p>

Traffic Signs / Directional Signs

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Traffic Signs	 <p>Reference Pictures only</p>	Traffic signs are used to communicate a variety of information to road users and this is achieved through a combination of visual effects involving a message displayed on a distinctive signboard, shape, background color and brightness.	Qatar	Al Jazira Co. for Safety, Security & Cont. (Q Sign) Industrial Area Street No17 Gate No. 60, P.O. Box 7706 Doha, Qatar Tel : +974 460 2684 Fax : +974 460 2274	Al Jazira Co. for Safety, Security & Cont. (Q Sign) -Same Adress-	Recommended to use the aluminum bracket which should be strong and running full length of the sign face in numbers to suit the sign size and <u>no welding to the back channel are allowed</u> . Also use anti-rotational aluminum clips and stainless steel of grade of A4 fitting (bolts, nuts, washers, etc).
			Qatar	Electro Industries PO Box: 24425 Doha, Qatar Tel: +974 4444 8402 Fax: +974 4450 2290	Electro Industries -Same Adress -	
			UAE	Giffin Traffiks Corniche Road (Street # 7) - Abu Dhabi – UAE Tel:+971 2 551 1544		
			Qatar	Sigma Metal Industries Industrial Area, Street No. 30 P.O. Box: 33167 Doha – Qatar Tel: (+974) 44600994 Fax: (+974) 44600995	Sigma Metal Industries -Same Adress -	
			Qatar	Qatar Aluminium Extrusion Co. PO Box 201698 Doha, Qatar Tel: +974 4433 3555 (Aluminium sheet only)	Qatar Aluminium Extrusion Co. -Same Adress -	
			Qatar	Gulf Crafts Co WLL New Industrial Area Doha, Qatar Tel: (+974) 44602002 Fax: (+974) 44602220	Gulf Crafts Co WLL -Same Adress -	
Qatar	ELAN Signage P.O.Box 45953 Doha Qatar Tel:44282828	ELAN Qatar	Conditional Approval			

Traffic Signs / Directional Signs... Cont'd

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Directional Signs		<p>Directional Signs give drivers advance warning of their approach to a junction.</p> <p>It will Indicate the type of junction that will have to be negotiated.</p> <p>Inform drivers about the destinations that may be reached from each exit.</p>	Qatar	Al Jazira Co. for Safety, Security & Cont. (Q Sign) Industrial Area Street No17 Gate No. 60, P.O. Box 7706 Doha, Qatar Tel : +974 460 2684 Email: qsigns@qatar.net.qa (Except Over- head signs)	Al Jazira Co. for Safety, Security & Cont. (Q Sign) -Same Address-	Supply & Install all Directional signs type except Over-head sign , manufacturer all Directional signs types except Over- head signs Manufacturer, Supply & Install All Directional Signs Types
		<p>It Helps to identify the route and indicate its status within the network.</p>	Qatar	Electro Industries PO Box: 24425 Doha, Qatar Tel: +974 4444 8402 Email: electroi@qatar.net.qa	Electro Industries -Same Address -	Manufacturer, Supply & Install All Directional Signs Types
		<p>It Helps to identify the route and indicate its status within the network.</p>	UAE	Giffin Traffiks Corniche Road (Street # 7) - Abu Dhabi – UAE Tel:+971 2 551 1544 Email: giffin@eim.ae	Giffin Traffiks -Same Address -	Manufacturer, Supply & Install All Directional Signs Types
			Qatar	Sigma Metal Industries Industrial Area, Street No. 30 P.O. Box: 33167 Doha – Qatar Tel: (+974) 44600994 Email : fayoumi@sigma-industries.com	Sigma Metal Industries -Same Address -	Manufacturer, Supply & Install All Directional Signs Types
	 <p>Reference Pictures only</p>		UAE	Techno Arabia Signs Jebel Ali Industrial - Dubai – UAE Tel: +97143233294 Email: techsign@eim.ae		Manufacturer, Supply & Install All Directional Signs Types
			UAE	Al Jaber Signs Sector M20, Mussafah Industrial Area UAE Tel: +971 2 555 3707	ASMA (Salim@asmaqatar.com)	Manufacturer, Supply & Install All Directional Signs Types


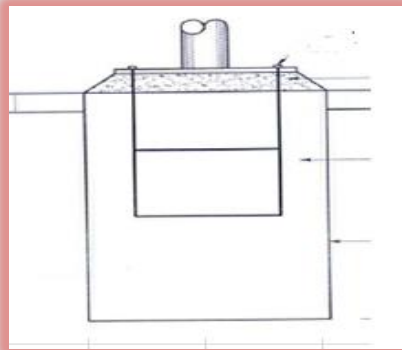
Traffic Signs / Directional Signs... Cont'd

System Type	System Name/Reference	Detail Description	System Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Directional Signs ...Cont'd					TRADING&AGENCY SERVICES LTD (TRAGS) P.O.BOX 1884 Doha Qatar. Tel : 44432212 Fax : 44422255 Email: tragsdoh@qatar.net.qa (Installation only)	Installation only	Meets MUTCD Specifications
					ELAN Signage P.O.Box 45953 Doha Qatar Tel:44282828 Fax:44282829 www.elan.qa	ELAN Signage	Conditional Approval

Sign Post/Structure

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Supporting Structures for Directional Signs (Gantry, Cantilever, Ground Mounted)	 <p>Reference Picture only</p>	Supporting Post/Structure for Directional signs	-			Non – frangible type, and hence safety barrier should be considered on every installation
Sign Posts (Passively Safe)	 <p>OPTIMAST</p>	OPTIMAST is an aluminum passively safe sign post complying with BS EN 12767 and CE for EN 12899 -1 2007.	U.K.	SIGN POST SOLUTIONS Unit 5, Clarendon Drive, The Parkway, Tipton U.K Tel:+ 44 (0) 121 506 4770 Fax: + 44 (0) 121 506 4771 www.signfix.co.uk	Electro Industries PO Box: 24425 Doha,Qatar Tel: +974 4444 8402 Fax: +974 4450 2290	Refer to manufacturer installation details.
Retention System for Foundation	 <p>Retention System(RS)</p>	Retention System is a unique method for installing posts in high-strength RS sockets that builds-on or replaces traditional foundation methods for fast, easy installation and removal of posts.	IRELAND	IPL GROUP Slane Road, Drogheda Co. Louth, Ireland. Tel : +353 41 983 2591 Fax : +353 41 983 2599 www.iplgroup.cpm	Sign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454	Foundation guidelines in accordance with EN 40 and BD94/07

Sign Post/Structure...Cont'd

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Retention System for Foundation		Retention System is a unique method for installing posts in high-strength RS sockets that builds-on or replaces traditional foundation methods for fast, easy installation and removal of posts.	U.K.	NAL LIMITED Weir Lane, Worcester WR2 4AY UK Email: sales@nal.ltd.uk Tel: 01905 427 100	Decorada Contracting P.O.Box 23528 Doha-Qatar Tel : +974 44690224	Foundation guidelines in accordance with EN 40 and BD94/07
Pre-Cast Concrete Foundation	 <i>Reference Picture only</i>	Dimension: Traffic signs- 400 mm X 400mm X 600mm & 600 mm X 600mm X 900mm Bitumen emulsion Protective coating for concrete foundation below the ground level to meet the requirements of ASTM C 309-93 and BS 6949:1991.	Qatar	Locally fabricated	Seek guidance from Ashghal Roads O&M Department for approved panel of contractors.	Ref Appendix 'C, J' for typical details

Fencing

System Type	System Name/Reference	Detail Description	Fence Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Pedestrian Guard Rail	 <i>Reference Picture only</i>	To guide pedestrian to a safer crossing point.	1040 mm	India	Metalmeccanica Fracasso India PVT Ltd E317, Floral Deck Plaza, Midc, Central road Mumbai, India.	TRADING&AGENCY SERVICES LTD (TRAGS) P.O.BOX 1884 Doha Qatar. Tel : 44432212 Fax : 44422255	Ref Appendix D for Typical detail
End Terminal	 <i>Terminal (PGR)</i>			K.S.A	AL Haramain Co. Al Nahdah, Jeddah 23614 KSA Tel: +966 12 694 2000	MIDWIL TRADING INC. P. O. Box 14054 Doha Qatar Tel : 44626121	
				Spain	HIASA Grupo Gonverri Hierros Y Aplanaciones, S.A Poligono Industrial de Cancienes S/N,33470 Carrera, Asturias, Spain. Tel: (+34) 985 12 8200 Fax: (+34) 985 50 5361 www.hiasa.com	Electro Industries PO Box: 24425 Doha, Qatar Tel: +974 4444 8402 Fax: +974 4450 2290	
P4 Aluminum pedestrian guard rail	Refer Appendix E for typical detail of P4 Aluminum pedestrian guard rail		1000 mm	UK	Varley and Gulliver Ltd Alfred Street Birmingham B12 8JR UK Tel: (+44) 121 773 2441	Sign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454	

Fencing... Cont'd

System Type	System Name/Reference	Detail Description	Fence Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Pedestrian Fence		To prohibit pedestrian random crossing roads or highways. Deco Model	-	Belgium	Betafence NV Deerlijkstraat 58A , Zwevegem , 8550 , Belgium Tel : 32 5 673 45 00 www.betafence.com	Etihad Qatari Integrated Project Management, Neptune, Doha,Qatar.	Ref Appendix F for Typical details
	 <i>Reference Picture only</i>	Decorative Model		Turkey	Betafence World Trade Centre Floor B1 Block 11/363 Yesilkoy Istanbul Phone : (0212) 465 77 90 Fax : (0212) 465 5970 Email : ls info@betafence.com	Sign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454	
Illuminated Fence			1.550 m & 1.950 m	Turkey	Kosedag No 2 Cad. No 1 Ankara Yolu Tuzla, Istanbul, Turkey. Tel : (+90) 216 593 24 00 Fax : (+90) 216 593 24 07 Email : kosedag@kosedag.com.tr	Sign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454	
Security Fence(Anti-climb Fence System)			2.50 m & 2.00 m	Turkey	-Same as above-	-Same as above-	



Fencing... Cont'd

System Type	System Name/Reference	Detail Description	Fence Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Security self-lock fence system			2.00 m/ 1.85 m/ Custom	Turkey	Kosedag No 2 Cad. No 1 Ankara Yolu Tuzla, Istanbul, Turkey. Tel : (+90) 216 593 24 00 Fax : (+90) 216 593 24 07 Email : kosedag@kosedag.com.tr	Sign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454	Under final commissioning of QA/QC issues of production facilities
Decorative and Self-lock Security Fence System and Anti-climb Fence		Decorative Model	Sizes (Height and Length) are Custom	China	GOLDNET 10-1 Middle Xinjing Road, South Part of Economic Development Zone,Zhangjiagang,Jiangsu Tel: 0086-0512- 56915999/59991029 Fax: 0086-0512-56915998 office@gold-net.com.cn www.gold-net.com.cn	Decorada Contracting P.O.Box 23528 Doha-Qatar Tel : +974 44690224	
Road Protection Fence	Refer Appendix 'K' for typical detail of Road protection fence.		2.55 m	Switzerland	Geobru gg AG Security Engineering Aachstrasse 11 CH-8590 Romanshorn / Schweiz Tel. +41 71 466 81 55 Fax +41 71 466 81 50	Electro Industries PO Box: 24425 Doha,Qatar Tel: +974 4444 8402 Fax: +974 4450 2290	

Fencing... Cont'd

System Type	System Name/Reference	Detail Description	Fence Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Stock Proof Fence (Camel Fence)	 <p><i>Stock Proof Fence</i></p>	To prevent stock encroaching highway.	1.9 m	U.A.E	LINK MIDDLE EAST P.O. BOX: 16846 Dubai UAE TEL:(971) 4-8816750 FAX:(971) 4-8816250	ELECTRO INDUSTRIES QATAR. P. O. Box 24425 Doha Qatar Tel : 48816750	
Chain Link Fence	 <p><i>Reference Pictures only</i></p>	Chain Link fence are normally used to demarcate boundaries and safety reasons.	2.0 m	Turkey	AL HARAMAIN Co. Al Nahdah, Jeddah 23614 KSA Tel: +966 12 694 2000	- ign Module System P.O Box 23528 Doha-Qatar Tel : +974 44513212 Fax : +974 44696454	
					BETAFENCE Yapi Sanayi ve Ticaret A.S. Turkey 34149 yesilkov		


Fencing... Cont'd

System Type	System Name/Reference	Detail Description	Fence Height	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Chain Link Fence	 <p>Reference Pictures only</p>	Chain Link fence are normally used to demarcate boundaries and safety reasons.	1.9 m	U.A.E	LINK MIDDLE EAST P.O. BOX: 16846 Dubai UAE TEL:(971) 4-8816750 FAX:(971) 4-8816250 CLIC Qatar Trading Co Doha Qatar P.O Box 23599 Tel:44503670 Fax 44503723	ELECTRO INDUSTRIES QATAR. P. O. Box 24425 Doha Qatar Tel : 48816750 CLIC Qatar Trading Co Doha Qatar P.O Box 23599 Tel:44503670 Fax 44503723	
Animal Grid		Chain Link fence are normally used to demarcate boundaries and safety reasons.	2.1 m	UAE	LINK MIDDLE EAST P.O. BOX: 16846 Dubai UAE TEL:(971) 4-8816750 FAX:(971) 4-8816250	ELECTRO INDUSTRIES QATAR. P. O. Box 24425 Doha Qatar Tel : 48816750	
Aluminum Bridge Mono Rails		Monorail for bridge parapet	Alum tube 101.6m /DIA3.2mm	Lebanon	M/S Sigma Contracting & Trading Lebanon	MIDWIL TRADING INC. P. O. Box 14054 Doha Qatar Tel : 44626121	

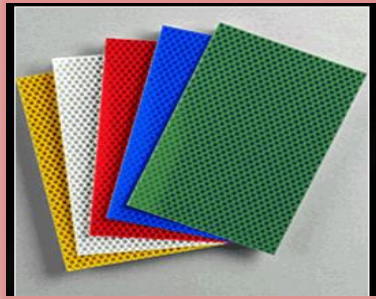

Bollards

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Bollards (Rebound able Type- Passively safe)	 <i>Advance NEO 150 Black, Lockfast version</i>	Passively safe rebound socketed bollards	U.K	GLASDON INT. LTD New Road, Blackpool, Lancashire, FY4 4UL UK Tel : +44 1253 600435 Fax: +44 1253 600436 Email : gil@glasdon.com	Midwil Trading P. O. Box 14054 Doha Qatar Tel : 44626121 sales@midwilinc.com	Refer to manufacturer installation details.
Bollards (Rebound able Type- Passively safe)	 <i>Vergemaster RX Marker Post</i>	Passively safe verge marker with wide-angle reflectors Extended base fixing model successfully tested to Performance Standard NE4/100 by TRL	U.K	GLASDON INT. LTD New Road, Blackpool, Lancashire, FY4 4UL UK Tel : +44 1253 600435 Fax: +44 1253 600436 Email : gil@glasdon.com	Midwil Trading P. O. Box 14054 Doha Qatar Tel : 44626121 sales@midwilinc.com	
Bollards (Concrete)	 <i>Concrete bollards</i>	OPC 40 concrete cement to be pigmented white to the requirement of BS 1014	Qatar	Locally fabricated		Ref Appendix I for Typical detail

Bollards- Cont'd...

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Bollards		<p>Cantabrai <i>Cast Iron Bollard</i></p> <p>Frades Model P 46 with removable base Cantabria P 45C Compostesia P 42 Rande Bollard P 45 A Removable Base P 46</p> <p>850mm*170mm</p> <p>300mm*Ø300mm 900mm*Ø160mm 700mm*Ø120mm 780mm*Ø190m</p>	Spain	<p>REY- Pprocesos De Fundicion VAT: B 36460734 Spain</p>	<p>Sign Modulus (SMS) Doha Qatar</p>	

Reflective Sheeting

System Type	System Name /Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Reflective Sheeting (Diamond Grade)	 <p>3M Series 4000</p>	<p>Diamond Grade DG3 Reflective Sheeting</p> <p>Type IX sheeting</p>	U.S.A	<p>3M Traffic Safety Systems Division Centre Cain Road Bracknell , Berks RG12 8HT Tel: 01344 857950 Fax: 01344 857970</p>	Seek guidance from Ashghal Roads O&M Department for approved supplier/installer details	
Reflective Sheeting (High Intensity Grade)	 <p>AVERY T6500</p> <p>Avery Dennison T-6500</p>	<p>Very High Intensity Micro-Prismatic Reflective sheeting</p>	U.S.A	<p>Avery Dennison 6565 W. Howard Niles, IL, 60714 USA Tel: 1 800 327 5917</p>	Seek guidance from Ashghal Roads O&M Department for approved supplier/installer details	

Reflective Sheeting... Cont'd

System Type	System Name/Reference	Detail Description	Country	Manufacturer	Local Supplier/Installer	Acceptance Status / Comment
Reflective Panels (Delineation of safety barriers and barricades)	 <i>3M Diamond Grade Linear Delineation System (LDS)</i>	<p>3M Diamond Grade Linear Delineation System (LDS) is intended for the linear reflectorization of concrete barriers and metal guardrails.</p> <p>Linear Delineation System panels are fabricated from 3M Diamond Grade (Type XI) Reflective sheeting, and are laminated into a thin gauge of aluminum and formed to a unique shape, which provides retro reflection across a very wide range of entrance and observation angles.</p>	U.S.A	3M Traffic Safety Systems Division Centre Cain Road Bracknell , Berks RG12 8HT Tel: 01344 857950 Fax: 01344 857970	Seek guidance from Ashghal Roads O&M Department for approved supplier/installer details	
Reflective Markers (Supplementary delineation device on temporary barrier systems)	 <i>Model LS-500 with 3 LEDs</i>	<p>The Lux- Solar LED Road Marker (Model LS 500 with 3 LEDs) is intended to use as a supplementary delineation device on temporary barrier systems in work zones.</p> <p>Dimension : 110mm X90mm X32mm Weight: 390g Poly Carbonate Housing</p>	U.S.A	LUX SOLAR, Inc Florida Micro Electronics 1601 Hill Avenue West Palm Beach, Florida-33407, USA Tel: +954-608-4608	ADA International LLC Level 21 Burj Doha-Qatar Tel: 4031 6664 Fax: 4031 6665	<p>Acceptance criteria as supplementary product only for Ashghal Roads Maintenance Dept. and not to be listed generally as a primary product(As per Ashgal Prequalification committee MOM of 22nd July 2015)</p> <p>It should be used only with recommended reflective strips or panels and high intensity solar powered warning lamps as per section 5.4.1 of the WZTMG</p>

Appendix A: Prerequisites of material for the Directional signs

(1) Reflective Sheeting:

- The approved reflective sheeting to be used must be conforming to ASTM D4956 Type XI. The digital printing solution is accepted with condition, (Warranty to be not less than 10 years)
- The reflective sheet manufacturer shall be one of the following: 3M USA , or Avery Dennison USA.

(2) Sign Face Plate:

- The sign Face to be used is Aluminum sheet 3mm Minimum Thick. Or Aluminum Planks 2mm Minimum Thick. With 200mm width for the plank.
- The approved Aluminum planks and back channel is the attached profiles.
- To use an approved anti – glare coating paint for the back side of the sign

(3) Sign Posts , Base Plate & Anchor Bolts:

- Overhead structure type is Mono-tube. Ground Mounted and Flag signs posts type is circular
- To be Hot Dip Galvanized to BS EN ISO 1461
- Anchor bolts to be in compliance with QCS2014
- Sizes: to be in compliance with QTM (or equivalent as per the attached drawings) and with QCS2014. To submit a calculation notes for the used posts, Anchor Bolts, Base plate, I-beams, etc.

(4) Fixtures & Fittings:

- For Aluminum sheet, use Stainless Steel clamps, and Anti – Rotational Aluminum Clamps in case fixing the sign face on one circular post.
- For Aluminum Planks, use Stainless Steel clamps.
- Use Stainless Steel fittings (Bolts, Nuts, Washers, etc.)

(5) Quality Control:

- A set of directional signs with complete components shall be tested by the laboratory and the results should be checked prior to installation.
- To submit clear Mill Test Certificates for all material used for the directional signs and to be checked prior to installation.
- A valid Authorization Certificate from the reflective sheeting manufacturer for the Directional Signs Fabricator to be submitted and checked prior to fabrication.
- A Compliance Certificate to be submitted after the installation from the reflective sheeting manufacturer stated that all Directional sign faces have been fabricated in compliance with reflective sheet manufacturer instructions.
- Factory visit is required during the fabrication stage to check the quality of the raw material and the fabrication, factory visit report shall be submitted to RMD for our record.
- To add an information plate illustrating the project code, sign number, date of fabrication, date of installation and the name of the manufacturer in the revised side of the sign panel.
- Upon completion of the directional signs installation, the consultant and the contractor/subcontractor are oblige to fill the inspection report form(copy is attached) for each installed directional signs and provide us with these reports for record and release of clearance in future

(6) Illumination:

- In compliance with AASHTO 2009 section 2 page 2-5, and 3M reflective sheet manufacturer recommendation, we recommend to not use external illumination as DG3 (or equivalent) is of high reflectivity sheeting with wide entrance and observation angles, taking into your consideration that the provision of power supply and CUTOFF 10 Amp to the Over-Head signs is required for future use, and to omit the related items from the BOQ (if the project is under design), or deduct it is rate (if the project already awarded).

(7) Residential Street Name Signs:

- Each street shall be named in accordance with the Engineer's instructions.
- Name plates shall be mounted on posts, existing street furniture, walls or railings at all road junctions.
- Signs on single posts shall be double faced and more than one sign may be supported on the post if the location so demands. Two sign plate shall be firmly secured back to back and shall be of standard dimensions.
- Signs supported on two posts or wall mounted shall be single faced, except Type F which has double face.

To be cont'd

- The width of the nameplate for main street signs is 300 millimeters. All sign plates shall bear the names and numbers of the streets and the zone numbers plus borders with lettering formed in Arabic and English upper and lower case corresponding to a lower case x-height of 50 millimeters and laid out according to the dimensions and style.

- The sign plates shall be chosen from one of five standard lengths of 600, 750, 900, 1,050 or 1,200 millimeters as may be appropriate according to the length of the street name & Number plus the zone number with any surplus space being distributed equally on either side of the name as approved by the Engineer
- Facing sign plates shall be of extruded aluminum covered with blue vitreous enamel or the blue Powder paints (with 20 years Guarantee along with certificate) as per the engineer instruction, with the legend and decorations in white reflective sheet (preferred) or vitreous enamel as per engineer instruction.
- Anchorage system to be used for signs on posts

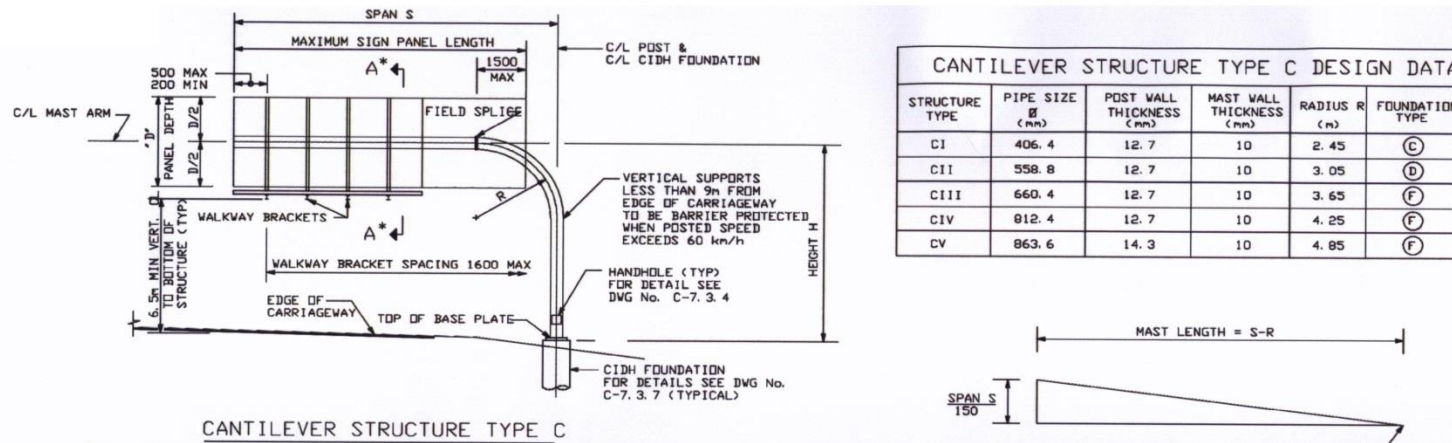
The following types apply:

- Type A: These signs are mounted on single posts with a height of 300 millimeters. Signs are double-faced and two signs may be supported on a post, according to a location's particular requirements. Type A signs have a prominent location and should be positioned at minimum 100 centimeters behind the curb or edge of the carriageway. They should also be positioned on central reserves or medians wherever appropriate, at an equidistant point between the two curbs.
- Type B: These signs are fixed onto appropriate, existing street furniture such as lampposts, at a minimum height of 230 millimeters and a maximum height of 300 millimeters. B-type signs are also double-faced and two signs may be fixed onto one piece of street furniture.
- Type C: These are single-faced signs at a minimum height of 230 millimeters and a maximum height of 300 millimeters, which are mounted onto fences or railings. They have a preferred height of 1.5 to 3.0 meters.
- Type D: Also single-faced signs at a minimum height of 230 millimeters and a maximum height of 300 millimeters, these signs are attached to walls at a minimum of two meter from the ground and maximum of three meters. They should be located as close to the road junction as possible without detracting from the amenities of the property to which they are attached.
- Type E: These signs are supported on two purpose-built galvanized iron posts and have a mounting height of 1.8 meter. Generally they should be positioned in the road corridor approximately 100 centimeters from its outer edge. At road junctions they should be positioned at a minimum distance of 100 centimeters from the corner of the road corridor.
- Type F: These signs are supported on two extruded aluminum post with variable diameter and have two aluminum faces 3mm thick covered with retro reflective sheeting. Both background and writing are to be of the same reflective material.
- The final position of each foundation shall be proposed by the Contractor for the approval of the Engineer.
- Street names shall be in the Arabic and English languages.
- A sample of each type of main street sign and local street sign including posts shall be submitted for the approval of the Engineer, before commencing mass production. Original artwork showing proposed lettering and numbering for each individual name plate shall similarly be submitted for final approval by the Engineer.
- The signs to be stored which are for future erection on as yet unconstructed streets shall be marked by a reference code relating to the street number and stored in a manner by which they may easily be identified using a system to be approved by the Engineer. All items shall be protected and packed to ensure a 15 year life without deterioration. The outside of any packaging shall indicate the contents.
- All parts of the street sign plates, posts and fixings shall be appropriate for a design life of 15 years under the climatic and environmental conditions of Qatar and be demonstrated to be vandal proof. All material treatments, enameling, post coatings and their application and fixing shall be in accord with the Specifications given above.
- The lettering sizes are based on QTM.

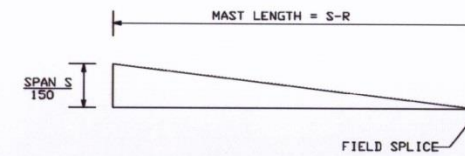
Any details, specifications and standard related to the directional signs and it is not mentioned in the above shall be in compliance with QCS2014, QTM and IAN 14.

Appendix B: Typical details of Supporting Structures for Directional Signs

(1) Cantilever Structure Type C



CANTILEVER STRUCTURE TYPE C DESIGN DATA					
STRUCTURE TYPE	PIPE SIZE Ø (mm)	POST WALL THICKNESS (mm)	MAST WALL THICKNESS (mm)	RADIUS R (m)	FOUNDATION TYPE
CI	406.4	12.7	10	2.45	(C)
CII	558.8	12.7	10	3.05	(D)
CIII	660.4	12.7	10	3.65	(F)
CIV	812.4	12.7	10	4.25	(F)
CV	863.6	14.3	10	4.85	(F)



CAMBER DIAGRAM

