



Standard Details of Road Elements

April 2014 Edition
Revision B : September 2017

Land Transport Authority

GENERAL NOTES

- 1) THE STANDARD DETAILS OF ROAD ELEMENTS (SDRE) ARE APPLICABLE TO ALL ROAD INFRASTRUCTURE PROJECTS.
- 2) PRIOR APPROVAL SHALL BE SOUGHT FROM LTA FOR ANY CHANGES TO THE FORM, SHAPE & DIMENSIONS OF THE ELEMENTS IN SDRE.
- 3) FOR THE ADOPTION OF DETAILS IN THE SDRE THAT REQUIRES SUBMISSION TO THE BUILDING & CONSTRUCTION AUTHORITY (BCA) AS STIPULATED IN THE BUILDING CONTROL ACT, THE PE / QP SHALL BE RESPONSIBLE FOR THE DESIGNS OF ALL STRUCTURAL AND GEOTECHNICAL WORKS IN ACCORDANCE WITH THE REQUIREMENTS IN THE BUILDING CONTROL ACT.
- 4) FOR THE ADOPTION OF DETAILS IN THE SDRE THAT DO NOT REQUIRE SUBMISSION TO BCA AS STIPULATED IN THE BUILDING CONTROL ACT, THE QP/ PE SHALL CHECK THE SITE CONDITIONS AND VERIFY THAT THE STRUCTURAL / GEOTECHNICAL DETAILS FALL WITHIN THE DESIGN ASSUMPTION / PARAMETERS. HE SHALL ENDORSE THE AS-CONSTRUCTED DRAWINGS OF THE ELEMENT UPON COMPLETION AND SUBMIT TO LTA.
- 5) THE SDRE SHALL BE READ IN CONJUNCTION WITH THE LTA MATERIALS AND WORKMANSHIP (M&W) SPECIFICATIONS AND DESIGN CRITERIA.
- 6) ALL CROSS REFERENCES BETWEEN STANDARD DETAILS SHALL BE TO THE LATEST REVISION.
- 7) ALL STANDARDS AND CODES REFERRED SHALL BE THE LATEST VERSION.
- 8) ALL DIMENSIONS SHOWN ARE IN MM UNLESS OTHERWISE STATED.
- 9) THE FOLLOWING CONCRETE GRADES SHALL BE USED, UNLESS OTHERWISE STATED:
REINFORCED CONCRETE - C25/30
MASS CONCRETE - C16/20
LEAN CONCRETE - C12/15
- 10) ALL CORNERS OF TRAFFIC SIGNS ARE TO BE OF 50mm RADIUS AND ON EXPRESSWAYS THE 600mm X 600mm TRAFFIC SIGNS SHALL BE INCREASED TO HAVE DIMENSIONS OF 900mm X 900mm.
- 11) ALL ALUMINIUM SHEETS SHALL COMPLY WITH BS EN 485, BS EN 515 AND BS EN 573.

TABLE OF CONTENTS

CHAPTER NO.	DRAWING TITLE	CHAPTER NO.	DRAWING TITLE
1	<p><u>PAVEMENTS OF ROADS</u></p> <p>FLEXIBLE PAVEMENT , RECAMBERING & WIDENING OF CARRIAGEWAY</p> <p>RIGID PAVEMENT (SHEET 1 OF 2)</p> <p>RIGID PAVEMENT (SHEET 2 OF 2)</p> <p>PUBLIC LIGHTING</p> <p>TRAFFIC LIGHT CABLE</p>	4	<p><u>GRATINGS & MANHOLE COVERS</u></p> <p>PEDESTRIAN GRATING FOR SUMP / DRAIN - WITHOUT MILD STEEL PLATE</p> <p>PEDESTRIAN GRATING FOR SUMP / DRAIN - WITH MILD STEEL PLATE</p> <p>FRAME FOR PEDESTRIAN GRATING</p> <p>VEHICULAR GRATING FOR MANHOLES (SHEET 1 OF 2)</p> <p>VEHICULAR GRATING FOR MANHOLES (SHEET 2 OF 2)</p> <p>VEHICULAR GRATING FOR DRAINS (SHEET 1 OF 2)</p> <p>VEHICULAR GRATING FOR DRAINS (SHEET 2 OF 2)</p> <p>MANHOLE COVER AND FRAME</p> <p>ROADSIDE MANHOLE GRATING</p>
2	<p><u>DRAINS & CULVERTS</u></p> <p>PRECAST CONCRETE CHANNEL AND DRAIN</p> <p>CAST-IN-SITU BOX CULVERT</p> <p>PRECAST CONCRETE PIPE CULVERTS</p> <p>PRECAST OPEN U-DRAIN</p> <p>PRECAST SLABBED OVER U-DRAIN</p> <p>PRECAST CONCRETE DROP-INLET CHAMBER</p> <p>SUB-SOIL DRAIN AND SUMP ALONG EXPRESSWAY</p> <p>SUB-SOIL DRAIN AND SUMP ALONG MAJOR ARTERIAL</p>	5	<p><u>RAILINGS</u></p> <p>PEDESTRIAN ALUMINIUM ALLOY RAILINGS - TYPE A, B, C, D, E & F (SHEET 1 OF 2)</p> <p>PEDESTRIAN ALUMINIUM ALLOY RAILINGS - TYPE A, B, C, D, E & F (SHEET 2 OF 2)</p>
3	<p><u>KERBS & FOOTPATHS</u></p> <p>KERBS AND DIVIDERS</p> <p>KERB PAINTING (SHEET 1 OF 2)</p> <p>KERB PAINTING (SHEET 2 OF 2)</p> <p>CIVIC DISTRICT KERB - TYPE C1, C2, C3 & C4</p> <p>FOOTPATH RAMP - TYPE 1 PEDESTRIAN CROSSING POINTS</p> <p>FOOTPATH RAMP - TYPE 2 PEDESTRIAN CROSSING POINTS</p> <p>FOOTPATH RAMP - TRAFFIC ISLAND</p> <p>FOOTPATH RAMP - SIDE ROAD</p> <p>FOOTPATH RAMP - DRIVEWAY</p> <p>FOOTPATH RAMP - FOOTPATH BESIDE OPEN DRAIN</p> <p>CAST-IN-SITU CONCRETE PAVEMENT</p> <p>HOMOGENEOUS TACTILE TILES AND ARRANGEMENT OF TACTILE TILES</p> <p>KERB WITH SLOT HOLES</p>	6	<p><u>GUARDRAILS</u></p> <p>VEHICULAR IMPACT GUARDRAILS - TYPE A & B TERMINALS</p> <p>VEHICULAR IMPACT GUARDRAILS - CRASH CUSHION</p> <p>CONCRETE BARRIER AT CENTER MEDIAN</p> <p>ARRANGEMENT AND CONNECTION DETAILS OF VEHICULAR IMPACT GUARDRAILS</p> <p>VEHICULAR IMPACT GUARDRAILS - THRIE-BEAM TRANSITION</p> <p>DOUBLE SIDED VEHICULAR IMPACT GUARDRAIL</p> <p>GUARDRAILS IN FRONT OF COLUMN - WITHOUT ADJOINING VEHICULAR IMPACT GUARDRAILS</p> <p>GUARDRAILS IN FRONT OF COLUMN - WITH ADJOINING VEHICULAR IMPACT GUARDRAILS</p>

TABLE OF CONTENTS

CHAPTER NO.	DRAWING TITLE	CHAPTER NO.	DRAWING TITLE
7	<p><u>DIRECTIONAL SIGNS</u></p> <p>LETTERINGS FOR DIRECTIONAL SIGNS - UPPER CASE (SHEET 1 OF 2)</p> <p>LETTERINGS FOR DIRECTIONAL SIGNS - UPPER CASE (SHEET 2 OF 2)</p> <p>LETTERINGS FOR DIRECTIONAL SIGNS - LOWER CASE (SHEET 1 OF 2)</p> <p>LETTERINGS FOR DIRECTIONAL SIGNS - LOWER CASE (SHEET 2 OF 2)</p> <p>NUMBERS FOR DIRECTIONAL SIGNS</p> <p>ARROWS FOR DIRECTIONAL SIGNS</p> <p>NOTES FOR DIRECTIONAL SIGNS (SHEET 1 OF 2)</p> <p>NOTES FOR DIRECTIONAL SIGNS (SHEET 2 OF 2)</p>	9	<p><u>TRAFFIC MANAGEMENT MEASURES</u></p> <p>SPEED REGULATING STRIPS</p> <p>CHANNELISING ISLANDS & U-TURN</p> <p>PHYSICAL NOSING WITH DRAINAGE - FOR EXPRESSWAY & NON-EXPRESSWAY</p> <p>PAVEMENT MARKINGS FOR PEDESTRIAN CROSSINGS</p> <p>RAISED ZEBRA CROSSING</p> <p>ROAD HUMP</p> <p>BUS FRIENDLY ROAD HUMP</p> <p>BUS FRIENDLY ROAD HUMP CUM RAISED ZEBRA CROSSING</p> <p>WAITING AREA FOR MOTORCYCLISTS</p>
8	<p><u>ROAD MARKINGS & SIGNS</u></p> <p>LANE MARKINGS (SHEET 1 OF 3)</p> <p>LANE MARKINGS (SHEET 2 OF 3)</p> <p>LANE MARKINGS (SHEET 3 OF 3)</p> <p>ARROW MARKINGS</p> <p>MULTI-HEAD ARROW FOR TURNING MOVEMENTS</p> <p>TYPICAL ACCELERATION LANE AT EXPRESSWAY</p> <p>TYPICAL DECELERATION LANE AT EXPRESSWAY</p> <p>CHEVRON MARKINGS</p> <p>ROAD SIGNS & MARKINGS AT INTERSECTIONS</p> <p>BUS LANE MARKINGS</p> <p>MANDATORY GIVE WAY TO BUS (MGWTB)</p> <p>PAVEMENT MARKINGS FOR SHARP CURVE</p> <p>CURVE ALIGNMENT MARKERS (CAM)</p> <p>GUIDING LINES AND TURNING POCKETS AT INTERSECTIONS</p>	10	<p><u>SUPPORTS FOR ROAD SIGNS</u></p> <p>SUPPORT FOR DIRECTIONAL AND INFORMATION SIGNS (SHEET 1 OF 3)</p> <p>SUPPORT FOR DIRECTIONAL AND INFORMATION SIGNS (SHEET 2 OF 3)</p> <p>SUPPORT FOR DIRECTIONAL AND INFORMATION SIGNS (SHEET 3 OF 3)</p> <p>SUPPORT FOR TRAFFIC SIGN (SHEET 1 OF 4)</p> <p>SUPPORT FOR TRAFFIC SIGN (SHEET 2 OF 4)</p> <p>SUPPORT FOR TRAFFIC SIGN (SHEET 3 OF 4)</p> <p>SUPPORT FOR TRAFFIC SIGN (SHEET 4 OF 4)</p> <p>ROAD GANTRY TRUSS (SHEET 1 OF 2)</p> <p>ROAD GANTRY TRUSS (SHEET 2 OF 2)</p> <p>ROAD GANTRY SIGN</p> <p>SUPPORT FOR CANTILEVER DIRECTIONAL SIGNS (SHEET 1 OF 3)</p> <p>SUPPORT FOR CANTILEVER DIRECTIONAL SIGNS (SHEET 2 OF 3)</p> <p>SUPPORT FOR CANTILEVER DIRECTIONAL SIGNS (SHEET 3 OF 3)</p> <p>TYPICAL STEEL BRACKETS FOR 4.5m HEIGHT LIMIT SIGN (900mm X 900mm)</p> <p>SUPPORT FOR TRAFFIC SIGN (FOR ARTERIAL & EXPRESSWAY)</p>

TABLE OF CONTENTS

CHAPTER NO.	DRAWING TITLE	CHAPTER NO.	DRAWING TITLE
11	<p><u>BUS STOPS</u></p> <p>BUS BAY (SHEET 1 OF 2) BUS BAY / LAYBY FOR NPARKS' WATER TANKER (SHEET 2 OF 2) BUS BAY DETAILS BUS SHELTER - TYPE A TEMPORARY USE ONLY BUS STOP LAYOUT & ELEVATION</p>	16	<p><u>TRAFFIC PROHIBITORY SIGNS</u></p> <p>TRAFFIC PROHIBITORY SIGNS (SHEET 1 OF 6) TRAFFIC PROHIBITORY SIGNS (SHEET 2 OF 6) TRAFFIC PROHIBITORY SIGNS (SHEET 3 OF 6) TRAFFIC PROHIBITORY SIGNS (SHEET 4 OF 6) TRAFFIC PROHIBITORY SIGNS (SHEET 5 OF 6) TRAFFIC PROHIBITORY SIGNS (SHEET 6 OF 6)</p>
12	<p><u>PLANTING REQUIREMENT</u></p> <p>SOIL AERATION (SHEET 1 OF 2) SOIL AERATION (SHEET 2 OF 2)</p>	17	<p><u>TRAFFIC WARNING SIGNS</u></p> <p>TRAFFIC WARNING SIGNS (SHEET 1 OF 9) TRAFFIC WARNING SIGNS (SHEET 2 OF 9) TRAFFIC WARNING SIGNS (SHEET 3 OF 9) TRAFFIC WARNING SIGNS (SHEET 4 OF 9) TRAFFIC WARNING SIGNS (SHEET 5 OF 9) TRAFFIC WARNING SIGNS (SHEET 6 OF 9) TRAFFIC WARNING SIGNS (SHEET 7 OF 9) TRAFFIC WARNING SIGNS (SHEET 8 OF 9) TRAFFIC WARNING SIGNS (SHEET 9 OF 9)</p>
13	<p><u>PROJECT SIGNS</u></p> <p>PROJECT SIGN BOARD FOR LTA PROJECT - TIMBER SIGN BOARD PROJECT SIGN BOARD FOR LTA PROJECT - ALUMINIUM SIGN BOARD FLYOVER SIGNAGE & BRIDGE INFORMATION SIGN PROJECT SIGN BOARD</p>		
14	<p><u>BOLLARDS</u></p> <p>BOLLARDS SPRING LOADED POST & FLEXIBLE POST SAFETY BOLLARD AT BUS STOP - POSTED SPEED : 60km/h & 70km/h (SHEET 1 OF 2) SAFETY BOLLARD AT BUS STOP - POSTED SPEED : 60km/h & 70km/h (SHEET 2 OF 2) SAFETY BOLLARD AT TURFED AREA - POSTED SPEED : 60km/h & 70km/h</p>		
15	<p><u>TRAFFIC MANDATORY SIGNS</u></p> <p>TRAFFIC MANDATORY SIGNS (SHEET 1 OF 2) TRAFFIC MANDATORY SIGNS (SHEET 2 OF 2)</p>		

TABLE OF CONTENTS

CHAPTER NO.	DRAWING TITLE	CHAPTER NO.	DRAWING TITLE
18	<u>TRAFFIC INFORMATORY SIGNS</u> TRAFFIC INFORMATORY SIGNS (SHEET 1 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 2 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 3 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 4 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 5 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 6 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 7 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 8 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 9 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 10 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 11 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 12 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 13 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 14 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 15 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 16 OF 17) TRAFFIC INFORMATORY SIGNS (SHEET 17 OF 17)	20	<u>STREET NAME BOARD</u> STREET NAME SIGN - GENERAL CONFIGURATION LAYOUT (SHEET 1 OF 3) STREET NAME SIGN - GENERAL CONFIGURATION LAYOUT (SHEET 2 OF 3) STREET NAME SIGN - GENERAL CONFIGURATION LAYOUT (SHEET 3 OF 3) STREET NAME SIGN - STREET NAME SIGN ON SINGLE SUPPORT POST STREET NAME SIGN - STREET NAME SIGN ON DOUBLE SUPPORT POST STREET NAME SIGN - CANTILEVER STREET NAME SIGN ON VERTICAL SUPPORT POST STREET NAME SIGN - CANTILEVER STREET NAME SIGN ON EXISTING LAMP POST STREET NAME SIGN SINGLE SIDE STREET NAME SIGN ON EXISTING LAMP POST STREET NAME SIGN ON TRAFFIC POST STREET NAME SIGN - EXTRUSION STREET NAME SIGN - CASTING PARTS STREET NAME SIGN - TRAFFIC SIGN ON SUPPORT POST
19	<u>TRAFFIC INFORMATORY SIGNS</u> TRAFFIC INFORMATORY SIGNS (SHEET 1 OF 2) TRAFFIC INFORMATORY SIGNS (SHEET 2 OF 2)	21	<u>CYCLING PATH</u> TREATMENT AT JUNCTION TREATMENT AT OTHER JUNCTIONS TREATMENT AT DEVELOPMENT / CARPARK ACCESS BICYCLE CROSSING SHARED TRACK TREATMENT AT BUS STOP WITH BUS BAY TREATMENT AT BUS STOP WITHOUT BUS BAY CYCLING PAVEMENT MARKING DETAILS CYCLING SIGNS CYCLING TRACK LIGHTING