GENERAL NOTES:

1. The applicable Standard Drawings shall be chosen from TABLE : GRID CONSTRUCTION SCENARIOS.
2. STANDARD SIZES OF GRIDS for normal installation are shown in table below.
   For other widths where specifically approved, the standard width may be varied as required, provided the bearer spacing does not exceed 700, and the rail overhang does not exceed 250.

STANDARD GRID WIDTHS

Road formation width, m	Poad Pavement width, m	Grid width, m	Grid segments to use
7.5, 8.0	3.5, 4.0	8.0	Refer SD 1565
8.5, 9.0	6.0, 6.5, 7.0	9.0	
greater than 9.0	6.0, 6.5, 7.0	10.0	

STANDARD GRID SPANS for 1.9m or 2.7m only (Refer Drawing 2, Note 3)

3. WIDTH MARKERS are required when the grid width is less than the road formation width.
   No width markers are required for standard grid width arrangements as in Note 2.
   Width markers shall be in accordance with MUTCD, MRTS14, Standard Drawings 1368 and 1363.
   Guide posts shall be in accordance with MUTCD, MRTS14 and Standard Drawing 1356.
4. 10m min BITUMEN SEAL as specified, for full formation width on unsealed roads to comply with MRTS11 and MRTS22.
5. MOTOR GRID DESIGN LIFE shall be 50 years.
6. DESIGN TRAFFIC LOADS : W80, A160, SM1600 and HLP400 to AS 5100.
7. DESIGN CRITERIA : Technical Note 18 of Design Criteria for Motor Girds.
8. CONCRETE shall be in accordance with MRTS70.
9. EXPOSURE CLASSIFICATION AND COVER to reinforcement shall be to AS 3600.
   Minimum Exposure classification B1.
   Minimum concrete strength and cover to reinforcement shall be as shown in table below. Minimum concrete strength and cover to reinforcement for higher exposure classifications than specified in the table below shall be in accordance with AS 3600, as appropriate.
   Blinding concrete N20/20.
   All exposed edges shall have 19 x 19 chamfers unless shown otherwise.
   Maximum nominal aggregate size shall be 20mm.

Exposure classification	Minimum concrete strength	COVER, mm	
		Precast *	Cast Insitu
B1	N32/20	30	40
B2	S40/20	35	45

   * Using rigid formwork and intense compaction.
   An approved super-workable concrete mix may be used in lieu of intense compaction.
10. REINFORCING STEEL shall be read in conjunction with Standard Drawings 1043 and 1044. Reinforcing steel shall be in accordance with MRTS71 and AS/NZS 4671.
    Deformed bars Grade D500N.
    Round bars Grade R250N.
    All carbon reinforcing steel shall be ACRS certified.
11. STEELWORK shall be fabricated to the requirements of MRTS78.
    Refer Standard Drawing 1565 for Structural Steelwork Notes and Welding Notes for Motor Grid Steelworks.
    CHS shall be Grade C250LO to AS/NZS 1163.
    All Structural steel hollow section material manufactured to AS/NZS 1163.
    All Steel flat material manufactured to AS/NZS 1594.
    All Steel plate material manufactured to AS/NZS 3678.
    Bolts Class 4.6 to AS 1111.1, nuts Class 5 to AS 1112.1 and thin nuts Class 5 to AS 1112.4.
    All bolts and nuts shall be hot dip galvanised to AS 1214.
    All other steelwork shall be hot dip galvanised to AS/NZS 4680 unless shown otherwise. Prior to galvanising all weld splatter and welding slag is to be removed.
12. PRECAST CONCRETE ITEMS shall be manufactured in accordance with MRTS72.
    Minimum concrete strength for formwork removal and lifting of precast items shall be as shown in drawings.
    Lifting design and devices shall be in accordance with MRTS72.
13. DIMENSIONS are in millimetres unless shown otherwise.

ASSOCIATED DOCUMENTS:
- Design Criteria for Bridges and Other Structures
- Design Criteria for Motor Grids – Technical Note 18
- Manual of Uniform Traffic Control Devices (MUTCD)

REFERENCED DOCUMENTS:

Departmental Standard Drawings:
- 1043 Reinforcing Steel – Standard Bar Shapes
- 1044 Reinforcing Steel – Lap Lengths
- 1353 Road Furniture – Vermin and Dog Fencing at Motor Grid
- 1562 Road Furniture – Motor Grid – Cast Insitu Abutment
- 1563 Road Furniture – Motor Grid – Cast Insitu Slab
- 1564 Road Furniture – Motor Grid – Precast Slab
- 1565 Road Furniture – Motor Grid – Steelworks

Departmental Specifications:
- MRTS03 Drainage, Retaining Structures and Protective Treatment
- MRTS11 Sprayed Bituminous Surfacing (Excluding Emulsion)
- MRTS14 Road Furniture
- MRTS22 Supply of Cover Aggregate
- MRTS70 Concrete
- MRTS71 Reinforcing Steel
- MRTS72 Manufacture of Precast Elements
- MRTS78 Fabrication of Structural Steelwork

NOTES for fencing at motor grids:

The following minimum parameters shall be followed when fitting new fencing to new motor grids, or when retrofitting side fencing to existing motor grids :

1. All existing non-frangible, non-standard, side fence materials shall be removed.
   Only posts deemed to be frangible and plain wire shall be used for grid side fencing.
   No new safety hazards shall be introduced.
2. For selection criteria and requirements for Width markers and Guide posts at Motor Grids refer to Notes 2 and 3.
3. 4-strands of 4 dia plain galvised wire shall be strung in a secure manner between upright 60.3 x 2.9 CHS, and that these CHS shall also be used for mounting single sided width markers, if required. Where guide posts are to be used for the posts of the grid side fencing, the delineators are to be unobstructed by the wires. Ends of wires shall not protrude into running lane. Refer to General Arrangement, Section A and Section B on Drawing 2 of Standard Drawing 1561 for all other details, dimensions and setout.
4. The plain wires shall be taken back to the adjacent fence end post located in the verge, and this post shall be minimum 800 clear from the ends of the grid rails. Relocate any end post as required to achieve this clearance, because they are not deemed to be frangible. Refer to General Arrangement, Section A and Section B on drawing 2 of Standard Drawing 1561.
5. Cast new concrete footings for each new fence post.
   Concrete shall be N32/20, in accordance with MRTS70 and Standard Drawing 1363.
   The footings shall be cast against the concrete abutment/headstock of the grid.
   Refer to drawing 2 of Standard Drawing 1561 for all details.
6. Guide posts shall be installed at the edge of the running lane where required as per MUTCD and MRTS14.
7. For other all other details of rural fencing in verge refer to MRTS14.
   For rural fencing with timber posts refer to Standard Drawing 1600.
   For rural fencing with CHS posts refer to Standard Drawing 1601.

SCOPE OF MOTOR GRID STANDARD DRAWINGS

The scope of Motor Grid Standard Drawings is to provide indicative standard details for various Grid Construction Scenarios.
It is the responsibility of the project design engineer to provide project specific drawings to suit grid span, widths, grid crossfall and other site specific grid parameters to suit the grid location.

TABLE : GRID CONSTRUCTION SCENARIOS

RAIL TYPE	ABUTMENT	BASE SLAB	DRAWING REFERENCE
RHS Rails	Cast Insitu	Not applicable	SD 1561 Motor Grid – General Arrangement SD 1562 Motor Grid – Cast Insitu Abutment SD 1565 Motor Grid – Steelworks
	Precast	Cast Insitu	SD 1561 Motor Grid – General Arrangement SD 1563 Motor Grid – Cast Insitu Base Slab SD 1565 Motor Grid – Steelworks
		Precast	SD 1561 Motor Grid – General Arrangement SD 1564 Motor Grid – Precast Base Slab SD 1565 Motor Grid – Steelworks

GENERAL NOTES FOR STANDARD MOTOR GRIDS

Department of Transport and Main Roads

ROAD FURNITURE

MOTOR GRID – GENERAL ARRANGEMENT

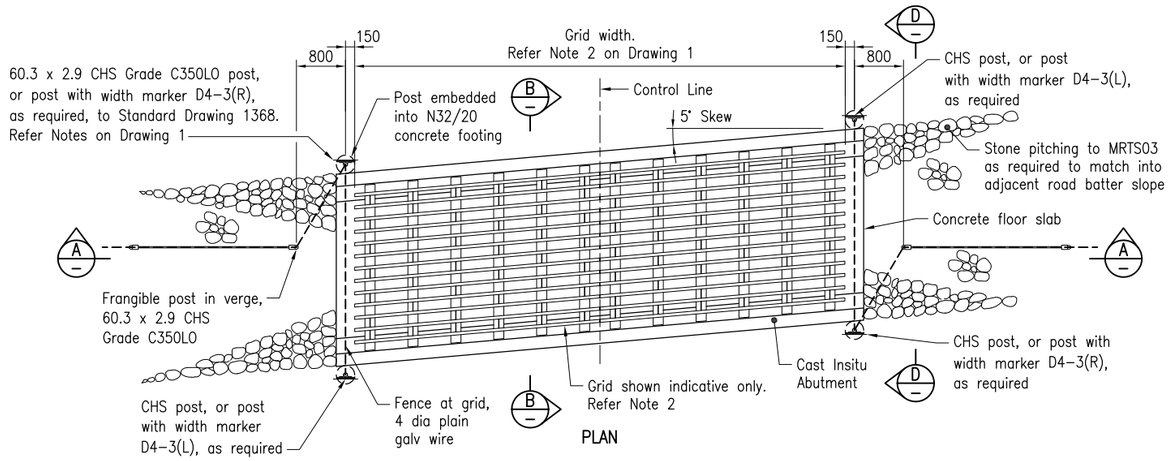
DRAWING 1 of 2

Queensland Government

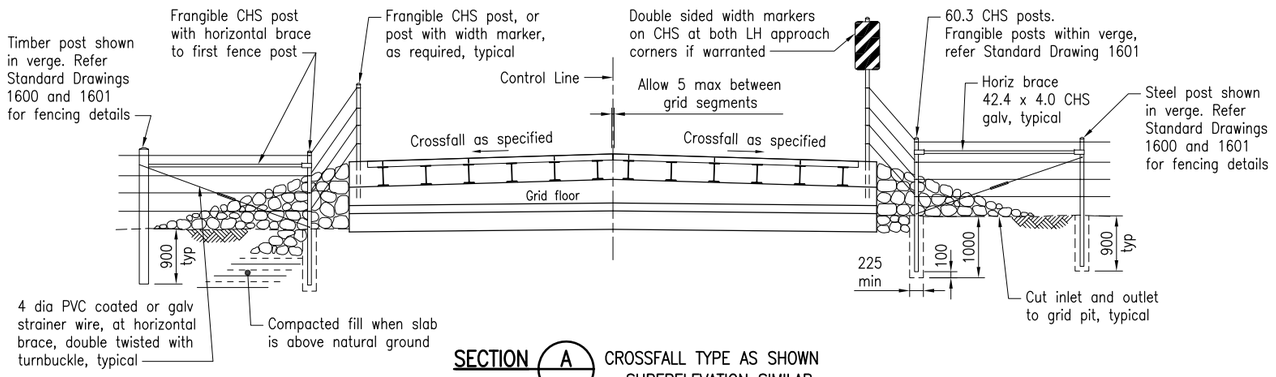
A3
Not to Scale

Standard Drawing No
1561
Date 11/19

A | B | C



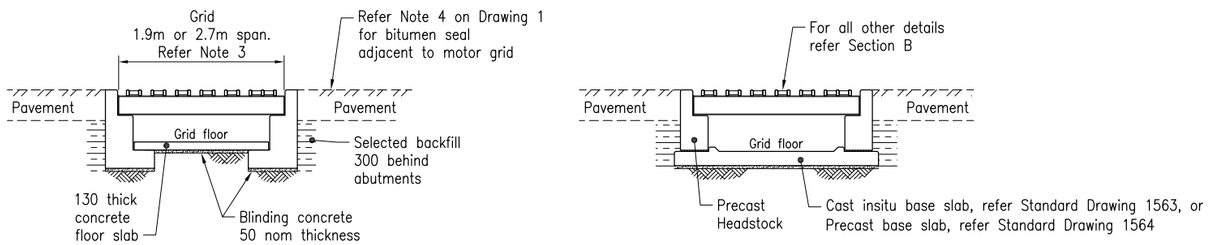
GENERAL ARRANGEMENT – CAST INSITU ABUTMENT



TIMBER FENCING IN VERGE AT GRID

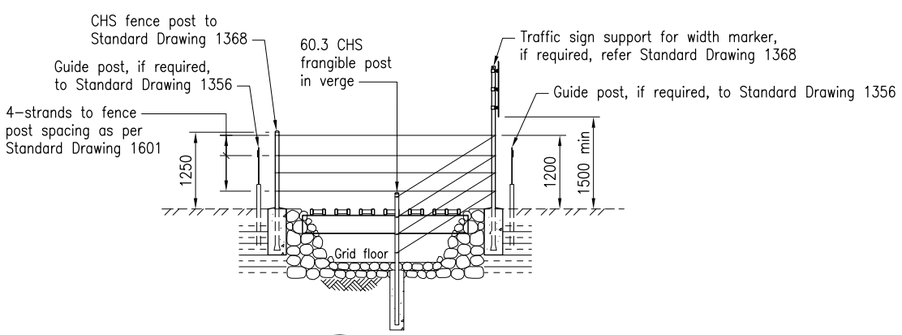
SECTION A – CROSSFALL TYPE AS SHOWN – SUPERELEVATION SIMILAR

CHS FENCING AT GRID AND IN VERGE



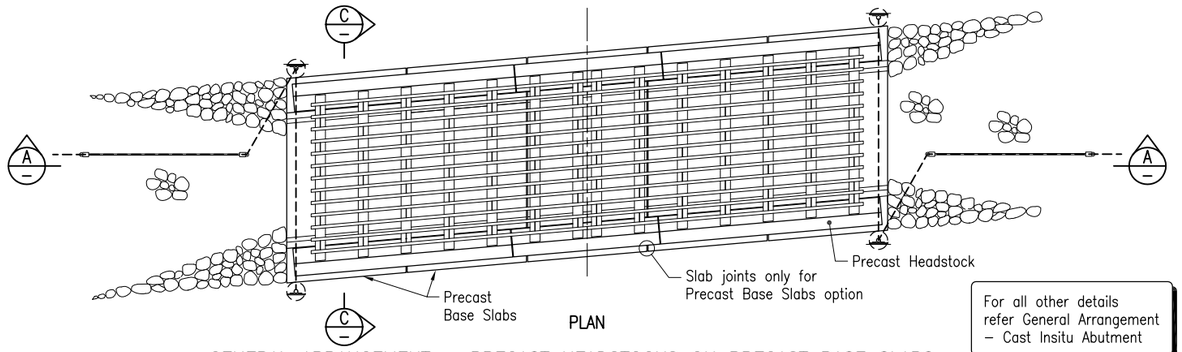
SECTION B – FOR CAST INSITU ABUTMENT Refer SD 1562 for details

SECTION C – FOR PRECAST HEADSTOCK WITH CAST INSITU BASE SLAB OR PRECAST BASE SLAB



SECTION D – FENCING AT GRID

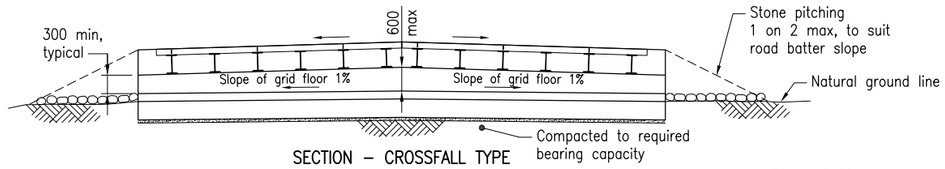
GENERAL ARRANGEMENT – STANDARD MOTOR GRIDS



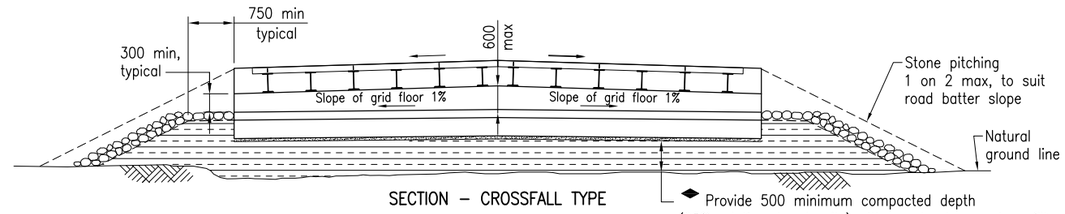
For all other details refer General Arrangement – Cast Insitu Abutment

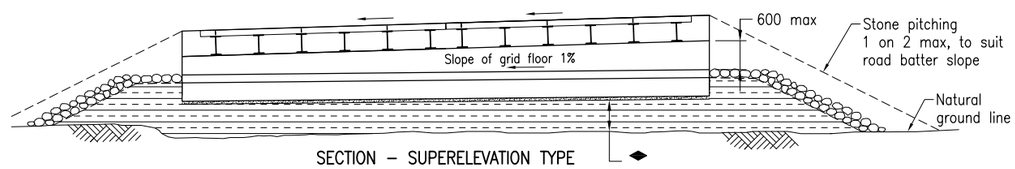
GENERAL ARRANGEMENT – PRECAST HEADSTOCKS ON PRECAST BASE SLABS

PRECAST HEADSTOCKS ON CAST INSITU BASE SLAB SIMILAR



GRID FLOOR AT NATURAL GROUND





GRID FLOOR ABOVE NATURAL GROUND

INSTALLATION METHODS FOR STANDARD MOTOR GRIDS

NOTES:

1. Refer Drawing 1 for all General Notes and Fencing Notes.
2. Refer SD 1565 for Motor Grid steelwork details.
3. GRID SPANS:
   - 1.9m Spans – Typically used for small animals like sheep.
   - 2.7m Spans – Typically used for large animals like cattle.
   - 2.7m Spans – Shall be used for vermin and dog. Refer SD 1353 for vermin and dog fencing details and works adjacent to motor grids. All other details shall be in accordance with this drawing

Department of Transport and Main Roads

ROAD FURNITURE

MOTOR GRID – GENERAL ARRANGEMENT

DRAWING 2 of 2

Queensland Government

A3

Not to Scale

Standard Drawing No 1561

Date 11/19

A | B | C