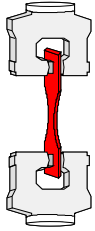


Mechanical Testing

- Tensile
- Compression
- Bend
- Shear
- Load
- Structures
- Fasteners
- Tensioning & Staying Systems
- Structural Bearings





IN CONFIDENCE TO THE CLIENT

REPORT NO: MT-09/542

STRENGTH TESTING OF FORGED WELDED STEEL GRATING

CLIENT: **NEW BRIDGE SERVICES**
BERT PEDRO
49 KAROONDA WAY
HAMPTON PARK VIC 3976

DATE OF TEST: DECEMBER 8TH 2009

DATE OF REPORT: DECEMBER 17TH 2009

TEST SYNOPSIS:

Two types of forged welded steel grating were delivered to the Melbourne Testing Services (MTS) laboratory for testing (See Fig.1). Simulated, Uniformly Distributed Load testing was required by simply supporting the grating over a specified span to determine the load vs deflection characteristics of the grating whilst under load. Details of the grating mesh as provided by the client are as follows:

Type 1: G505/40/100
Profile: 50x5x40x100
Size: 3.0m long x 1.0m wide
Test Span: 2420mm
Rating: Heavy Duty

Type 2: G253/30/100
Profile: 25x3x30x100
Size: 2.5m long x 0.985m wide
Test Span: 1200mm
Rating: Light & Medium Duty



FIG.1.
WELDED STEEL GRATING

TEST PROCEDURE:

Load testing was conducted by positioning the test grating panels in a calibrated structural testing machine (See Fig.2). Simulated, 4 point, uniformly distributed load (UDL) was applied to the top of the steel grating at a constant rate until the nominated, elastic mid-span deflection was achieved. The test load was then released and the residual deflection recorded. This elastic loading procedure was repeated two more times in order to step increase the target mid-span deflection. Upon completion of elastic load testing the grating panels were reloaded until the onset of plastic deformation and failure was observed. Throughout testing the applied load and grating deflection was autographically recorded by a computerized data acquisition system.

TEST OBSERVATIONS:

Heavy Duty G505/40/100

As can be seen from Figure 4, the G505/40/100 grating supported the test load in a linear manner up to approximately 30kPa. Visual inspection of the grating while under test load did not reveal any evidence of cracked welds or failure. During elastic deflection testing, the mid-span deflection recorded at 5.32kPa was 10.91mm. Upon release of the elastic deflection test loads the grating was observed to have re-bounded to its original position.

Light & Medium Duty G253/30/100

The G253/30/100 grating supported the test load in a linear manner up to approximately 15kPa. Visual inspection of the grating while under test load did not reveal any evidence of cracked welds or failure. During elastic deflection testing the mid-span deflection recorded at 5.19kPa was 6.55mm. Upon release of the elastic deflection test loads the grating was observed to have re-bounded to its original position.

TEST DATA:

Load vs deflection tables computed from the test data for each grate are provided in Table 1 and Table 2.

Load vs deflection curves for each test grate are provided in Figure 4.

Test Pressure (kPa)	Mid-span Deflection (mm)
1	2.1
2	4.1
3	6.2
4	8.2
5	10.3
6	12.3
7	14.4
8	16.4
9	18.5
10	20.5

**TABLE 1
G505/40/100
(2.42M SPAN)**

Test Pressure (kPa)	Mid-span Deflection (mm)
1	1.3
2	2.5
3	3.8
4	5.0
5	6.3
6	7.6
7	8.8
8	10.1
9	11.4
10	12.6

**TABLE 2
G253/30/100
(1.20M SPAN)**



**FIG.2
G505/40/100 TEST SET-UP**



**FIG.3.
G253/30/100 TEST SET-UP**

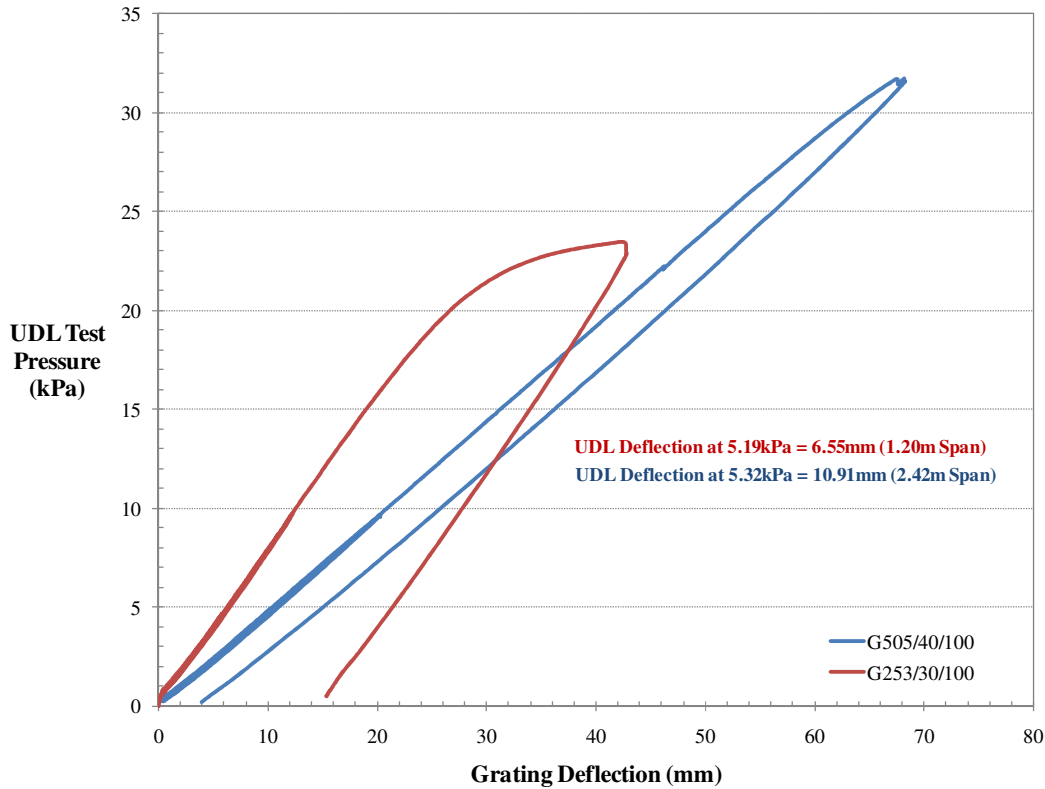


FIG.4
TEST DATA CURVES FOR NEWBRIDGE
STEEL GRATING

Notes:

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7. The tests as reported herein are considered Experimental Type Tests and therefore do not validate or certify the products with any Australian or International standards that may apply.

RODNEY WILKIE
AUTHORISED SIGNATORY