MAST System
Designer’s Guide for Clients

June 2020
MAST – Introduction

- The MAST uses an FT100 controller with TestSuite MPE and DOF control software
- The MAST has 4× vertical 1 MN and 4× horizontal 500 kN Actuators

- 6 Degrees of Freedom:
  - X,Y,Z: that can be Force or Displacement
  - R_X, R_Y, R_Z: that can be an Angle or Moment

- The Mast stroke capacity:
  - Translational (X,Y,Z): ±250 mm
  - Rotational (RX,RY,RZ): ±7 deg

- The Mast moment capacity:
  - R_X, R_Y (Roll,Pitch): 4.5 MN.m
  - R_Z (Yaw): 3.55 MN.m
MAST – 3D View

1. Strong Floor
2. L-shape Reaction Wall
3. MAST Crosshead
4. Vertical Actuators
5. Removable Support Stands
1 Strong Floor
2 L-shape Reaction Wall
3 MAST Crosshead
4 Vertical Actuators
5 Removable Support Stands
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<td>2</td>
<td>L-shape Reaction Wall</td>
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<td>3</td>
<td>MAST Crosshead</td>
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MAST – Specimen Dimension Limit (with support stands)

Specimen (small)
2.5m × 2.5m
MAST – Specimen Dimension Limit (w/o support stands)

Specimen (big)
3.5m × 3.5m
MAST – Elevation View: Vertical Travel Limit

Current level

Strong Floor

Upper limit

Mid-stroke

Lower Limit

Z-direction Range

0.5m

3.1m

1m

Current level
MAST – Plan View: Crosshead Drawing

* Depth: 1 m
MAST – Plan View: Crosshead with Strong Floor
### MAST – Specimen Mounting Configuration

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<td>Specimen-to-floor interface fixture</td>
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<td>9</td>
<td>Fixture-to-Crosshead Fasteners (M24 Post-tensioned All-threads)</td>
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<td>10</td>
<td>Fixture-to-Floor Fasteners (M24-M50 Post-tensioned All-threads)</td>
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MAST – Travel Speed Limit

- MAST can move at the rate of up to $40 \text{ mm/s}$ in X and Y direction.