# Room ID: R22A

**Room Description:**

Automotive Test Enclosure
Semi-Anechoic Absorber-Lined

**Room Dimensions:**

21.3m x 10.67m x 5.49m or
70ft. x 33ft. x 18ft. (see Figure - 3 below)

**Room Construction:**

1 Layer 3oz. Copper
RF absorber placed on all four walls and the ceiling.

**Test room filtering:**

1 – DC 30 Amp filter

**Test room power availability:**

230VAC 60Hz 3Phase 30 Amp
120VAC 60Hz 1Phase 30 Amp
115VAC 60Hz 1Phase 15 Amp outlets
480VAC 60Hz 3Phase 200 Amp available at enclosure
***Note: Other power arrangements are available upon request.***

**Test room Ventilation:**

3 – 10,000CFM Fans exhausting outside of enclosure.
1 – 40in by 30in windows with window flaps for rain protection.
2 – External window flaps adjusted from outside for rain protection.
2 – 3ft by 3ft Louvered Roof Vents.

**Test room Exhaust Outlets:**

2 – 12in diameter (stainless steel pipe through enclosure ceiling.)
16ft above the floor
1 – 5 ¼ in diameter (galvanized steel pipe through east side of enclosure)

**Test room Features:**

Free-Standing RF Hardened Active Dynamometer 2WD / 4WD, 4 x 31kW
RF hardened Camera system used for monitoring for susceptibility test.

**R22A Vehicle Door Dimensions:**

Test Chamber Door = 197in. (16ft 5in.) Tall & 196in. (16ft 4in.) wide
Garage Door =166in. (13ft 10in.) Tall & 262in (21ft 10in.) wide

# Room ID: R22P

**Room Description:**
MONITOR ENCLOSURE

**Room Dimensions:**
10.7m x 5.2m x 3.05m
or
35ft. x 17ft. x 10ft. (see Figure - 3 below)

**Room Construction:**
1 Layer 3oz. Copper

**Load room filtering:**
1 – DC 30 Amp filter

**Load room power availability:**
208VAC 60Hz 3Phase 60 Amp
230VAC 60Hz 3Phase 30 Amp
115VAC 60Hz 1Phase 15 Amp outlets
***Note: Other power arrangements are available upon request.***

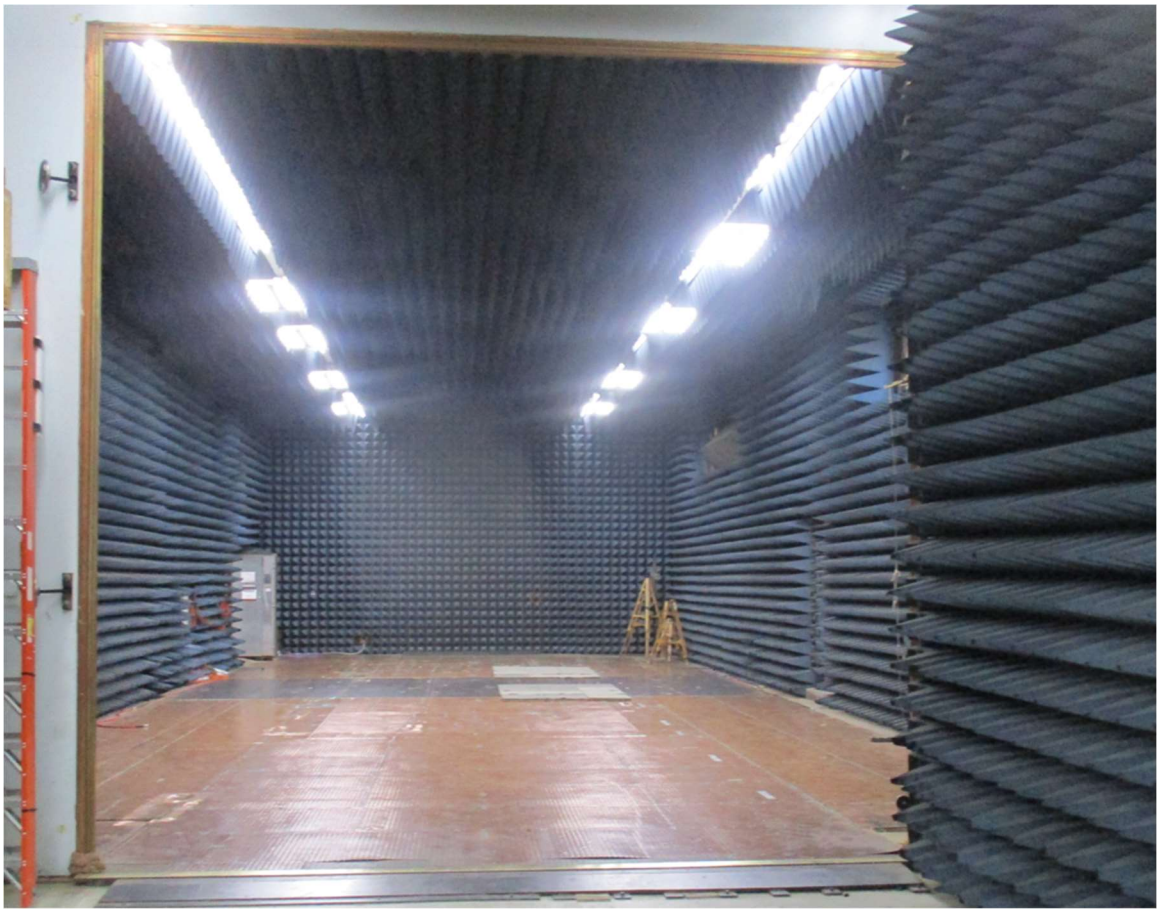


**Figure – 1:** Room 22A (Test Room)

**Figure – 2:** Room 22A (Test Room)

**Figure – 3: Room 22P (Monitor / Customer Setup)**

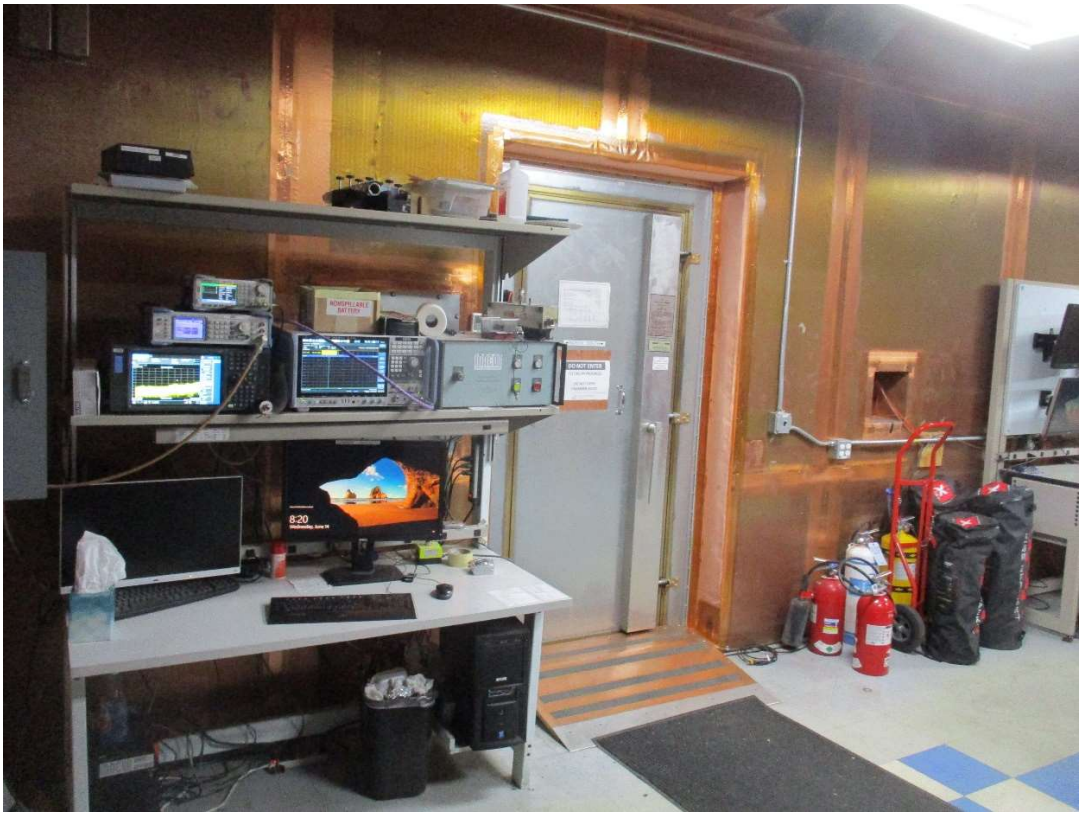


**Figure – 4: Room 22P (Monitor / Control Room)**

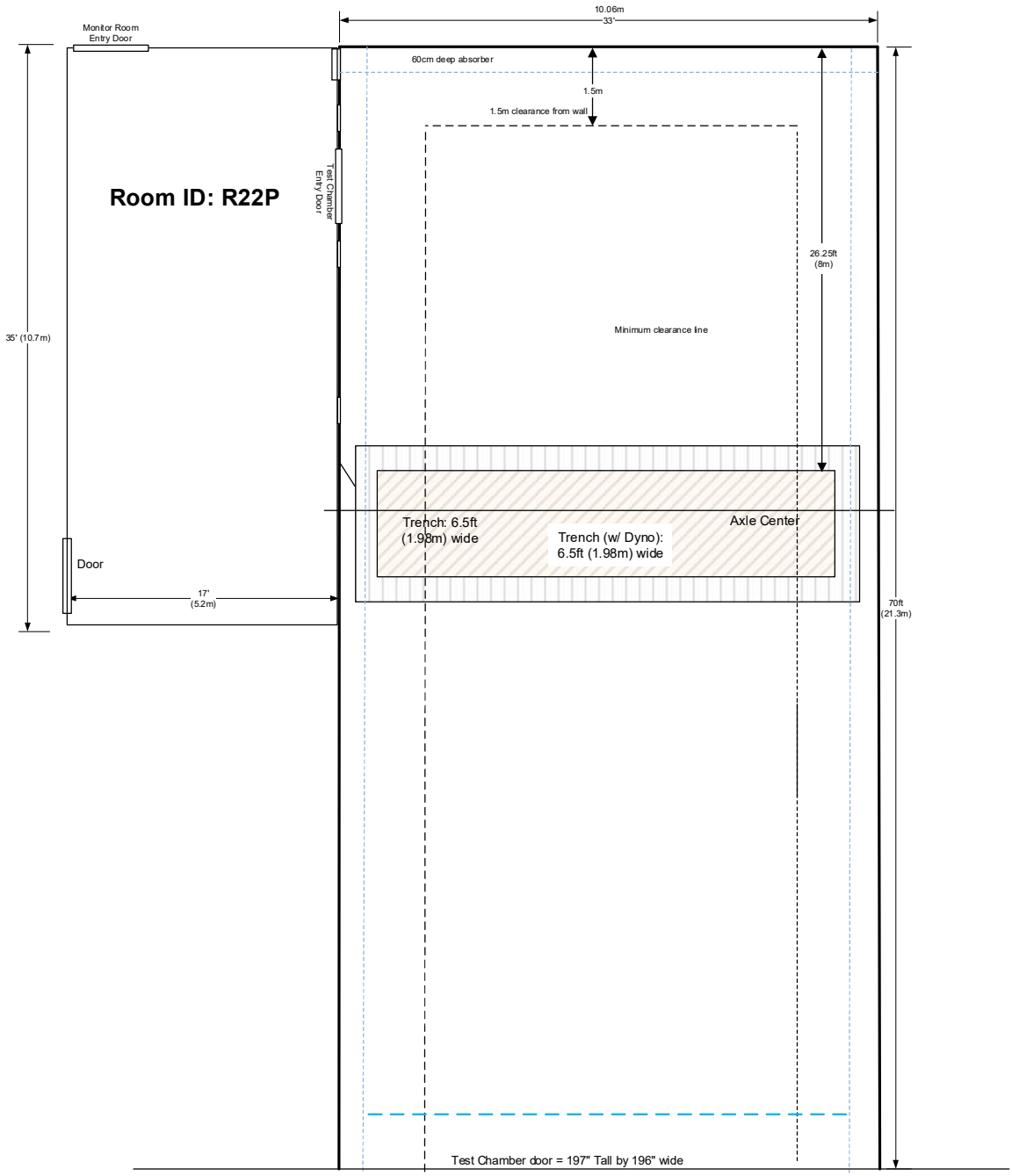



**Figure - 5:** Rooms 22A (Test Room) & 22P (Monitor Room)

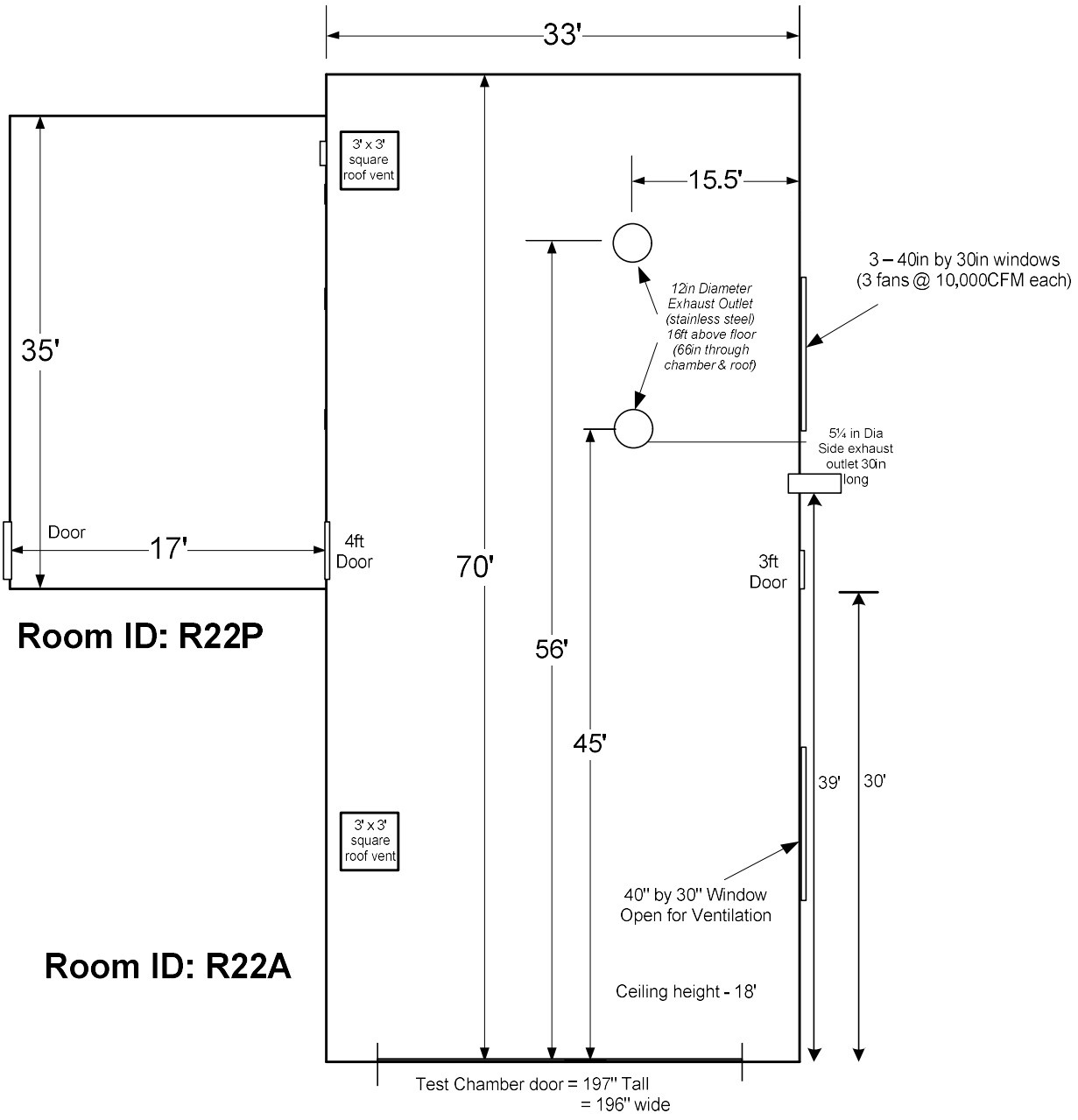



**Figure - 6:** Rooms 22A (Test Room Ventilation)

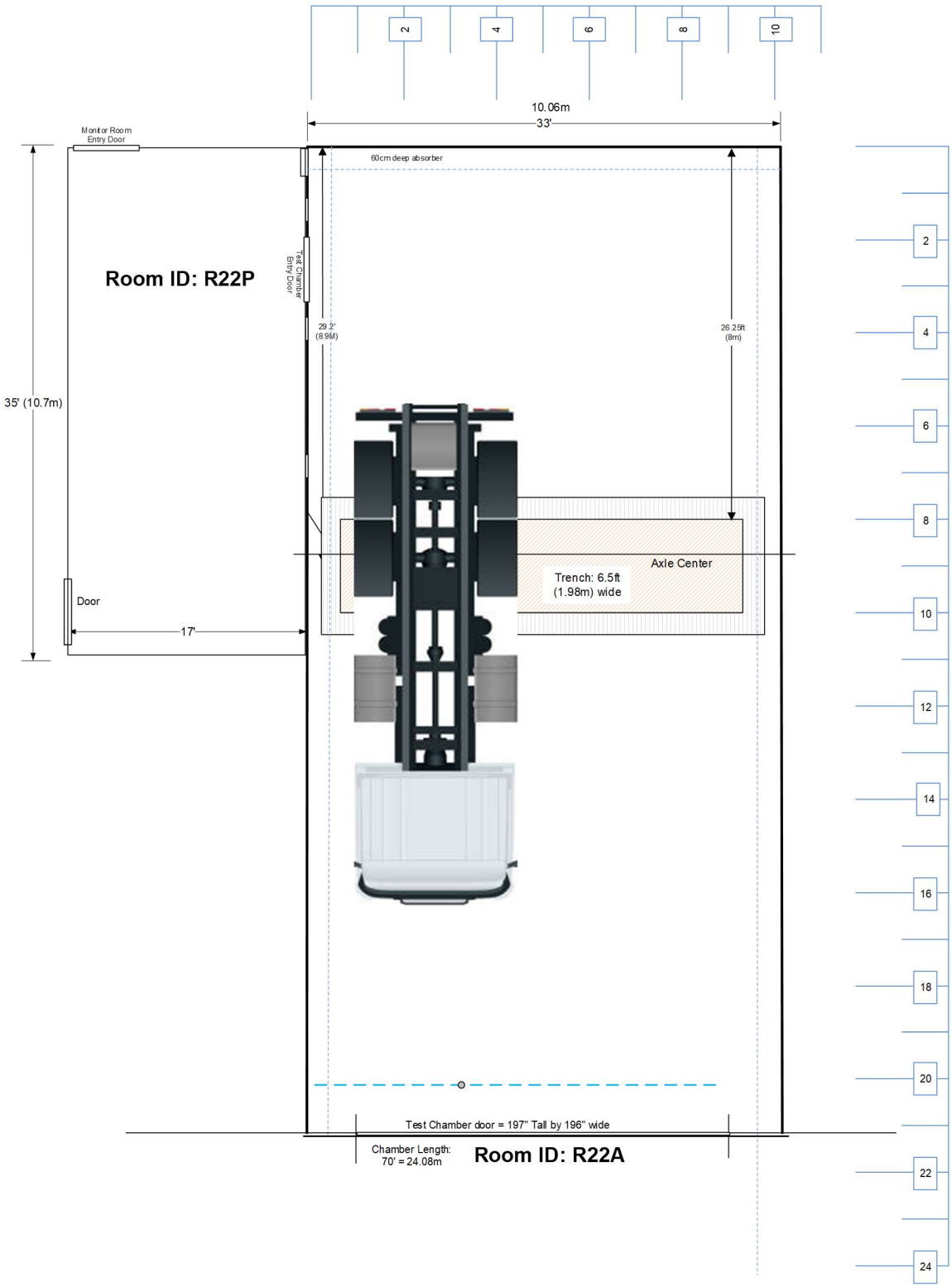



**Figure – 7:** Dynamometer Trench Example Setup

**Figure – 8:** Dynamometer inside Trench Setup (West Side)

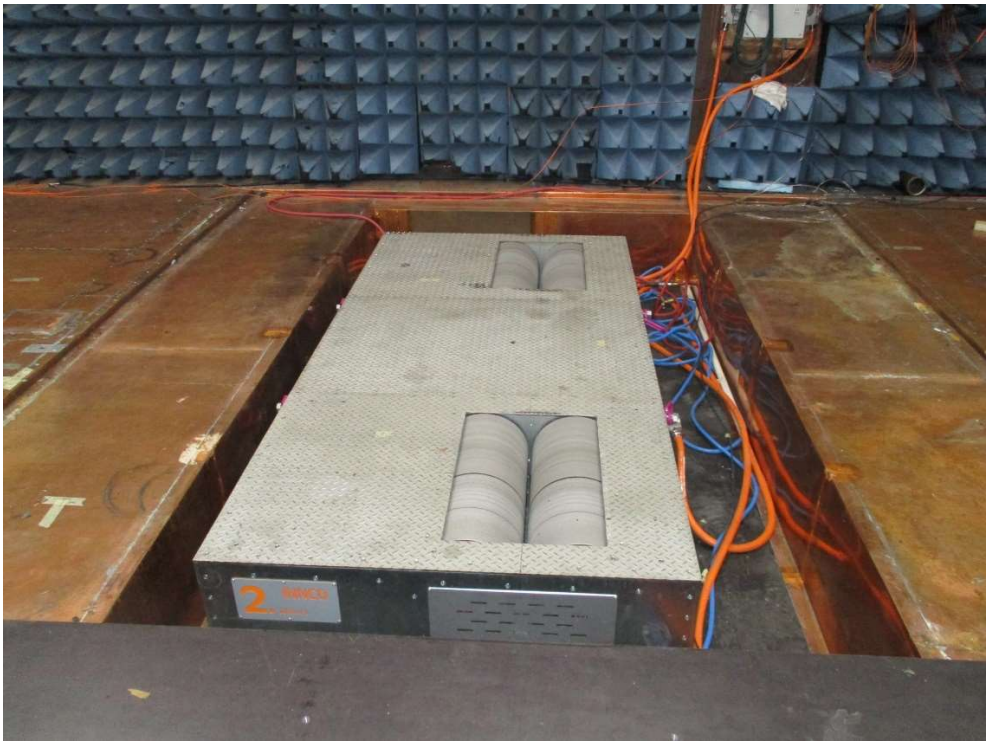


**Figure – 9:** Dynamometer inside Trench Setup Cabling

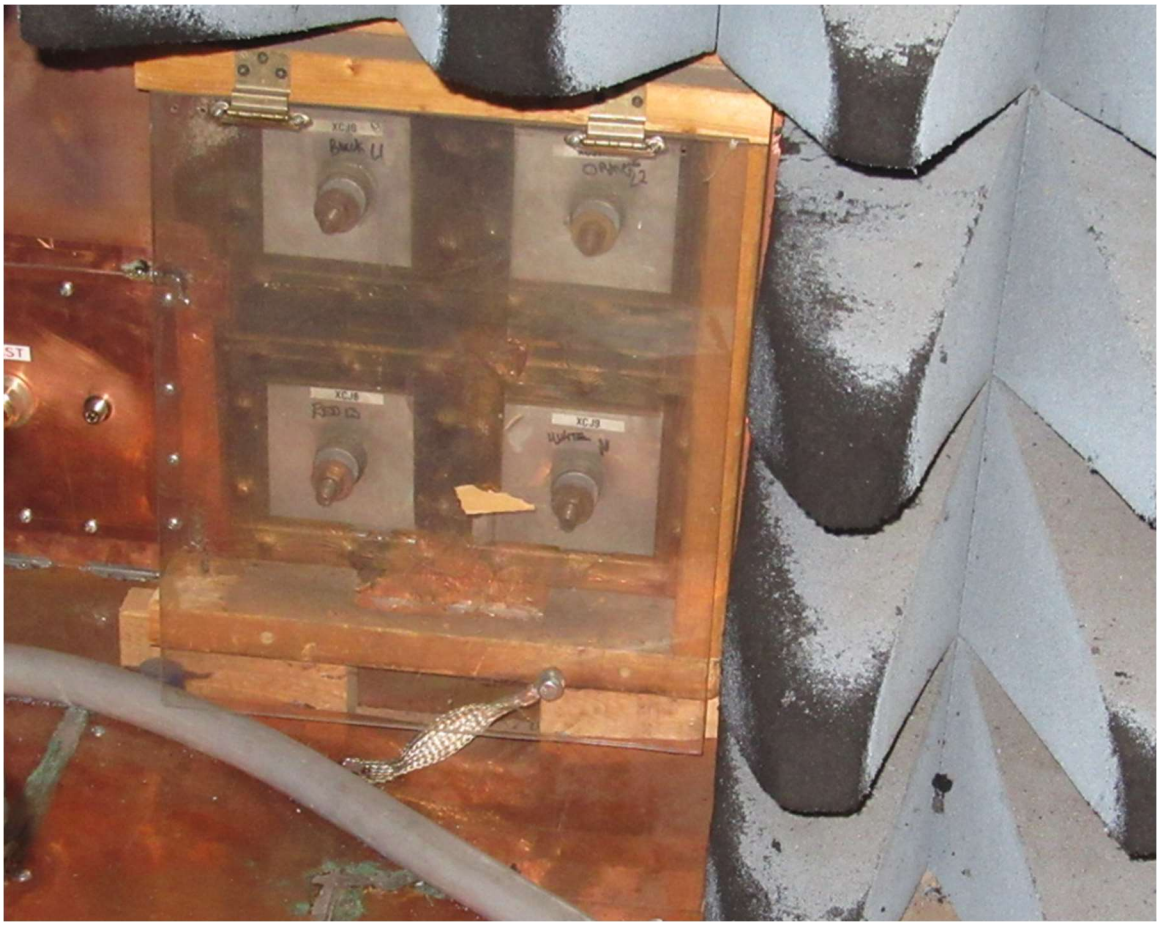


**Figure – 10:** 200A, 10uF feedthrough caps on North wall

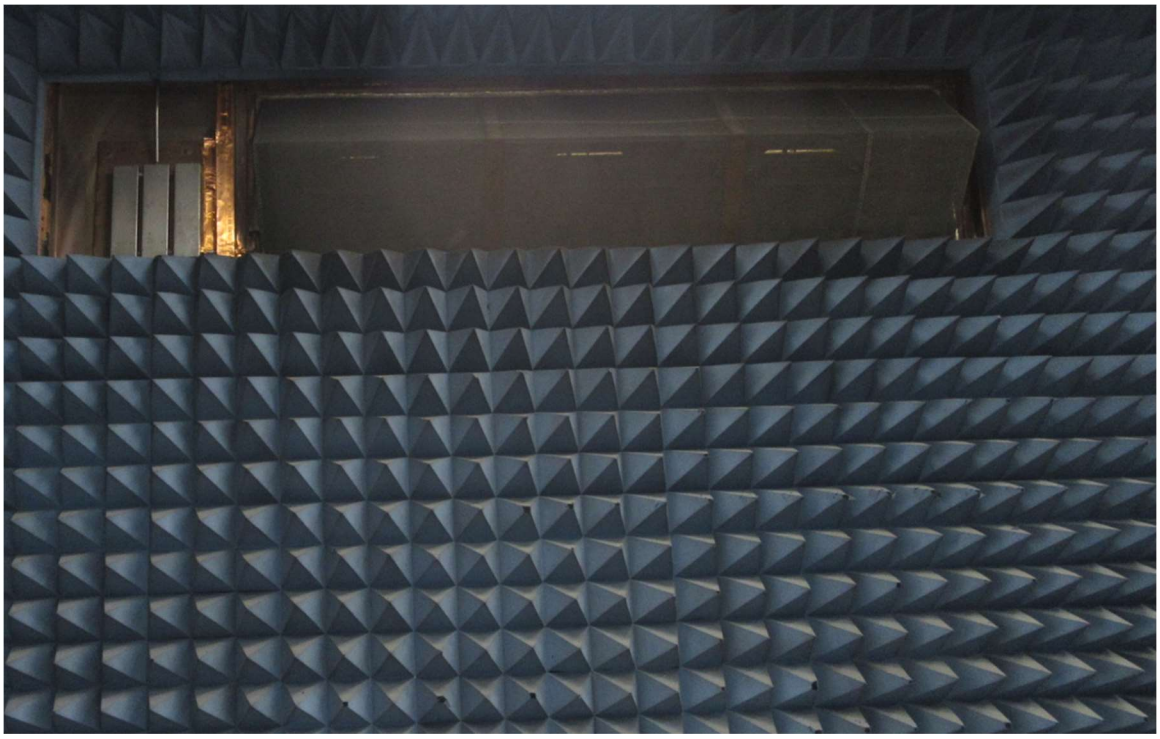


**Figure – 11:** Exhaust Fans (3 x 10,000 CFM each)

**Figure – 12:** N.W. Door from Test Chamber to Monitor Room


**Figure – 13:** Door from Monitor Room to Test Chamber

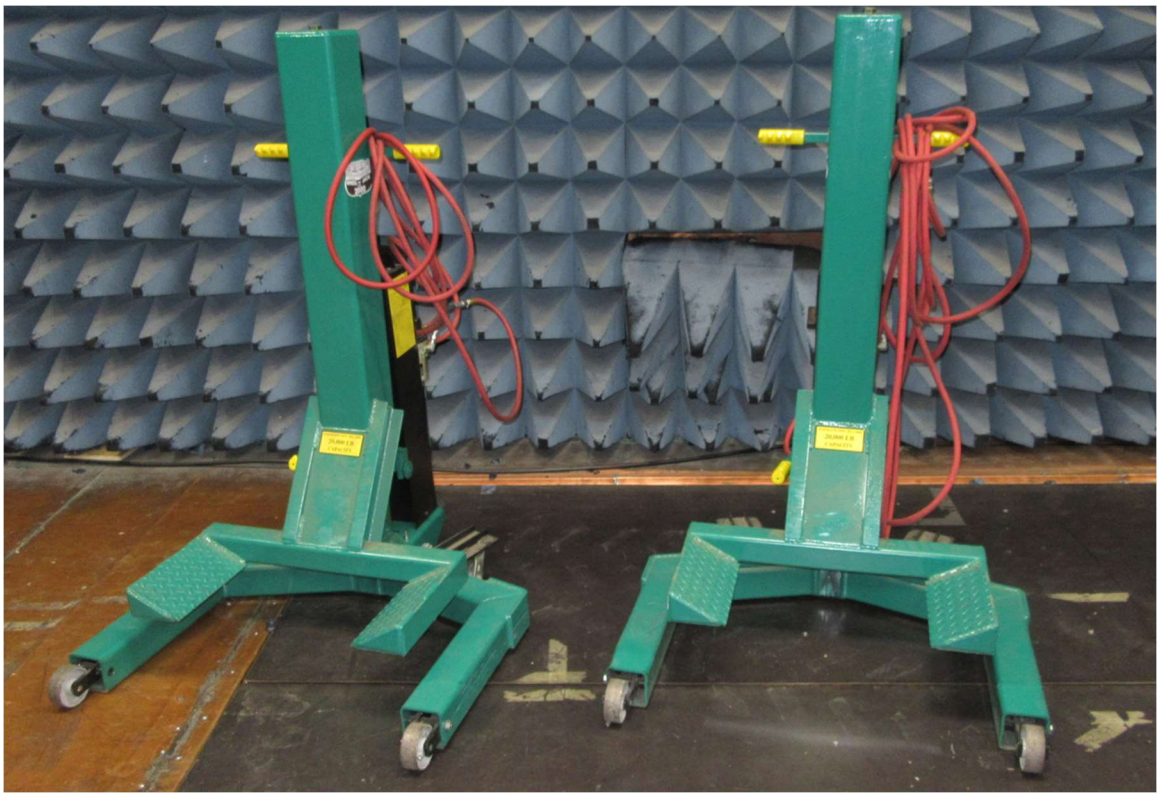
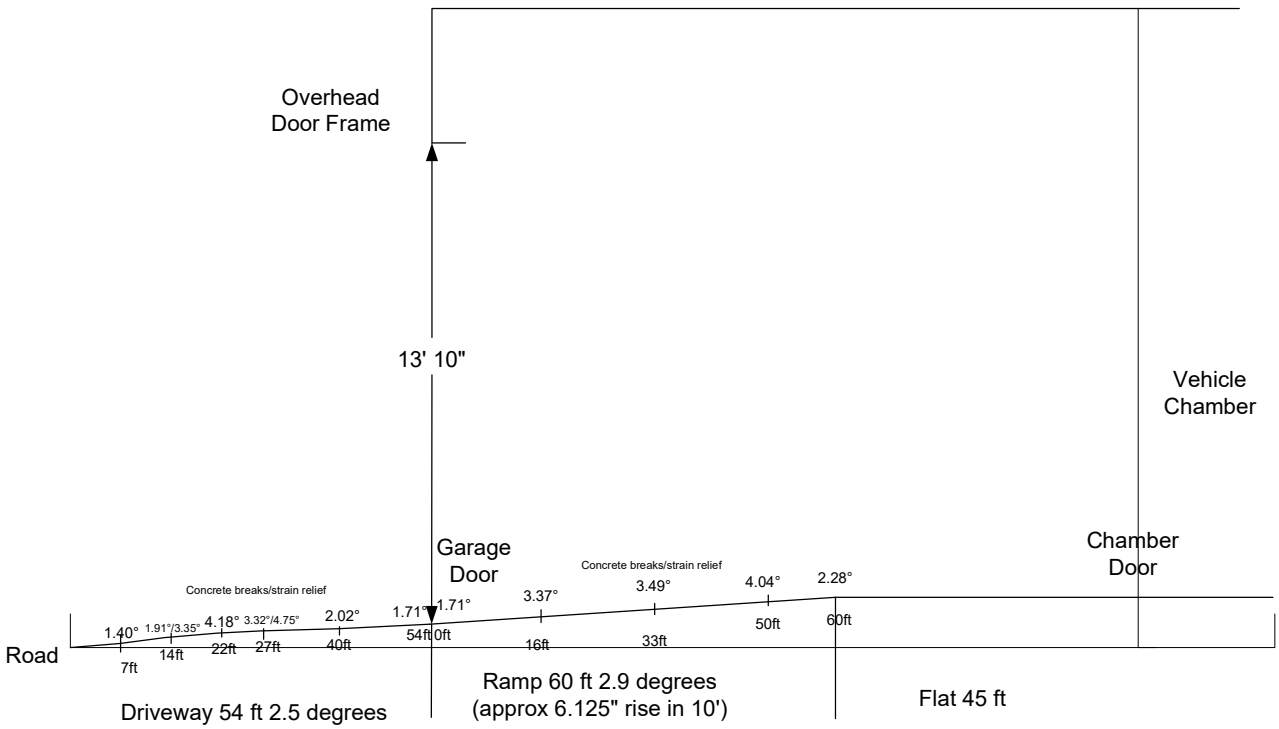


**Figure – 14:** 20,000lb Wheel Lifts

**Figure – 15:** Access door to East Parking Lot

**Figure – 16: Access Door from East Parking Lot to Test Chamber**

**Figure – 17: Access door Screen access panel**




Note: The degree measurements were taken at break points in the concrete with a digital level. The overall degree indicated was calculated, based on the high and overall length measurements using a laser level. With the flat to door measurement (36.75 inches) and door to road measurement (28 inches).

<u>Road to door measurements</u>
Road/door = arc tan (28/636) = 2.5°
14ft to door = arc tan (21.5/468) = 2.6°
27ft to door = arc tan (11/312) = 2.0°

Road/14ft = arc tan (6.5/168) = 2.2°
14ft/27ft = arc tan (10.5/156) = 3.8°
27ft/54ft = arc tan (11/312) = 2.0°

**Figure – 18: Driveway & Ramp Grade**

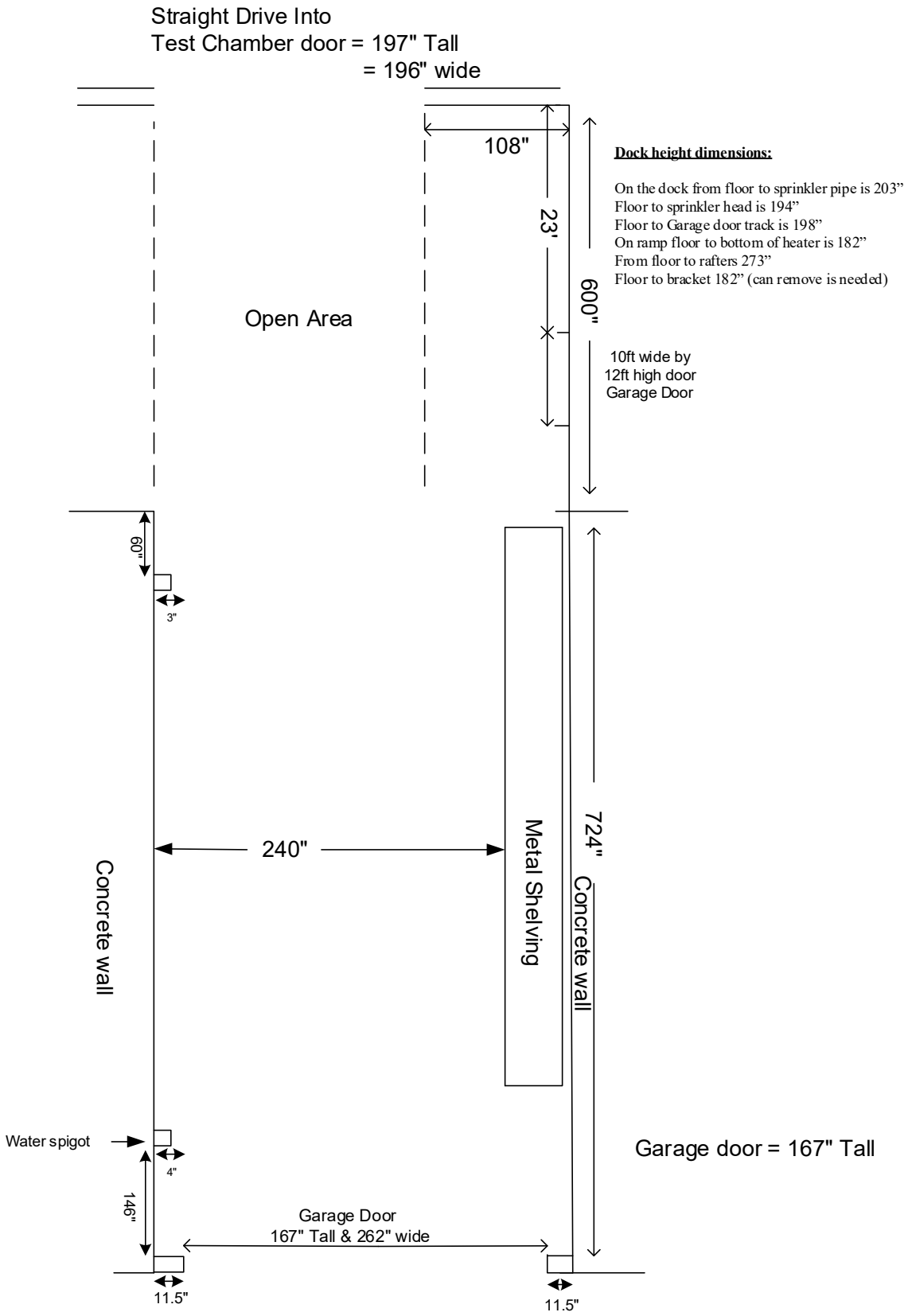



**Figure – 19: Driveway & Ramp Grade**

**Figure – 20: Dynamometer Setup Photos**

Dynamometer Information:

## Free standing dynamometer RPS40-55/100-6-F (10to/Axle)

innco systems GmbH • Erlenweg 12 • 92521 Schwarzenfeld • Germany

### short description

The Roller Stand RPS40-55/100-6-F (10to/Axle) is constructed as a free-standing dynamometer which can be fixed onto a turntable.

Two active elements (modules) are used for cars with rear / front wheel drive as well as 4WD. Each car wheel is driven by a separate motor / generator. It can be used for acceleration / retardation and in an endurance mode.

The RPS40-55/100-6-F (10to/Axle) is prepared to be used in an anechoic chamber for EMI and EMC measurements. All electronic components are located inside the modules in a shielded and radio interference suppressed box.

The RF- Emission is less than the limit "B" of CISPR 22. The immunity against field strength up to 200 V/m is guaranteed.

A fast PLC is taken to control the roller bench managing the frequency inverters according to the users commands and possible requirement of parent measurement system. The PLC is connected to interface PC via fibre optic links. The system controller PC is equipped with an IEEE interface to be connected to a host computer. Forward/backward turning and acceleration/retardation is programmable, speed profiles can be created. ABS test sequences are possible.

The maximum speed is limited by inverter function controller and by the internal micro controller. The temperature on the motors and inside the electronic box is being watched.

Two emergency switches are located (a) close to the stand and (b) in the control room. In case of an emergency the main power will be switched off.

innco systems dynamometer are basically equipped with power feedback units. With power feedback units each tire / roller pair is connected with a separate motor/generator. If the roller pair is driven (usually by the engine of the vehicle) the generator feeds the energy to the inverter-unit in the cabinet. If the vehicle has a passive axle, this energy can be used to drive the passive axle.

As a standard modus the "hilldrive" mode can be realised with minimised heat build-up: only the loss of the system has to be included, whereas the dynamometer generates a part of the electricity needed for the air condition! So the capacity of the air condition can be reduced and the expected current consumption for the whole chamber is lower.

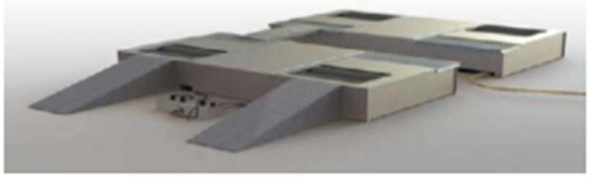
No mechanical parts are needed (no wear) and no additional wires; only the filters have to be able to support the energy flow bidirectional.

### short data overview

| | | | RPS40-55/100-6-F (10to/Axle) |
|---|---|---|---|
| Permissible axle load | | kg | 10.000 |
| Inner- \| Outer Roller edges | | mm | 1200 \| 2600 |
| Axle distance (Standard) | | mm | 4000 … 2300 |
| Axle distance in reverse setup (optionally) | | mm | 4000 … 1600 |
| Motor power | | kW | 4 × 31 |
| Max. speed | | km/h | 100 |
| Rated speed | | km/h | 55 |
| Acceleration \| Deceleration | | $m/s^2$ | 6 \| 6 |
| force on the roller (each pair) | | N | 1.780 |
| Roller diameter | | mm | 318 |
| Height of modules | | mm | 410 |
| width \| depht per module | | mm | 2865 × 1350 |
| own weight per module \| total (approx..) | | kg | 6500 \| 3250 |
| Temperature range | | °C | -10...+40 |
| Working range | | °C | 0...+35 |
| Current consumption | max. apprx. | A | 410 |
| Voltage | | | 400V \| 3~+PE \| 50-60Hz |

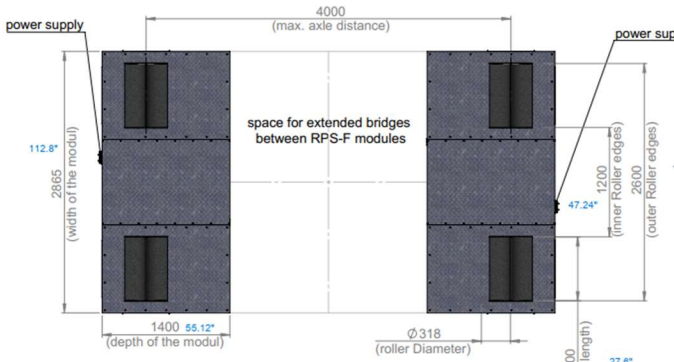
### common spec

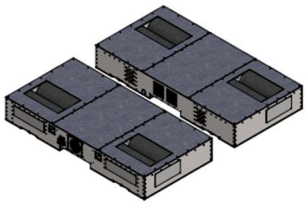
| | |
|---|---|
| Control | PLC as system control, PC as HMI, communication via FO cable (GOF type) |
| Included | Ramps to enter, bridges to pass to the 2nd module,<br>PC with standard software, attachable rollers for movement,<br>eyebolts for fixing / tying (1) \| material mainly galvanised steel |



(5)

(1) Tying the vehicle should be made at outer points. If there is no other way the eyebolts can be usedtoo.
(2) requires the option "air cushion system for easy moving"
(3) Picture shows optional moving aid with air cushions instead of rollers



**KEINE FREIGABE - NOT RELEASED**

| Revision | Änderung | Datum | Name |
|---|---|---|---|
| | | | |



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Phone +49 (9435) 301659-0 • Fax +99
eMail: info@innco systems.com

| | Datum | Name |
|---|---|---|
| 3D erstellt | 04.08.2021 | SM |
| 3D Freigabe | | |
| 2D erstellt | 10.08.2021 | SM |
| 2D Freigabe | | |

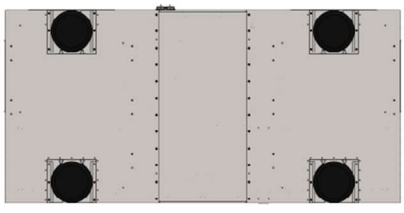
| Massstab: | Sage-Nr.: | Material: |
|---|---|---|
| 1:30 | | |
| RPS | | Oberfläche: |

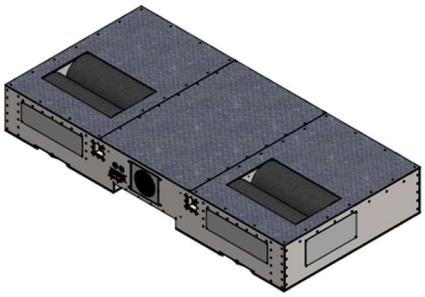
RPS40-55100-8-F

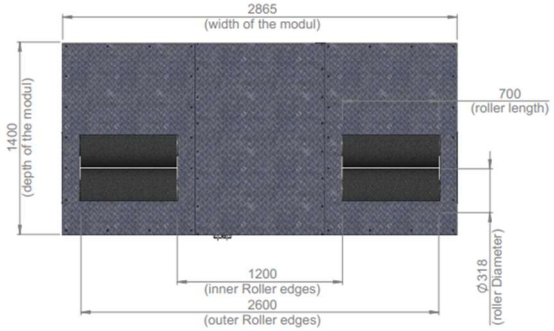
ALLGEMEINTOLERANZ DIN 7168 • m

**ISYS-0051700**

Revision: 00 | 00 (value | revision) 1/1 A3






total weight approx 3250 kg

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|---|---|---|---|
| | | | |



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| | Datum | Name |
|---|---|---|
| 3D erstellt | 18.06.2021 | SM |
| 3D Freigabe | | |
| 2D erstellt | 23.06.2021 | SM |
| 2D Freigabe | | |

| Massstab: | Sage-Nr.: | Material: |
|---|---|---|
| 1:20 | | |
| RPS | | Oberfläche: |

RPS40-55100-8-F Modul

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**ISYS-0050541**

Revision: 00 | 00 (value | revision) 1/1 A3