

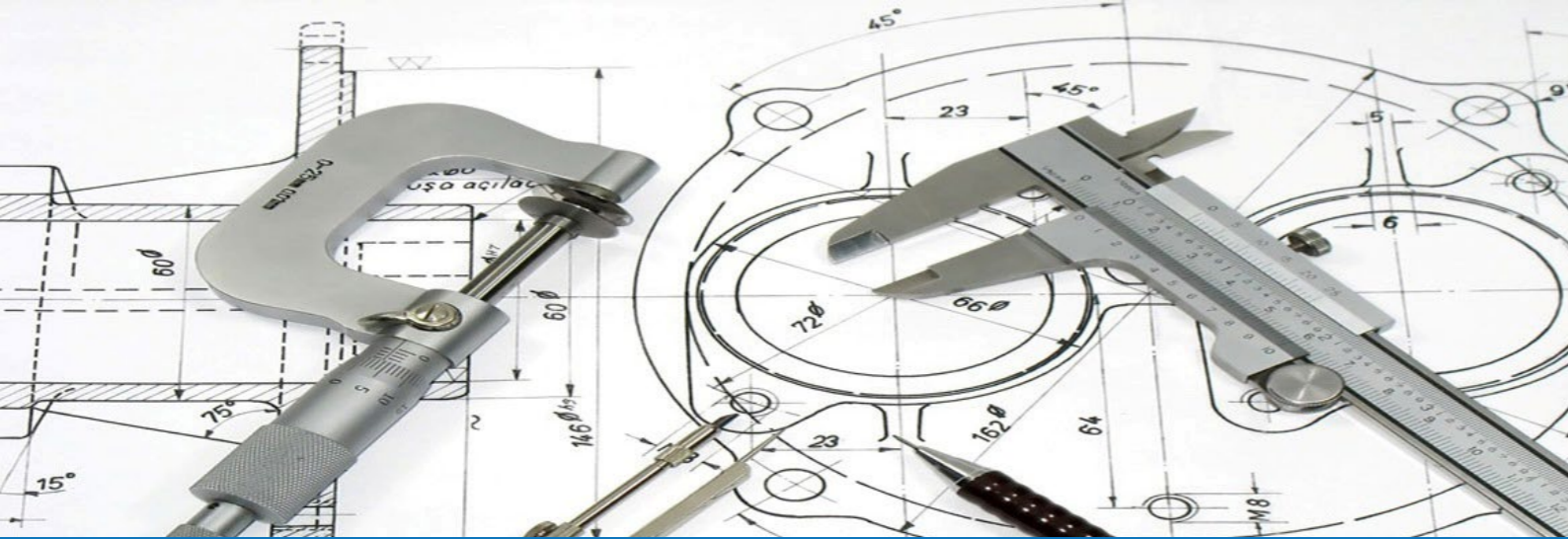


**C A R B O N**  
T W E L V E

Seal of **Engineering Excellence**

**COMPANY** PROFILE





## COMPANY PROFILE

## COMPANY BACKGROUND

**Carbon 12 Mechanical Design cc [C12], is a Namibian Mechanical Engineering Firm, founded in 2016 and offers our clients a wide variety of Mechanical Engineering Services such as Mechanical Design, Installation & onsite Management, Reliability maintenance, and product manufacturing.**

Through industry experience and knowledge of plant equipment and processes, by the principle member and technicians, we are able to engage projects of varying sizes and complexity levels in the following industries:

- Materials Handling
- Chemical
- Petrochemical
- Mining
- Power Generation
- Food & Beverage
- Agriculture
- Concrete & Construction plant
- Light & Heavy Automotive
- Water

Headquartered in Windhoek, C12's team consists of a team of experienced mechanical engineers, technicians & artisans with a common vision. We have registered professionals with successful track records of cost effective, SAFE, & CODED solutions.

Our Competencies & Services

- Storage Vessel Design
- Fluid Conveying Systems & Piping Design
- Pressure Equipment Design
- General Mechanical Design
- 3D Modeling & Draughting
- Reliability Maintenance & Defect Investigations.
- Installations & Management
- Metal Product Fabrication & Manufacturing

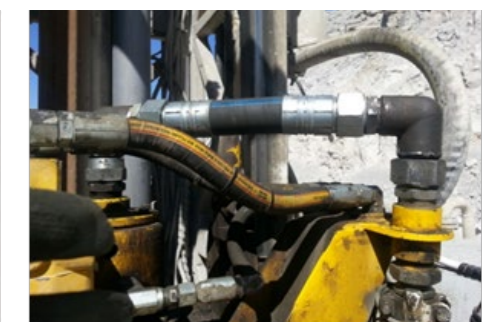
In 2016, Carbon 12 Mechanical Design cc, was founded by a registered Mechanical Engineer with Storage vessel & Process plant & Industrial equipment design & project management experience. The aim towards our clients is to offer affordable, SAFE & guaranteed engineering solutions.

C12 is supported by extensive experience & engineering acumen through the Principle engineer, and available computer aided analysis tools. We therefore are able to design numerous products to relevant CODES and non-coded products.

Additionally, we are able to offer our clients quality products & services, through our administrative & engineering procedures: QC/QA plans, SHEQ Policies, Weld & Fitting Procedures, Best Practice Engineering Specifications, etc.



“The aim towards our clients is to offer affordable, safe & guaranteed engineering solutions”







## STORAGE VESSEL DESIGN

C12 is highly experienced in the design of storage vessels and is able to offer full designs in excellent time. Vessel Design outputs include:

- CODED Calculations to API 650 & API 620.
- Finite Element Analysis on components not covered by API CODES.
- Full set of Fabrication & Assembly drawings.
- Sign of by a Registered Engineer.



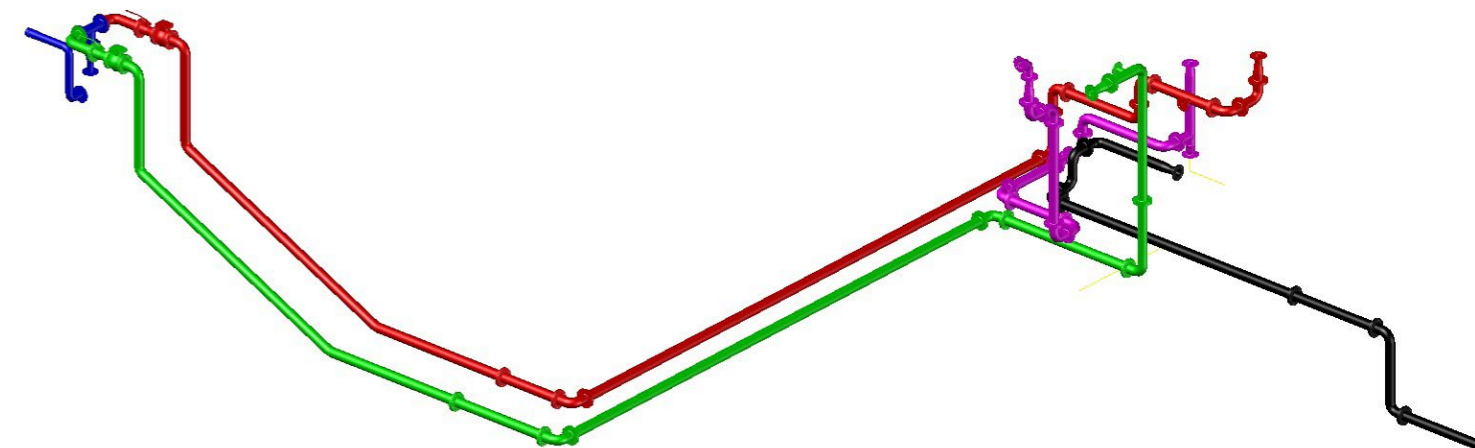
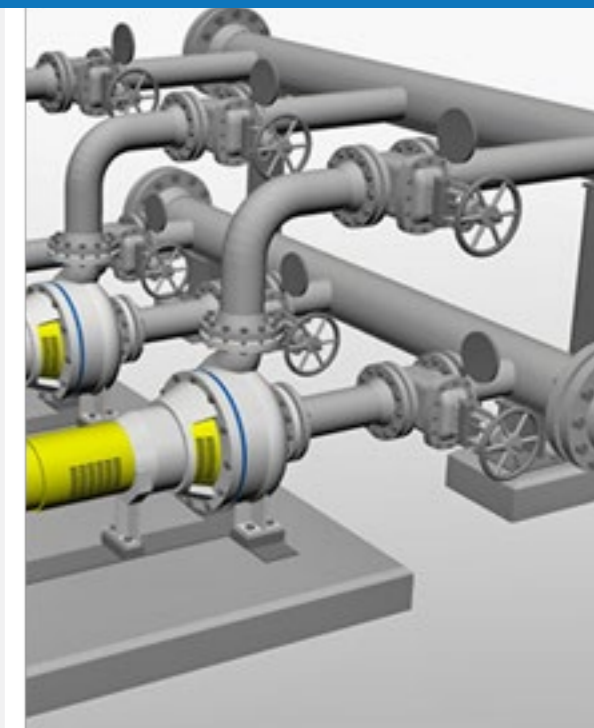
## PIPING DESIGN

C12 offers complete piping design services which consists of:

- Impulse or water hammer analysis
- Seismic, Wind & Wave Analysis
- Pipe routing & design.
- Isometric pipe drawings.
- Pump Calculations
- Flow optimization

Carbon 12 Mechanical Design can perform analysis to any major piping CODES such as:

- ASME B31.1
- ASME B31.3
- ASME B16.5





# VIII

## Division 1

### RULES FOR CONSTRUCTION OF PRESSURE VESSELS



The American Society of Mechanical Engineers



SETTING THE STANDARD

LOADING OF BRIDGE

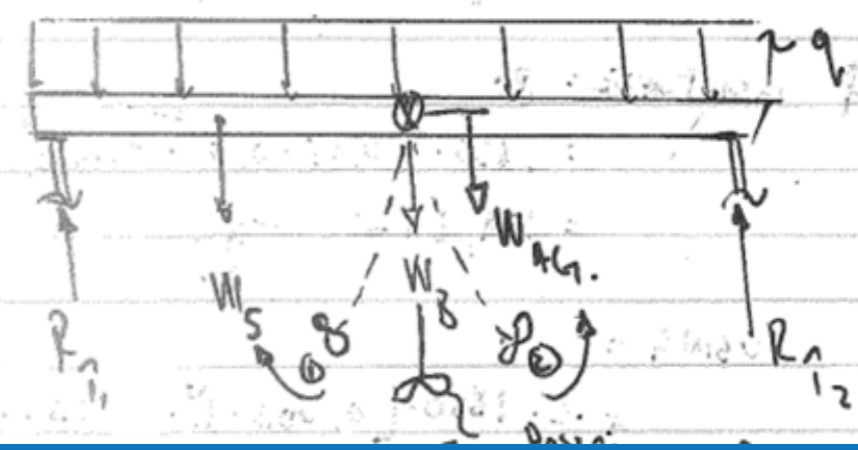


FIG. 1. LOADING ON SHAF RAILS AS SHAF? ANALYSIS.

## PRESSURE VESSEL EQUIPMENT DESIGN

## GENERAL MECHANICAL DESIGN & MANAGEMENT SERVICES

Carbon 12 Mechanical Design, has expertise capable of designing pressure equipment and is capable to supply a cost effective design package promptly. The design package include the main sections:

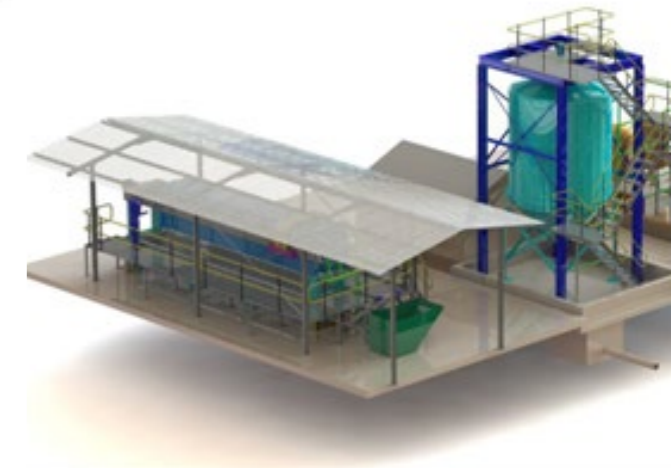
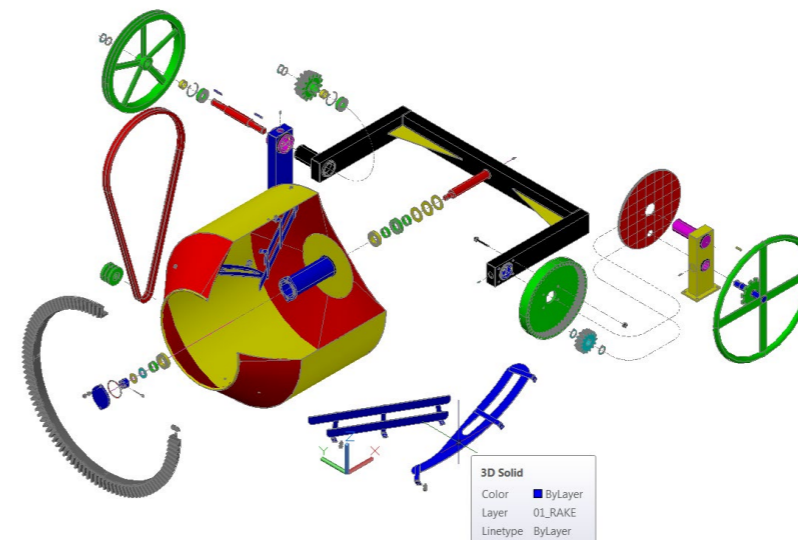
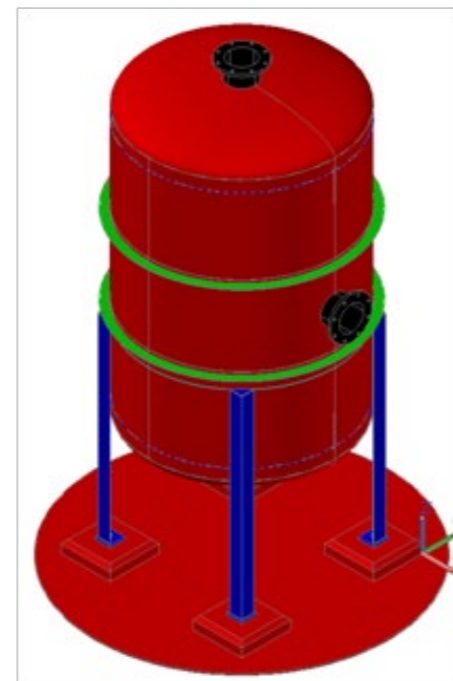
- CODE Calculations: All relevant calculations as required by ASME BPVE, Divisions I & II, EN 13445.
- Finite Element Analysis in Solid Works on all components not covered by code calculations or by the Weld Research Council Bulletin 07.
- Transport & Rigging Study: To simulate the forces acting on the vessel during rigging and transport of the vessel.
- Complete Fabrication drawings.
- Sign off by a Registered Engineer.



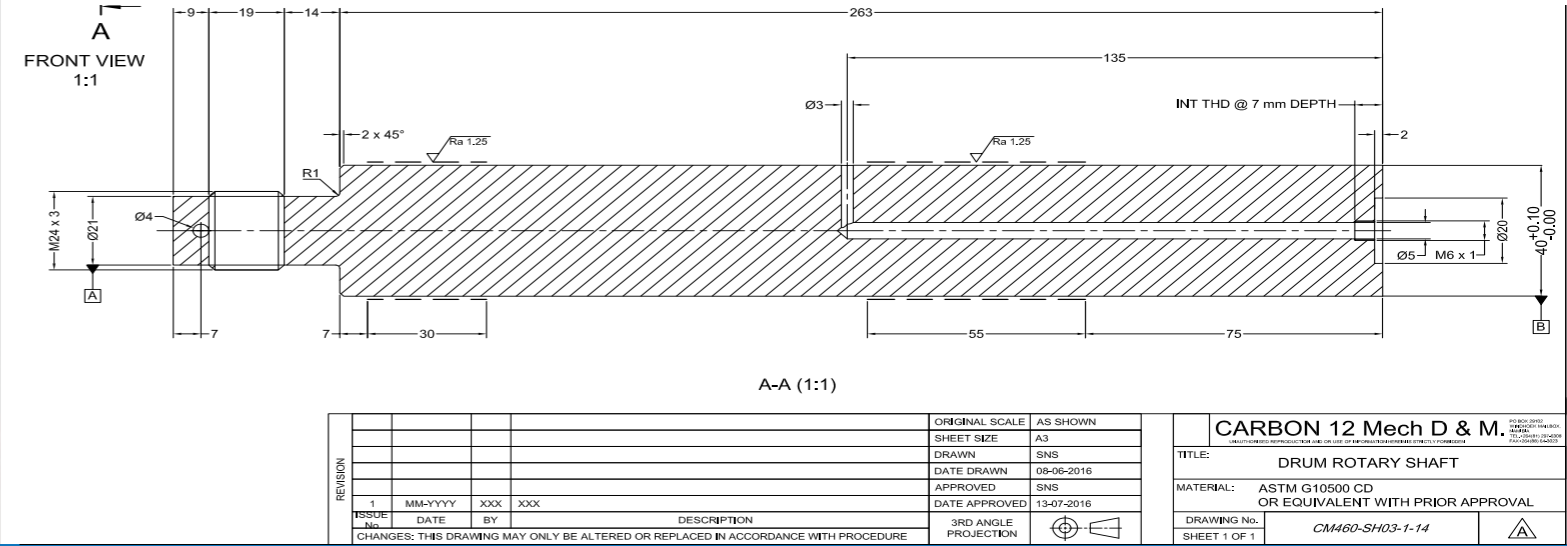
Carbon 12 Mechanical Design has the ability to develop new designs and innovative products. We use state of the art CAD software to support or design development.

We offer the following comprehensive Mechanical Design & Consulting services:

- Concept Design.
- Detailed Design & Draughting
- Material selection, analyses, surface texture specifications.
- Stacked Tolerance analysis.
- Testing & Evaluation of prototypes.
- Stress Analyses using FEA.
- Product Fabrication & Installation.
- Management of Turnkey Projects.







## PETROLEUM PRODUCT STORAGE & FIRE PROTECTION SYSTEMS

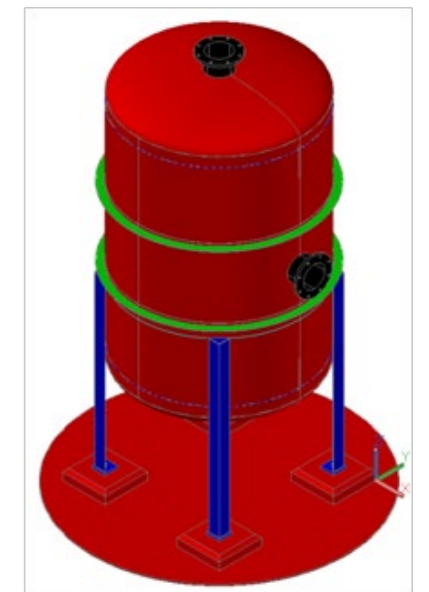
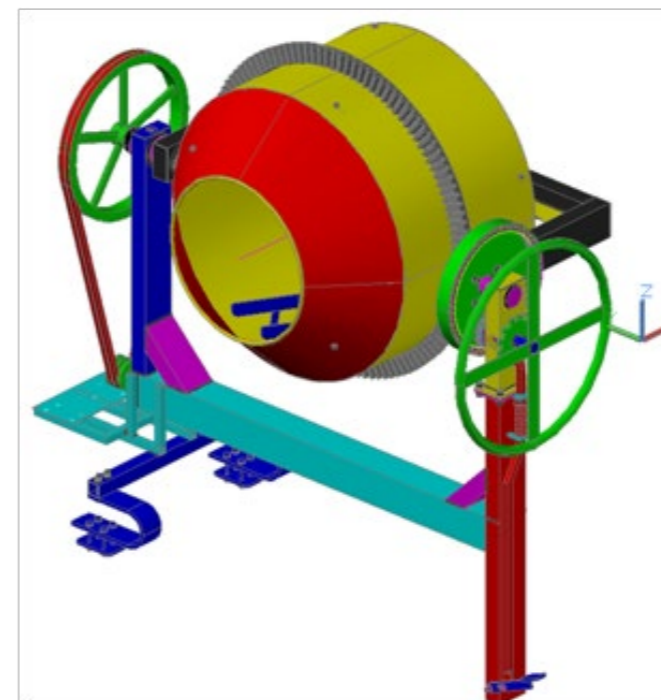
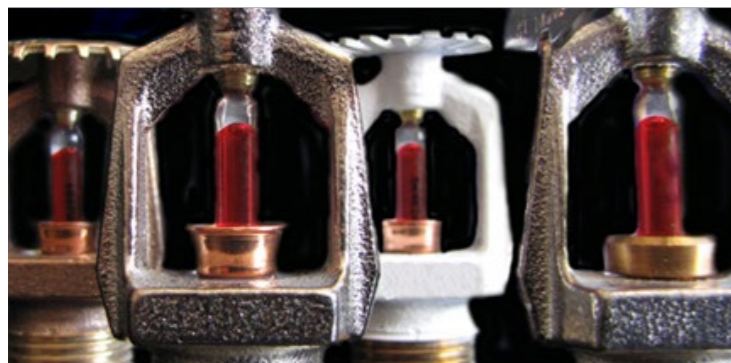
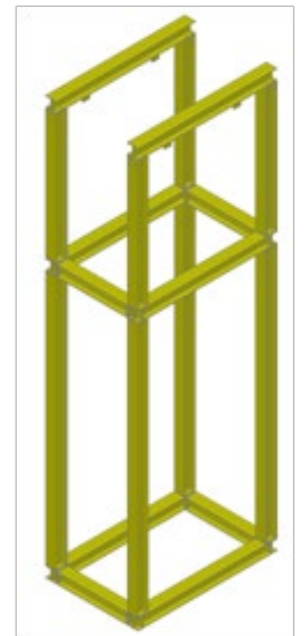
## 3D MODELING & DRAUGHTING

The Engineers at Carbon 12 Mechanical Design has experience in the design of petroleum product storage facilities. Whether above ground or below ground. Our designs are covered by the relevant storage & distribution codes and fire protection codes:

- SANS 10131: Above ground storage tanks.
- SANS 10089.1: Storage and distribution of petroleum products in above ground bulk installations.
- SANS 10089.2: Electrical and other installations in the distribution and marketing sector.
- SANS 10089.3: The installation, modification and decommissioning of underground storage tanks, pumps, dispensers and pipework at service stations and consumer installations.
- NFPA 15: Standard for water spray fixed systems for fire protection
- NFPA 16: Standard for the installation of foam-water sprinkler and foam-spray systems.

Carbon 12 Mechanical Design is Formidable in ALL phases of Mechanical Draughting and 3D CAD modelling. Carbon 12 uses AutoCAD & SolidWorks which are some of the market leaders in 3D CAD Modeling. We can provide the following 3D Modeling & Draughting services:

- 3D parametric modeling
- 2D Machine Drawings.
- Detailed Fabrication Drawings
- Technical Draughting
- Bill of Materials.







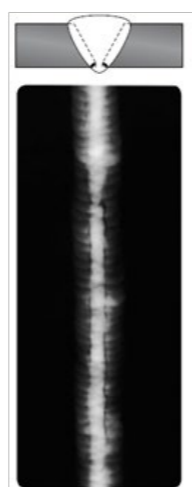
## RELIABILITY ENGINEERING, INSPECTIONS & FAILURE ANALYSIS

We can assist our clients in determining the root cause of failure of specific parts, and advice on possible improvements. We can define the dynamic behaviors of vibrating piece of equipment and measure analysis of the following properties:

- Temperature
- Vibration
- Rotary speed

Through our NDT Partners, we can carry out the following assesment of equipment:

- Storage vessel wall thickness & Pressure testing
- Radiography
- Magnetic Particle Inspections
- Thermography
- Reporting



Key Partners:



## GENERAL MAINTENANCE & MECHANICAL INSTALLATION

Carbon 12 Mechanical Design posses individuals with experience and industry best practice knowledge of the industrial plant equipment, and work processes.

The firms is able to carry out maintenance activities on common industrial equipment and installation of mechanical equipment and structures. We are guided by our QC/QA procedures & best practice specifications. Maintenance & installation on the following equipment:

- HME
- Lubrication & Hydraulics
- Vessels
- Pumps & Gearbox assemblies
- Piping
- Air handling equipment
- Hydrocarbons, fuel & filtration
- Irrigation equipment systems
- Agitation & mixers
- Conveyors & bulk solid handling
- Concrete Plant equipment & structure







Seal of **Engineering Excellence**

#### **PHYSICAL ADDRESS**

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