AMR LOAD CAPACITY CALCULATION GUIDE

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Classification: Confidential & Proprietary

1. PURPOSE AND SCOPE

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1. This Load Capacity Calculation Guide ("Guide") establishes the standardi

2. This Guide applies to all NaviFloor Series 2000 and 3000 AMR models op

2. DEFINITIONS

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1. "Base Load Capacity" means the maximum theoretical load that an AMR

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2. "Dynamic Load Factor" means the adjustment coefficient accounting for n

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3. "Environmental Coefficient" means the adjustment factor for operational s

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4. "Safety Margin" means the mandatory reduction percentage applied to the

3. BASE LOAD CAPACITY DETERMINATION

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1. The Base Load Capacity (BLC) shall be calculated using the following for

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BLC = (MP × SF) - RW

Where:

MP = Maximum Platform Rating

SF = Structural Factor (0.85)

RW = Robot Weight

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2. The Base Load Capacity must be verified through static load testing condu

4. DYNAMIC LOAD ADJUSTMENTS

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1. The Dynamic Load Factor (DLF) shall be applied based on operational pa

a) Standard Movement (0-1.2 m/s): DLF = 1.0

b) Enhanced Speed (1.3-2.0 m/s): DLF = 0.85

c) Rapid Transit (2.1-3.0 m/s): DLF = 0.70

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2. For operations involving inclines:

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0-2° incline: No adjustment

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2-5° incline: Reduce DLF by 0.15

>5° incline: Prohibited unless specifically authorized

5. ENVIRONMENTAL CONSIDERATIONS

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1. The Environmental Coefficient (EC) shall be applied based on surface con

Surface Type	Coefficient
Smooth Concrete	1.0
Epoxy Coating	0.95
Metal Grating	0.90
Textured Surface	0.85

2. Additional environmental factors requiring adjustment:

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Wet conditions: Reduce EC by 0.2

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Uneven surfaces: Reduce EC by 0.15

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Temperature extremes: Consult Technical Bulletin TB-2023-09

6. FINAL LOAD CAPACITY CALCULATION

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1. The Final Load Capacity (FLC) shall be calculated as:

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FLC = BLC × DLF × EC × 0.9
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Where 0.9 represents the mandatory Safety Margin.

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2. The calculated FLC must be rounded down to the nearest 50kg increment.

7. IMPLEMENTATION REQUIREMENTS

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1. Load capacity calculations must be:

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Performed by qualified personnel

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Documented in the Fleet Management System

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Reviewed quarterly or upon environmental changes

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Validated by a NaviFloor certified technician

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2. Documentation Requirements:

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Calculation worksheets

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Environmental assessment records

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Validation certificates

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Quarterly review logs

8. SAFETY PROTOCOLS

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1. Emergency Override Procedures:

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Load capacity limits are hard-coded

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Override requires Level 2 authorization

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All overrides must be logged and reported

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2. The AMR shall automatically prevent:

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Loading beyond calculated capacity

Operation outside approved parameters

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Movement when improperly loaded

9. DISCLAIMER AND LIABILITY

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1. This Guide contains proprietary information of NaviFloor Robotics, Inc. a

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2. NaviFloor Robotics, Inc. assumes no liability for damages resulting from:

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Incorrect capacity calculations

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Unauthorized modifications

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Operation outside specified parameters

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Failure to follow safety protocols

10. DOCUMENT CONTROL

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1. This Guide shall be reviewed annually and updated as required.

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2. Change History:

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v3.2: Updated dynamic load factors (2024-01-15)

v3.1: Added environmental coefficients (2023-09-20)

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v3.0: Major revision incorporating Series 3000 AMRs (2023-06-01)

11. CERTIFICATION

The undersigned hereby certifies that this Guide has been reviewed and appr

for implementation.

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Dr. Elena Kovacs

Chief Research Officer

NaviFloor Robotics, Inc.
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Date: January 15, 2024

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