ASSEMBLY LINE LAYOUT SPECIFICATIONS

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Document No.: OPS-ALL-2023-142

Effective Date: January 1, 2024

Version: 3.1

1. PURPOSE AND SCOPE

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1 This document establishes the mandatory specifications and requirements f

2 These specifications apply to all Company manufacturing facilities, includi

2. DEFINITIONS

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1 "Assembly Station" means a designated workspace within the assembly lin

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2 "Critical Path" refers to the primary production flow path through which A

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3 "Quality Control Point" means designated inspection locations where produ

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4 "Sensor Calibration Zone" means specially designated areas for testing and

3. ASSEMBLY LINE CONFIGURATION

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1 Basic Layout Requirements

a) Minimum aisle width: 2.4 meters

b) Maximum distance between emergency stops: 6 meters

c) Overhead clearance requirement: 3.5 meters

d) Maximum linear distance of main assembly line: 45 meters

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2 Station Spacing

a) Minimum space between assembly stations: 2.1 meters

b) Component staging area per station: 4.5 square meters

c) Operator workspace per station: 2.8 square meters

3 Production Flow

a) Main assembly line shall maintain unidirectional flow

b) Subassembly feeds must intersect main line at 90-degree angles

c) Maximum of three parallel assembly lines per facility

d) Minimum turning radius for AMR transport: 1.8 meters

4. TECHNICAL REQUIREMENTS

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1 Power Infrastructure

a) 480V three-phase power drops every 3 meters

b) Dedicated 120V circuits for testing equipment

c) UPS backup for critical testing stations

d) Ground fault protection at each power distribution point

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2 Network Infrastructure

a) Cat6A ethernet drops at each assembly station

b) Redundant wireless coverage throughout assembly area

c) Dedicated VLAN for production testing

d) Minimum network speed: 1Gbps

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3 Environmental Controls

a) Temperature range: 20-24°C

b) Humidity range: 45-55% RH

c) Clean room rating: ISO Class 7

d) Static discharge protection at all electronic assembly points

5. SAFETY AND COMPLIANCE

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1 Emergency Systems

a) Fire suppression coverage per local code

b) Emergency lighting on independent power

c) Clear evacuation paths marked on floor

d) Maximum distance to emergency exit: 30 meters

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2 Safety Zones

a) Yellow safety markings around all automated equipment

b) Red restricted zones around testing areas

c) Green pedestrian walkways

d) Blue designation for material handling paths

6. QUALITY CONTROL INFRASTRUCTURE

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1 Testing Stations

a) Minimum of three QC checkpoints per assembly line

b) Dedicated final testing area: 100 square meters

c) Environmental chamber location requirements

d) Calibration equipment positioning

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2 Documentation Requirements

a) Digital display mounting locations

b) Barcode scanner positioning

c) Quality documentation storage

d) Real-time monitoring system placement

7. MODIFICATIONS AND VARIANCES

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1 Any modifications to these specifications must be approved in writing by:

a) Director of Manufacturing

b) Quality Assurance Manager

c) Facility Safety Officer

d) Chief Technology Officer

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2 Variance requests must be submitted using Form OPS-VAR-2023 and incl

a) Technical justification

b) Risk assessment

c) Mitigation plan

d) Timeline for implementation

8. CERTIFICATION

The undersigned hereby certify that these Assembly Line Layout Specificatio
have been reviewed and approved:

NAVIFLOOR ROBOTICS, INC.

By:

Name: Richard Torres

Title: Chief Operating Officer

Date: _

By:

Name: Dr. Elena Kovacs

Title: Chief Research Officer

Date: _

9. REVISION HISTORY

Version 3.1 - January 1, 2024

Version 3.0 - June 15, 2023

Version 2.1 - January 10, 2023

Version 2.0 - July 1, 2022

Version 1.0 - March 1, 2022