

FIELD MANUAL · VOLUME 18

Quiet. Calm. Cured.

Wellness is plumbed, vented, and powered before drywall.

PREPARED FOR

Operators · Project Managers · Designers · Integrators · Owner's Reps

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MANIFESTO

Wellness is plumbed, vented, and powered before drywall.

Vol 18 governs the infrastructure of Restrepo Innovations luxury residential wellness rooms across the NJ/NY metro corridor — oxygen enrichment, hyperbaric chambers, sauna, cold plunge, steam shower, and float tanks. Every circuit, every drain, every exhaust path, and every structural accommodation is resolved in the framing stage. Modalities that require dedicated circuits, structural reinforcement, and vapor-proof assemblies do not tolerate retroactive installation. The wellness room is infrastructure before it is experience.

SCOPE

Residential-only. Applies to new luxury construction and major renovations within Restrepo Innovations projects in the NJ/NY metro corridor (IECC Climate Zone 4A). Covers oxygen enrichment and altitude training, hyperbaric oxygen chambers, traditional Finnish and infrared sauna, cold plunge, steam shower, float tanks, and cross-cutting mechanical, electrical, plumbing, acoustic, and smart-home infrastructure. Governing codes: NEC 2020 (NJ UCC, NJAC 5:23-3.16), IBC 2021 NJ edition (NJAC 5:23-3.14), NSPC 2021 (NJ Plumbing Subcode, NJAC 5:23-3.15), ASHRAE 62.2-2019/2025, NFPA 99-2024, UL 875, FDA 21 CFR 868.5470. Cross-references Vol 02 (Electrical Rough-In) and Vol 09 (Acoustic Isolation).

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PART 1

Air & Oxygen

Sections 01–04 — Why Wellness Now, Oxygen Enrichment, HBOT Chambers, Ventilation & Code

§ 01

Why Wellness Now

PART I — AIR & OXYGEN

Luxury residential wellness infrastructure has shifted from a discretionary amenity to a core construction discipline. Each modality carries specific MEP requirements that cannot be retrofitted without significant disruption to finished surfaces. Electrical circuits, floor reinforcement, waterproofing, and exhaust paths must be resolved before drywall.

THE FOUR PARTS OF THIS VOLUME

Part	Modalities	Primary Codes
I — Air & Oxygen	Oxygen enrichment, HBOT chambers, ventilation	NFPA 99 Ch 14; NEC 2020 Art. 210; ASHRAE 62.2
II — Heat & Cold	Sauna (Finnish/infrared), cold plunge, steam shower	NEC Art. 422/680; UL 875; IRC R702/R803; IPC 2021
III — Water, Sound & Power	Float tank, acoustic isolation, electrical/plumbing	NEC Art. 680; NSPC 2021; NFPA 70; IRC R301.5
IV — Discipline & Closeout	Written direction, pre-wellness checklist, QC/commissioning	NJ UCC; ASHRAE 62.2; Energy Star Indoor airPLUS

FIELD RULE

Plan every modality before framing is complete.

The circuit count, drain locations, structural reinforcements, and exhaust paths for all six wellness modalities must be resolved in the pre-construction coordination meeting. Changes after drywall are surgical procedures at luxury finish costs. The wellness room is not a room that gets infrastructure added later — it is infrastructure from the first framing nail.

NOTE

NJ code stack — NSPC, not IPC.

New Jersey adopts the National Standard Plumbing Code (NSPC) 2021 for its Plumbing Subcode (NJAC 5:23-3.15) — not the IPC. The Electrical Subcode runs NEC 2020 (NJAC 5:23-3.16). The Building Subcode uses IBC 2021 NJ edition (NJAC 5:23-3.14). IPC references in this volume are for general alignment; all NJ permit documents must cite the applicable NSPC section.



SPECIFICATION**Residential-only discipline.**

Every provision in Vol 18 is residential. We do not reference commercial, medical, or multifamily standards as primary authority. Where NFPA 99 Chapter 14 is cited (HBOT, oxygen rooms), it is applied as best-practice engineering reference, not as a mandatory healthcare occupancy code. Confirm occupancy classification with the AHJ before permit submittal.

§ 02

Oxygen Enrichment

PART I — AIR & OXYGEN

A residential oxygen room uses a molecular sieve pressure-swing adsorption (PSA) concentrator to raise ambient O₂ from 20.9% to 24–30%, creating a hyperoxic micro-environment. Oxygen-enriched atmospheres above 23.5% O₂ are formally classified as a fire-hazard multiplier by the Compressed Gas Association and NFPA 53. All design work must account for fire safety, dedicated electrical circuits, exhaust, and material restrictions from the first framing coordination meeting.

CONCENTRATOR PRODUCT SURVEY

Manufacturer / Model	Flow (LPM)	Power (W)	Sound (dBA)	Outlet Pressure	Notes
Hypoxico Sierra 100	100	550–650	65	N/A	Altitude/hypoxic; dual-mode rooms; 110V, dedicated 20A
Hypoxico Everest Summit II	120	550–650	60	N/A	USA-made; 110V; 550–650W continuous load
Hypoxico HYP 123	120	550–650	60	N/A	USA-made; same electrical profile as Everest Summit II
CAIRE NewLife Intensity 8	2–10 LPM	410	52	20 psig	120V; 87–96% O ₂ purity; high-pressure output
CAIRE NewLife Intensity 10	2–10 LPM	590	55	20 psig	120V; 4.9A continuous; dedicated 20A GFCI circuit
CAT / AltaPro dual-mode	Confirm w/ MFR	Confirm	Confirm	N/A	Switchable O ₂ /N ₂ for dual hyperoxia/hypoxia rooms
AirSep / CAIRE VisionAire	Confirm	Confirm	Confirm	N/A	Stationary concentrator; confirm for room-enrichment use

ELECTRICAL REQUIREMENTS — O₂ ROOM

Equipment	Voltage	Circuit	Conduit	Notes
CAIRE Intensity 10 concentrator	120 VAC	Dedicated 20A GFCI	EMT; flex at equipment	Continuous load; size at 125% per NEC Art. 210.19
Hypoxico Everest Summit II	110 VAC	Dedicated 20A GFCI	EMT; flex at equipment	550–650W; AFCI/GFCI combo breaker preferred

Clinical-grade UPS (1,200 VA min.)	120 VAC	Dedicated 20A	EMT	On-line double-conversion; 15-min runtime at full load
O ₂ monitor / controller	120 VAC	Shared control circuit	EMT or low-voltage flex	Alarm at 25% and 30% O ₂ ; interlock to exhaust and shutoff
Dedicated exhaust fan	120 VAC	Dedicated or shared control	EMT	Interlock with concentrator power-on; exhaust to exterior only

DO NOT

No NM cable in an O₂-enriched room without written direction.

NM (Romex) cable is not used in any oxygen-enriched environment without specific written AHJ direction. The oxygen-enriched atmosphere accelerates combustion of the cable jacket in an arc-fault event. EMT or RMC conduit is the standard for all branch circuits in an oxygen room. AFCI/GFCI combination breakers are preferred per NEC 2020 Art. 210.12.

FIELD RULE

Room volume, O₂ loading, and exhaust sizing.

A well-sealed 200 ft³ room requires approximately 3–5 LPM supplemental O₂ to maintain 28% with one occupant. Do not seal the room completely: a dedicated exhaust fan of at least 1 CFM per ft² of floor area prevents CO₂ accumulation from occupant respiration. Concentrator intake must draw from outside the O₂-enriched zone — never recirculate enriched room air back through the concentrator.

SPECIFICATION

Fire safety in oxygen-enriched atmospheres — NFPA 53.

NFPA 53 (Recommended Practice on Materials in Oxygen-Enriched Atmospheres) is the primary fire-hazard reference. Key provisions: no open flames, no oil-based finishes or petroleum-based caulks in the O₂ delivery zone, vapor-tight electrical fixtures, zero-VOC water-based paints and sealers only. No latex foam underlayment. Closed-cell SPF permitted if fully coated with ignition-barrier finish per IBC 2021 §2603.4.

BEST PRACTICE

Spare hardware — 5% delivered and labeled.

Deliver and label a minimum 5% overage of all consumable O₂ room components: inlet air filters, outlet tubing segments, O₂ monitor sensor heads, and UPS battery modules. Label and stage in an adjacent mechanical room. This policy applies across all six wellness modalities in Vol 18.

§ 03

HBOT Chambers

PART I — AIR & OXYGEN

Residential mild hyperbaric oxygen therapy (HBOT) chambers operate at 1.3–1.5 ATA (4.0–7.35 psig). All chambers in this volume are soft-shell or semi-rigid civilian designs for home wellness use. FDA 21 CFR 868.5470 classifies full-body chambers as Class II devices; chambers marketed solely as wellness devices without medical claims occupy a regulatory gray zone. Treat any chamber above ambient pressure as a pressure vessel requiring all associated structural, electrical, and safety provisions regardless of FDA marketing classification.

CHAMBER MANUFACTURER SURVEY

Model	Diameter	Length	Pressure	Electrical	Notes
OxyHealth Vitaeris 320	32" (813 mm)	92"	1.3 ATA / 4 psi	110–120V UL cert.	Dual-head 1/3 hp oil-less compressor; 135 LPM; 0.01µm filtration
OxyHealth Respiro 270	27" (686 mm)	92"	1.3 ATA / 4 psi	110–120V	1/4 hp; ~45 lbs deflated; residential standard entry
OxyHealth Solace 210	21" (533 mm)	92"	1.3 ATA / 4 psi	110–120V	Single-occupant; smallest footprint; 24 lbs deflated
Summit to Sea Grand Dive 40"	40"	90"	1.3 ATA / 4.4 psi	120V 15A	Dual redundant compressors; US-made; 12' x 8' min. room
Newtowne C4-27 / C4-34	27" / 34"	~90–95"	1.3 ATA / 4 psi	120V	46-oz ballistic nylon; dual pressure relief; quiet compressors

ROOM DIMENSION REQUIREMENTS

Chamber Model	Min. Room Length	Min. Room Width	Min. Ceiling Ht.	Concentrator Zone
Solace 210 (21" dia.)	12 ft	6 ft	7 ft	2' x 2'
Respiro 270 / C4-27 (27" dia.)	13 ft	6 ft	7 ft	2' x 2'
Vitaeris 320 (32" dia.)	14 ft	7 ft	7 ft 6 in	2' x 2'
Grand Dive 40" (40" dia.)	14 ft	8 ft	7 ft 6 in	2' x 2'

NFPA 99 CH 14 AND FDA CLASSIFICATION

NFPA 99-2024 Chapter 14 defines Class A (multi-place), Class B (single-occupant), and Class C (veterinary) hyperbaric chambers. Soft-sided residential units at 1.3–1.5 ATA fall within the Class B / Category 3 framework. NFPA 99 §14.2.1.1.7 requires rooms housing Class A or B chambers to be dedicated-use spaces; apply this as best practice for residential wellness rooms. FDA 21 CFR 868.5470 classifies full-body chambers as Class II devices with special controls. Verify current FDA clearance status with the manufacturer before specification.

DO NOT**No overhead lighting directly above the chamber opening.**

Condensation on the chamber exterior combined with possible O₂ concentrations near zipper ports creates a hazard if a fixture fails above the opening. Locate lighting on the wall at bench level or in indirect cove positions. All fixtures in the HBOT zone: vapor-tight, rated for the location, no spark-producing devices within the chamber room during operation.

FIELD RULE**Compressor vibration isolation — standard specification.**

Mount compressor on a 2" neoprene anti-vibration pad. For multi-compressor configurations (Grand Dive Pro Plus: four compressors), use a common anti-vibration base plate. Flexible high-pressure hose connection to the chamber provides additional vibration decoupling. Do not place compressors against a shared bedroom wall without acoustic isolation per §09.

INSPECTION STANDARD**Combustible material audit before chamber installation.**

Before chamber delivery: audit the room for petroleum-based lubricants, aerosols, synthetic carpeting beneath the O₂ manifold, and oil-based finish topcoats. Approved floor finishes: sealed concrete, ceramic tile, sealed hardwood (water-based finish only). No VCT or vinyl composite tile. No electric space heaters in the chamber room. No gas fireplaces or candles.

§ 04

Ventilation & Code

PART I — AIR & OXYGEN

ASHRAE 62.2-2019 and IRC 2021 govern ventilation in NJ wellness rooms. Each O₂ or HBOT room requires a dedicated exhaust path to the exterior — never to a shared HVAC return. NJ adopted IRC 2021 for mechanical ventilation via NJAC 5:23-3.21.

VENTILATION CODE STACK

Reference	Requirement
ASHRAE 62.2-2019 §4.1.1	$Q_{fan} = 0.03 \times A_{floor} (ft^2) + 7.5 \times (N_{br} + 1)$ CFM; no infiltration credit on balanced systems
ASHRAE 62.2-2025	MERV 11 minimum filtration; toilet room exhaust added; Restrepo standard: MERV 13 on all equipment
IRC 2021 M1505	Whole-house mechanical ventilation mandate for new construction; NJ operative September 6, 2022
NFPA 99 §14.2.4.4.1	Class B (single-occupant) chambers: 1 ft ³ /min minimum ventilation; apply as best practice in residential
Energy Star Indoor airPLUS v2	MERV 13 required for ventilation and ducted HVAC systems; homes permitted on/after August 1, 2024
NEC 2020 Art. 210.12	AFCI protection on all 120V, 15A and 20A circuits in habitable residential spaces, including wellness rooms

SPECIFICATION

MERV 13 filtration — Restrepo baseline.

Specify MERV 13 on all ventilation equipment. MERV 13 captures particles 1–3 microns at 50–75% efficiency, satisfying ASHRAE 62.2-2025 and Energy Star Indoor airPLUS v2. For Zehnder ComfoAir Q units, verify fan curve can maintain design airflow at the higher pressure drop of MERV 13 before specifying a HEPA upgrade.

FIELD RULE

Exhaust isolation — wellness rooms to exterior only.

Each wet or oxygen-active wellness room (O₂ room, HBOT room, steam shower, float room, sauna) must have a dedicated exhaust fan discharging directly to the exterior. Exhaust from these rooms must never enter the shared residential HVAC return. O₂-enriched air routed into a shared HVAC system creates a fire hazard throughout the duct network.

PART 2

Heat & Cold

Sections 05–07 — Sauna Infrastructure, Cold Plunge, Steam Shower

§ 05

Sauna Infrastructure

PART II — HEAT & COLD

Restrepo sauna installations cover two types: traditional Finnish (rock heater, 160–195°F dry heat with löyly steam) and infrared (IR panels, 100–140°F radiant heat). Both types require dedicated 240V circuits, vapor barrier assemblies, and floor drainage. Traditional heaters draw 3–10+ kW and require 2-pole breakers. Infrared units range from 120V/15A single-person to three-circuit 240V/20A installations. All heaters must carry UL 875 listing for residential sauna use.

TRADITIONAL HEATER ELECTRICAL — HARVIA KIP SERIES

Model	kW	Voltage	Full-Load Amps	Breaker	Wire (Cu)	Room Volume
Harvia KIP 30 (3 kW)	3.0	240V 1-ph	12.5 A	20A 2-pole	12 AWG	75–130 ft ³
Harvia KIP 45 (4.5 kW)	4.5	240V 1-ph	18.8 A	30A 2-pole	10 AWG	130–220 ft ³
Harvia KIP 60 (6 kW)	6.0	240V 1-ph	25.0 A	40A 2-pole	8 AWG	170–300 ft ³
Harvia KIP 80 (8 kW)	8.0	240V 1-ph	33.4 A	50A 2-pole	8 AWG	251–424 ft ³

OTHER HEATER BRANDS — TRADITIONAL AND INFRARED

Brand / Model	kW	Voltage / Circuit	Notes
Helo Roxx / Himalaya (Harvia group)	8–8.6	240V 1-ph; mirrors KIP series	UL listed; Helo is Harvia sister brand under Harvia Group
Tylo Combi Pure 6	6 kW sauna	240V 30A sauna + 20A steam	Combined sauna + steam injector; confirm combined load w/ MFR
IKI Electric 9 kW	9	240V 50A 2-pole; 8 AWG Cu	110-lb stone capacity; extended löyly sessions
Sunlighten mPulse Discover 1P	~1.8	120V or 240V; confirm w/ MFR	SoloCarbon 4-wavelength NIR/MIR/FIR + red light; ultra-low EMF claim
Sunlighten mPulse Empower 5P	~4.2	240V 20A	SoloCarbon PulseIQ 5-person; ultra-low EMF
Clearlight Sanctuary 1 / 2	1.4–2.5	120V 15A or 20A NEMA 5-15P / 5-20P	True Wave carbon/ceramic 6–12 µm FIR; near-zero EMF claim; request 3rd-party test report
Clearlight Sanctuary Studio	~7	3 × 240V / 20A (three circuits)	Specify shielded LED drivers (FCC Part 15 Class B) for in-room lighting

SAUNA ROOM CONSTRUCTION AND WOOD SPECIES

Species	Key Properties	Best Use
Western Red Cedar	Natural antiseptic, aromatic, water-repellent; surfaces cool at 185°F; 25–40-yr lifespan	Premium standard; luxury residential benchmark
Nordic Spruce	Traditional Finnish; 20–25% lower thermal conductivity than untreated wood	Authentic Finnish aesthetic; traditional installations
Basswood	Antifungal; consistent color; minimal knots; allergy-sensitive	Allergy-sensitive clients; light-colored contemporary interiors
Eucalyptus	Tight grain; excellent moisture resistance; distinctive appearance	Contemporary luxury; Sunlighten mPulse standard material

SPECIFICATION

NEC 125% continuous-load rule — Harvia KIP 80.

Per NEC 2020 Art. 210.19(A)(1), circuit conductors must be rated at 125% of the continuous load. Harvia KIP 80 at $33.4A \times 1.25 = 41.7A$, requiring a 50A 2-pole breaker and 8 AWG copper minimum. NEC Art. 110.3(B) mandates installation per manufacturer instructions; if the heater manual specifies a 50A circuit, the installation must match regardless of an independent calculation suggesting lower sufficiency.

DO NOT

No NM cable behind the heater or in the vapor barrier zone.

NEC Art. 310.15 and heater manufacturer requirements prohibit non-metallic sheathed cable in areas where temperature exceeds 90°C (194°F). Use 90°C-rated THHN/THWN in EMT conduit for all sauna circuits. No NM cable without written AHJ direction. Run all circuits from the heater in EMT, terminating at a UL 875-listed junction box outside the steam zone.

FIELD RULE

Vapor barrier, furring, and drainage sequence.

Construction sequence: structural framing → R-13–R-19 batt insulation → foil-faced vapor barrier (foil toward heated interior; seams lapped 6" and foil-taped) → 1×3 horizontal furring at 24" o.c. (ventilated air gap) → T&G; interior cladding (blind nail/clip system for luxury finish). Floor: slope 1/8" per foot to P-trapped floor drain. Trap primer per ASSE 1018 required. Sauna door swings outward; no lock from inside.

§ 06

Cold Plunge

PART II — HEAT & COLD

A residential cold plunge provides controlled cold-water immersion at 37–59°F (3–15°C). Floor loading is the most significant structural concern: filled units impose 55–101 PSF, exceeding the 40 PSF residential wood-frame floor design standard. NEC 2020 Article 680 governs GFCI requirements for permanently installed cold plunge units. Dedicated circuits, waterproof membranes, and floor drains are required on every installation.

COLD PLUNGE MANUFACTURER SURVEY

Model	Gal.	Filled Wt.	Electrical	Filtration	Notes
Plunge All-In	105	~1,150 lbs	120V 15A GFCI cord	UV + ozone	Plug-and-plunge; 0.75 HP; 37°F min.; 10–12°F/hr cooling rate
Renu Therapy Cold Stoic 2.0	75–95	~1,145 lbs	120V; 20A GFCI	Integrated	304 SS; 350-lb dry; 83 PSF on wood-frame floor
Renu Therapy Siberian (Large)	95–125	~1,500 lbs	120V; 20A GFCI	Integrated	650-lb dry; >100 PSF — structural engineer required
Morozko Forge	Confirm	1,000–1,200 lbs	120V; confirm A w/ MFR	Integrated	Stainless; 340–375-lb dry; 2" clearance around mechanical
BlueCube C2 / CM	~100 / Confirm	~1,334 / Confirm	120V 20A / 240V 30–60A GFCI	UV + hydro-jet / Confirm	C2: 304 SS 14-ga. 5 ft tub; CM: chiller up to 60 ft from tub

FLOOR LOADING — CRITICAL STRUCTURAL DATA

Unit	Gallons	Water Wt. (lbs)	Tub Wt. (lbs)	Total + Occupant	Footprint (ft²)	PSF Load
Plunge All-In	105	875	238	1,313	16.8	~78
Cold Stoic 2.0	95	792	350	1,342	16.1	~83
Siberian Large	125	1,042	650	1,892	18.7	~101
BlueCube C2	~100	834	~300	1,334	24.1	~55

Standard residential wood-frame floors are designed for 40 PSF live load (IRC Table R301.5). Every cold plunge except the BlueCube C2 on its full footprint exceeds this threshold on a wood-frame upper floor. Engage a licensed structural engineer before any above-grade cold plunge installation. Concrete slab / basement installations at 100+ PSF capacity are generally adequate without modification.

SPECIFICATION**NEC 680 GFCI requirements for cold plunge.**

NEC 2020 Art. 680.5(B): GFCI protection on all 15A and 20A circuits within 5 feet of the plunge tub inside wall. Art. 680.12: GFCI breaker on the supply circuit for permanently installed units. Art. 680.25(A)(2): circulation receptacles not less than 10 ft from inside walls. No extension cords; manufacturer-supplied cord is the maximum for plug-in installations.

FIELD RULE**Chiller heat rejection — indoor HVAC impact.**

An indoor cold plunge chiller rejects 1,000–3,000 BTU/hr into the room. For a room targeting 68°F ambient with a 1.5-ton chiller running 8 hours per day, add 1/4–1/2 ton of incremental cooling to the room HVAC design. BlueCube CM remote-condenser option eliminates the indoor heat dump entirely and is the preferred specification for fully enclosed wellness rooms.

INSPECTION STANDARD**Waterproof membrane in cold plunge splash zone.**

Floor and walls within a 4-ft radius of the tub perimeter and all wall surfaces up to 12" above the tub rim require waterproofing. Approved systems: Schluter KERDI (0.3–0.4 perms, ASTM E96) or Laticrete Hydro Ban (<0.1 perms, ANSI A118.10). Full flood-test before tile installation. UV + ozone filtration maintains water quality at cold temperatures where chlorine efficacy drops.

§ 07

Steam Shower

PART II — HEAT & COLD

A residential steam shower uses an electrically powered generator producing pressurized steam injected into a fully enclosed, vapor-sealed enclosure. Generator sizing uses Adjusted Cubic Footage (ACF): room volume multiplied by a material multiplier. Marble multiplies at 1.3×; tile at 1.0×; fiberglass/acrylic at 0.5×. The rule of thumb is 1 kW per 30–50 ft³ ACF; always verify against manufacturer-published sizing tables. All generators require 240V dedicated circuits and vapor-sealed enclosures with TCNA-compliant waterproof membranes.

GENERATOR MANUFACTURER SURVEY

Brand / Model	Coverage (ACF ft ³)	kW Range	Voltage	Notes
Mr. Steam MS90–MS150	75–150	7.5–9 kW	240V 1-ph	Stainless steel; residential standard; THHN 90°C wire required
Mr. Steam MS200–MS400	150–400	12–24 kW	240V 1-ph or 3-ph	Larger residential / light commercial; confirm phase availability
ThermaSol PRO84 Series III	Up to 84	~5–6 kW	240V 30A	Smart Steam technology; precise temp control
ThermaSol PRO140 Series III	Up to 140	~9 kW	240V 40–50A	PRO Series III luxury residential standard
ThermaSol PRO240 Series III	Up to 240	~15 kW	240V 60A	Large master suite / estate installations
Amerec AK-K2	Confirm w/ MFR	Confirm	240V	18" front / 6" top clearance; 20 ft max steam line; 1/2" Cu steam pipe
Steamist SM-7 / SM-9 / SM-12	150 / 200 / 280	7 / 9 / 12 kW	240V	All single-phase; SM number ≈ kW output; SM-9 residential large standard
Kohler Invigoration Series	Confirm w/ MFR	Confirm	240V	Integrates with Kohler Anthem+ and Control4 natively

ELECTRICAL SIZING BY GENERATOR LOAD

Generator Size	Voltage	Min. Breaker	Wire Gauge (THHN 90°C)	GFCI
3–5 kW	240V	20A 2-pole	12 AWG	Yes — per NEC 680/210.8

6–7.5 kW	240V	30A 2-pole	10 AWG	Yes
9–10 kW	240V	50A 2-pole	8 AWG	Yes
12–15 kW	240V	60A 2-pole	6 AWG	Yes
20–30 kW	240V	100A 2-pole	4 AWG	Yes

SPECIFICATION

Generator location and plumbing discipline.

Generator must be outside the steam enclosure in a dry location. Maximum 25 ft from the steam head; 10–15 ft preferred. Access clearances: 18" front, 6" top, 8" plumbing side. Steam line: 1/2" copper with no valves or restrictions between generator and head. Slope steam line toward generator at 1/4" per foot minimum — no dips or valleys. Install drain pan with blow-down valve at generator; tempering valve on drain line before ABS/PVC drain connection (steam condensate approaches 212°F).

FIELD RULE

TCNA steam shower membrane — ≤ 0.5 perms required.

TCNA SR613/SR614 requires a bonded waterproof membrane at ≤ 0.5 perms on all six surfaces (four walls, floor, ceiling). Schluter KERDI: 0.3–0.4 perms (ASTM E96); apply KERDI-BAND at all transitions. Laticrete Hydro Ban: < 0.1 perms; flood-test in 2 hours at 70°F. Redgard does not meet the ≤ 0.5 perm requirement for steam shower applications and is not approved.

INSPECTION STANDARD

Ceiling slope and glass enclosure specification.

Minimum 1" rise per 12" run on steam shower ceiling to direct condensate to walls rather than dripping on occupants; 2" per foot recommended. Ceiling height 7–8 ft optimal. Glass enclosure: full-height to ceiling or within 2" of ceiling; 1/2" tempered safety glazing per CPSC 16 CFR Part 1201 Cat. II. No exposed unprotected steel frames at the steam head location; specify aluminum or 316 stainless for all hardware within 12" of steam outlet.



PART 3

Water, Sound & Power

Sections 08–10 — Float Tank, Acoustic Isolation, Electrical & Plumbing Discipline

§ 08

Float Tank

PART III — WATER, SOUND & POWER

A residential float tank delivers restricted environmental stimulation (REST) in a body-temperature Epsom salt solution at 800–1,200 lbs of magnesium sulfate. Structural loading is the primary design constraint: an i-sopod approaches 3,168 lbs total — approximately 70 PSF, nearly double the residential wood-frame design standard. HVAC requires a corrosion-rated evaporator coil. Filtration: 1-micron + UV + H₂O₂/ozone.

FLOAT TANK MANUFACTURER SURVEY

Model	Dims. (approx.)	Salt (lbs)	Total Wt.	Electrical	Notes
i-sopod (UK)	8.5×5.6×4.3 ft	1,210	~3,307 lbs	~13A; multi-voltage	Fiberglass double-wall; engine unit separate; 13×15 ft room min.
Dreampod V2 / V3	~10×14 ft room	1,100	Confirm	Std. household	Solid foam core; titanium HX; 10-µm + UV; confirm all specs w/ MFR
Samadhi Tank	Sections fit std. door	Confirm	~3,000+	Grounded outlet	Oldest US manufacturer; wood-frame; ozonator; assembleable in place
Oasis / ProFloat	Confirm w/ MFR	800–1,200	Confirm	Confirm	Fiberglass hard-shell; luxury residential; confirm all specs w/ MFR

FILTRATION AND SANITATION STANDARD

Mechanism	Specification	Maintenance Cycle
Mechanical filtration	1-micron cartridge or bag filter; full volume turnover between sessions	Replace per manufacturer schedule; inspect at each session
UV sterilization	254 nm ultraviolet; 99.9%+ bacteria/virus neutralization	Replace UV bulb annually; effectiveness diminishes with use
Ozone (O ₃) injection	Corona discharge generator; UV + O ₃ produces hydroxyl radicals (OH·) for organic oxidation	Confirm O ₃ generator output annually; corona electrode inspect
Hydrogen peroxide (H ₂ O ₂)	Maintain 50–100 ppm residual; 35% food-grade H ₂ O ₂ only; test after each filtration cycle	Test each session; adjust per test result

Salt concentration	800–1,200 lbs Epsom salt (USP/reagent grade MgSO_4); SG 1.26–1.30 verified by hydrometer	Check SG monthly; replenish salt to maintain target SG
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SPECIFICATION

Corrosion-resistant HVAC and salt-resistant materials — mandatory in float rooms.

Airborne Epsom salt particulate corrodes standard aluminum evaporator fins within 1–3 seasons. Specify Mitsubishi MSZ/MUZ-GL with Diamond Coat evaporator coil; minimum 12,000 BTU/hr (1 ton) for 100–150 ft²; room target 93–95°F. Exhaust: minimum 100 CFM to exterior via PVC or fiberglass ductwork — never galvanized. All salt-circuit materials: PVC Schedule 80 or CPVC piping; 316 SS impellers and fittings; Viton/EPDM seals. No copper in the salt circuit.

INSPECTION STANDARD

Structural engineer required for above-grade float tanks.

Float tank total weight approaches 3,168 lbs for an i-sopod, imposing ~70 PSF over a 47.5 ft² footprint. This significantly exceeds the 40 PSF residential wood-frame design standard. A licensed structural engineer must review and approve the floor system before delivery. Concrete slab and basement installations are generally adequate at 100+ PSF without modification.

FIELD RULE

Discharge float water to municipal sewer only.

Float water contains very high TDS (total dissolved solids) from the Epsom salt load. High TDS can disrupt the biological community in a septic system. Connect float tank drain to the municipal sewer. Confirm with the local utility if a pre-discharge approval is required. Drain line must be P-trapped per NSPC 2021 / IPC 2021 §1002 and must slope 1/4" per foot to the drain.

BEST PRACTICE

Spare hardware — float room 5% minimum.

Stage and label in the mechanical room: one replacement UV bulb (annual cycle), filter cartridge set per manufacturer schedule, 100 lbs Epsom salt in reserve, pump impeller seal set, door gasket seal material, and one spare O₃ generator electrode. Deliver in a labeled bin at project completion per Restrepo spare hardware policy.



§ 09

Acoustic Isolation

PART III — WATER, SOUND & POWER

Acoustic isolation for wellness rooms serves two goals: protecting occupants of adjacent spaces from wellness equipment noise, and protecting the wellness experience from structural and airborne noise intrusion. Float tanks are the most demanding — low-frequency vibrational noise from HVAC and footsteps transmits through water and degrades the sensory deprivation experience. Target: STC ≥ 55 for all walls adjacent to bedrooms; IIC ≥ 55 for floor/ceiling assemblies over occupied spaces.

WALL ASSEMBLIES — STC PERFORMANCE REFERENCE

Assembly	STC Rating	Application
25-ga. metal studs 24" o.c. + 0.5 lb/ft ² MLV + 1+1 layers 5/8" drywall both sides	STC 55	Standard wellness room wall adjacent to bedroom
Same + 1 lb/ft ² MLV (full-weight layer)	STC 56	Upgraded; float room or HBOT room preferred spec
Double 2×4 stud (1" gap) + R-15 mineral wool + 2 layers 5/8" Type C each side + Green Glue between layers	STC 58–62	Float room; HBOT room; sauna mechanical wall
RC-1 resilient channels 24" o.c. + mineral wool + 2 layers 5/8" Type C drywall	STC 55–57	Cost-effective upgrade over standard single-stud wall

FLOAT ROOM VIBRATION ISOLATION — FOUR MECHANISMS

Mechanism	Specification	Effect
Floating floor	Poured gypsum or sleeper system on neoprene-cork-neoprene pads (Mason Industries type) 18–24" o.c.	Decouples floor from structure; blocks low-frequency vibration transmission
Tank isolation pads	11–15 vibration isolation pads (3" × 3" contact area) spaced under tank; not continuous mat	Air gaps between pads break up sound wave transmission through tank shell
MLV + Green Glue	1 lb/ft ² MLV continuous layer, all seams overlapped 4" + sealed; Green Glue compound between drywall layers	Adds 4–6 STC points; viscoelastic damping of structure-borne vibration
Resilient channels (RC-1)	Inner face of wall framing before inner drywall layer; no short-circuit contact at both ends of channel	Mechanical decoupling of drywall from framing; critical detail to avoid short-circuits

SPECIFICATION**STC-rated door assembly — float and HBOT rooms.**

STC-rated door assembly minimum: STC 45 door leaf with acoustic door sweep and compression seals on all four sides. Commercial acoustic door vendors: Overly Door, Acoustical Surfaces, AMBICO. The door assembly is the weakest link in any acoustic isolation strategy — a standard hollow-core door eliminates the benefit of an STC 55 wall assembly entirely.

FIELD RULE**Pump and filtration platform isolation.**

Float tank pump and filtration units must not physically contact the float room walls or floor directly. Mount on a sub-platform on vibration isolation pads. All plumbing connections via flexible couplings that do not transmit vibration to the tank or room structure. A pump hard-connected to a PVC elbow touching the wall produces 10–20 dB more transmission than a flex-coupled installation.

§ 10

Electrical & Plumbing Discipline

PART III — WATER, SOUND & POWER

Every wellness appliance requires a dedicated branch circuit. No shared loads. GFCI protection applies to all receptacles and hard-wired equipment within 5–20 feet of water features per NEC 2020 Article 680. AFCI protection applies to all 120V, 15A and 20A circuits in habitable spaces per NEC 2020 Art. 210.12. The conservative position for wellness rooms: all receptacles and hard-wired equipment on GFCI-protected circuits; AFCI/GFCI combination breakers preferred at the panel.

DEDICATED CIRCUIT LOAD SUMMARY — FULL WELLNESS SUITE

Modality / Equipment	Voltage	Estimated Load	Circuit Minimum	GFCI
Sauna heater (8 kW)	240V	33.4A cont.	50A 2-pole	Per NEC 422.48
Steam generator (9 kW)	240V	~37.5A cont.	50A 2-pole	Yes — NEC 680/210.8
Cold plunge chiller (0.75 HP)	120V	~10A cont.	20A dedicated	Yes — NEC 680.5(B)
HBOT compressor (single)	120V	~6–10A	20A dedicated	Per NEC 210
Float tank pump + heater	120V	~13A	20A dedicated	Yes
O ₂ concentrator (CAIRE Intensity 10)	120V	~4.9A cont.	20A dedicated	Per NEC 210
Mitsubishi mini-split (float room)	240V	Confirm w/ MFR	Per MFR spec	Per location
Smart-home control system (Crestron/C4)	120V	Low	Shared control circuit	Per location

CONDUIT TYPES — WELLNESS ROOM BRANCH CIRCUITS

Zone	Conduit Type	Notes
All dry areas within wellness room framing	EMT (electrical metallic tubing)	Standard specification for wellness room branch circuits
Equipment connection points (within 3 ft of appliance)	Liquid-tight flexible conduit (LFMC, sealtite)	Prevents vibration transmission to conduit; allows thermal movement

Penetrations through concrete slab; physical damage zones	RMC (rigid metal conduit)	Required at slab penetrations and below-grade transitions
Any location in wellness room	BX/MC armored cable	Without written direction — see §11 for discipline policy

PLUMBING ROUGH-IN — NSPC 2021 (NJ) / IPC 2021 REFERENCE

Fixture / Modality	Drain Line Size	Supply Line	Trap Requirement
Steam shower	2" minimum with strainer	3/8" cold water with shutoff and check valve	P-trap with trap primer ASSE 1018
Sauna floor drain	2" minimum	Hose bib outside door for bucket fill (no supply inside)	P-trap with trap primer ASSE 1018; prevent evaporation
Cold plunge (permanent)	2" min.; 3" for high-volume drainage	3/4" cold with shutoff and vacuum breaker (backflow preventer)	P-trap per NSPC 2021 / IPC 2021 §1002
Float tank	2" minimum; confirm w/ MFR	3/4" cold with shutoff; hot optional for faster fill	P-trap; municipal sewer only — no septic connection

SPECIFICATION

Lighting control — Lutron RA3, Athena, DALI, Crestron.

Wellness room lighting zones: anteroom/pre-sauna — full dimming, DALI or 0–10V, Lutron RadioRA 3 (RA3) or Athena; sauna — heat-rated vapor-tight fixtures (IP65 min.), dimming to low red-spectrum at session end; HBOT room — no overhead fixtures above chamber, DALI cove lighting only; steam shower — UL-listed wet-steam-location fixture; cold plunge — IP65+ sealed vapor-tight LED, GFCI required; float room — marine-grade vapor-tight, air-button switch inside tank for occupant control.

FIELD RULE

Service entrance capacity — 400A preferred for full wellness suite.

A full luxury wellness suite peak coincident demand (sauna 8 kW, steam 9 kW, cold plunge 1 kW, HBOT 0.7 kW, float 1 kW, O₂ concentrator 0.6 kW, HVAC 3–5 kW, lighting 0.5 kW) totals 8–12 kW incremental load above standard residential. A 200A service entrance is the minimum; 400A is preferred where the wellness suite is in addition to a full residential load. All wellness circuits labeled at the panel: equipment description, voltage, amperage, and room designation.

PART 4

Discipline & Closeout

Sections 11–13 — Without Written Direction, Pre-Wellness Checklist, QC · Commissioning · Closeout

§ 11

Without Written Direction

PART IV — DISCIPLINE & CLOSEOUT

This section catalogs the practices we do not perform on a Restrepo wellness room installation without written direction from the engineer of record, the architect of record, or the AHJ. None of these are universally wrong — many are common practice in other markets or under different project conditions. They simply require explicit, documented written direction in advance. Verbal direction does not satisfy this requirement.

FIELD RULE

BX/MC armored cable — without written direction.

Line-voltage branch wiring in wellness rooms uses EMT conduit as the Restrepo standard. BX/MC armored cable (NEC Articles 334/330) is not used without written direction from the engineer of record or AHJ specifying it for the specific project. In sauna rooms, armored cable in tight wall cavities can prevent the vapor barrier from seating correctly before cladding installation.

FIELD RULE

NM cable in any oxygen room, HBOT room, or steam shower — without written direction.

NM (Romex) cable is not used in O₂ rooms, HBOT rooms, or steam showers without specific written AHJ direction. In oxygen-enriched atmospheres, the cable jacket accelerates combustion in arc-fault events. In steam environments, the cable jacket degrades from prolonged moisture exposure. EMT is the standard for all wellness room branch circuits.

FIELD RULE

Shared drain connections from multiple wellness fixtures — without written direction.

Each wellness room fixture (steam shower drain, sauna floor drain, cold plunge drain, float tank drain) is individually trapped and vented per NSPC 2021. Wet-venting of multiple fixtures on the same stack is permitted under specific fixture unit loading limits — confirm with the licensed plumber and AHJ. We do not combine traps or share vents without written direction from the engineer of record.



FIELD RULE**Cold plunge or float tank on wood-frame upper floor without structural engineering — without written direction.**

No cold plunge or float tank is installed on a wood-frame floor above grade without a licensed structural engineer's written review and approval. Cold plunge loads reach 101 PSF; float tanks approach 70 PSF. Both exceed the 40 PSF residential design standard. The structural engineer's letter is filed in the project record before delivery of the equipment.

FIELD RULE**Skipping pre-wellness infrastructure coordination meeting — without written direction.**

The pre-wellness coordination meeting — confirming all circuits, drains, structural accommodations, waterproofing scope, and exhaust paths before framing is closed — is a Restrepo standard requirement on every wellness room project. We do not proceed to drywall without the signed coordination meeting record on file.

§ 12

Pre-Wellness Checklist

PART IV — DISCIPLINE & CLOSEOUT

The pre-wellness gate is the single most consequential quality control event in the Restrepo wellness room sequence. Drywall does not close until every item on this checklist is verified, photographed, and signed by the project manager, MEP lead, and Restrepo AV/smart-home lead. The checklist is the document of record for the pre-wellness coordination meeting.

PRE-WELLNESS GATE — INFRASTRUCTURE CHECKLIST

- ☐ **VERIFY** All dedicated wellness circuits rough-in confirmed: O₂ room, HBOT room, sauna, steam, cold plunge, float tank
- ☐ **VERIFY** Structural engineer approval letter on file for all cold plunge and float tank installations above grade
- ☐ **VERIFY** Waterproof membrane scope confirmed: steam shower, sauna floor, cold plunge splash zone, float room floor/walls
- ☐ **VERIFY** All floor drains located and P-trapped; trap primer type (ASSE 1018 or ASSE 1072) confirmed with plumber
- ☐ **VERIFY** Cold plunge and float tank drain lines routed to municipal sewer; no connection to septic confirmed
- ☐ **VERIFY** All exhaust paths to exterior confirmed: O₂ room exhaust fan, steam shower exhaust, float room exhaust, sauna exhaust
- ☐ **VERIFY** GFCI protection confirmed on all circuits within 5 ft of water features per NEC 2020 Art. 680
- ☐ **VERIFY** Sauna vapor barrier and furring sequence confirmed; heater location and safety clearances verified
- ☐ **VERIFY** HBOT room lighting confirmed: no overhead fixtures above chamber opening; cove or wall lighting only
- ☐ **VERIFY** Float room HVAC confirmed: Mitsubishi Diamond Coat or equivalent corrosion-rated mini-split specified
- ☐ **VERIFY** Smart-home rough-in confirmed: CAT6A home-runs, RS-232/RS-485 runs, keypad boxes at all wellness room entries
- ☐ **VERIFY** Spare hardware order confirmed: 5% minimum consumables per modality staged for delivery at closeout

INSPECTION STANDARD

Pre-wellness gate — sign-off requirement.

Drywall does not close until every item above is verified and the pre-wellness gate sign-off form is signed by the GC project manager, MEP lead, and Restrepo AV/smart-home lead. The signed form is filed in the project record. Photo documentation of all rough-in, waterproofing, and structural work is uploaded to the project cloud folder the same day the checklist is signed.



SPECIFICATION**Spare hardware policy — all six modalities.**

A minimum 5% overage of all consumable components is delivered and labeled at project completion: UV bulbs (float, cold plunge), filter cartridges, O₂ monitor sensor heads, sauna heater stones, Epsom salt (100 lbs reserve), O₃ generator electrodes, pump impeller seal sets, door gaskets, smart-home keypads and occupancy sensors (one spare per type). All spare hardware is labeled with project name and date, delivered in a labeled bin stored in the mechanical room.

§ 13

QC · Commissioning · Closeout

PART IV — DISCIPLINE & CLOSEOUT

Commissioning is the bridge between an installed wellness room system and a warranted, measured, owner-operated space. Every Vol 18 project passes through the same closeout sequence: verify, document, register, train, deliver. Nothing leaves Restrepo's hands until all closeout gates are closed. Wellness is plumbed, vented, and powered before drywall — the closeout record proves it was done correctly.

CLOSEOUT GATES — WELLNESS ROOM INFRASTRUCTURE

- ☐ **VERIFY** All dedicated wellness circuits energized and tested; breaker labels verified against load schedule at panel
- ☐ **VERIFY** GFCI protection verified: all circuits within 5 ft of water features tested; AFCI/GFCI combo breakers confirmed
- ☐ **VERIFY** Sauna heater commissioned: first heat cycle completed; UL 875 listing confirmed; NEC Art. 422.48 disconnect verified
- ☐ **VERIFY** Steam generator commissioned: preheat cycle complete; blow-down valve tested; steam line slope and head location confirmed
- ☐ **VERIFY** Cold plunge commissioned: temperature at set-point confirmed; GFCI tested; NEC 680 provisions verified
- ☐ **VERIFY** Float tank commissioned: SG 1.26–1.30 confirmed by hydrometer; UV and O₃ running; H₂O₂ at 50–100 ppm
- ☐ **VERIFY** O₂ / HBOT room: O₂ monitor calibrated; alarms at 25% and 30% tested; exhaust interlock and HVAC damper confirmed
- ☐ **VERIFY** All exhaust fans operational and interlocked; no wellness room exhaust connected to shared HVAC return
- ☐ **VERIFY** Smart-home sequences activated and demonstrated: Crestron/Control4/Lutron RA3 wellness scenes confirmed
- ☐ **VERIFY** All spare hardware (≥5% delivered) in labeled mechanical-room bin; AHJ final inspection sign-off on file
- ☐ **VERIFY** Homeowner training complete: all six modality controls, maintenance schedules, spare hardware location, emergency shutoffs
- ☐ **VERIFY** Commissioning report signed: Restrepo project manager, MEP lead, AV/smart-home lead, homeowner



INSPECTION STANDARD**Final QC gate — all twelve items verified and signed.**

All twelve closeout items verified, documented, and signed before project handover. No closeout item is waived without written direction from the project manager. The commissioning report is delivered to the homeowner in writing with copies of all test results, registration confirmations, and spare hardware delivery photographs. The signed report is filed in the project record.

BEST PRACTICE**Crestron / Control4 wellness sequence — Morning Recovery Protocol.**

Sample Crestron sequence: wake-time trigger → sauna heater relay closes (target 170°F) → steam generator preheats (10-min cycle) → anteroom DALI transitions from 2,700K 10% to 3,500K 60% → push notification at T+20 min (sauna ready) → cold plunge confirmed at target temperature → post-protocol: all heaters enter standby, DALI reduces to 30%. Document the sequence logic in the project record and provide the owner with the SIMPL+ or C4 project file backup.

CLOSING

Wellness is plumbed, vented, and powered before drywall. Every circuit was run, every drain was roughed-in, every structural accommodation was confirmed, and every exhaust path was verified before framing closed. Vol 18 is the standard. Vol 18 is the discipline.

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