Example facility — design summary

Example facility · Milford, MA · 5 rooms · Massachusetts

Prepared by: Matt's Hydroponics, Massachusetts · 508-296-0470 · hello@mattshydroponics.com

CANOPY **6,420** sqft MA Tier 2 (every tier counted)	PLANTS **10,068**	TOP LIGHTS **429**
LIGHTING LOAD **268.9** kW 641.8 kW connected	COOLING **245.8** tons design, with margin	DEHUMIDIFICATION **15,625** pints/day
FEED WATER **1,935** gal/day RO 4,000 GPD	CO_2 **61.5** lb/day bulk tank ~1,000 lb	EST. YIELD **348–522** lb/harvest dry flower, typical to dialed-in
EQUIPMENT AT RETAIL **$957,903.01** + 18 lines priced on your quote	DLC-LISTED LIGHTS **420 of 429** for utility rebates	LIGHTING CIRCUITS **73** 20 A, loaded to 80 %

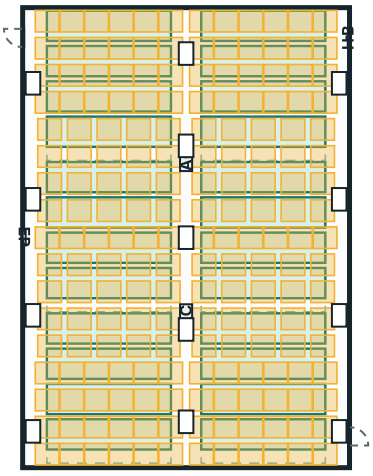
PRELIMINARY EQUIPMENT SIZING — A PLANNING DESIGN, NOT AN ENGINEERED DRAWING

Every number here is worked out from the rooms as drawn, the equipment picked and the assumptions listed with their sources. Your mechanical and electrical engineers confirm final sizing and stamp drawings for permits. These are our retail prices. Facility customers don't pay retail: once we talk — by phone or in person — every price is adjusted on your final quote, and our facility pricing is competitive.

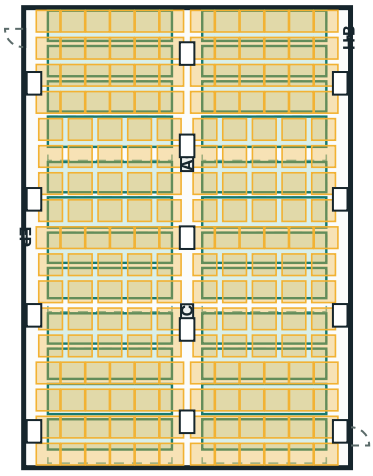
Your numbers, whoever you buy from. The totals for cooling, dehumidification, electrical load, water, RO and CO_2 are stated plainly so your team can check any quote against them. Wherever you are, we work with you to get every rebate your state and utility offer.

The rooms

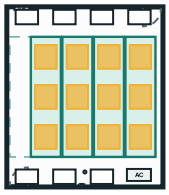
Every room drawn at the same scale (a room-by-room view, not a floor plan of the building).



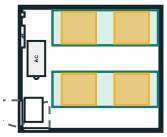
Flower Room 1 · 54' × 76'



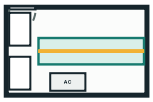
Flower Room 2 · 54' × 76'



Veg Room · 26' × 30'



Mother Room · 16' × 14'



Clone Room · 16' × 10'

Room schedule

Room	Type	Size (L × W × H)	Benching	Canopy sq ft	Plants	Phase
Flower Room 1	Flower	54' × 76' × 12'	24 × rolling bench	2,460	2,760	1
Flower Room 2	Flower	54' × 76' × 12'	24 × rolling bench	2,460	2,760	2
Veg Room	Veg	26' × 30' × 12'	4 × mobile multi-tier rack, 3 tiers	1,200	1,800	1
Mother Room	Mother	16' × 14' × 10'	2 × fixed multi-tier rack, 2 tiers	192	48	1
Clone Room	Clone	16' × 10' × 10'	1 × fixed multi-tier rack, 3 tiers	108	2,700	1
Facility		**9,372 sq ft of floor**		**6,420**	**10,068**	

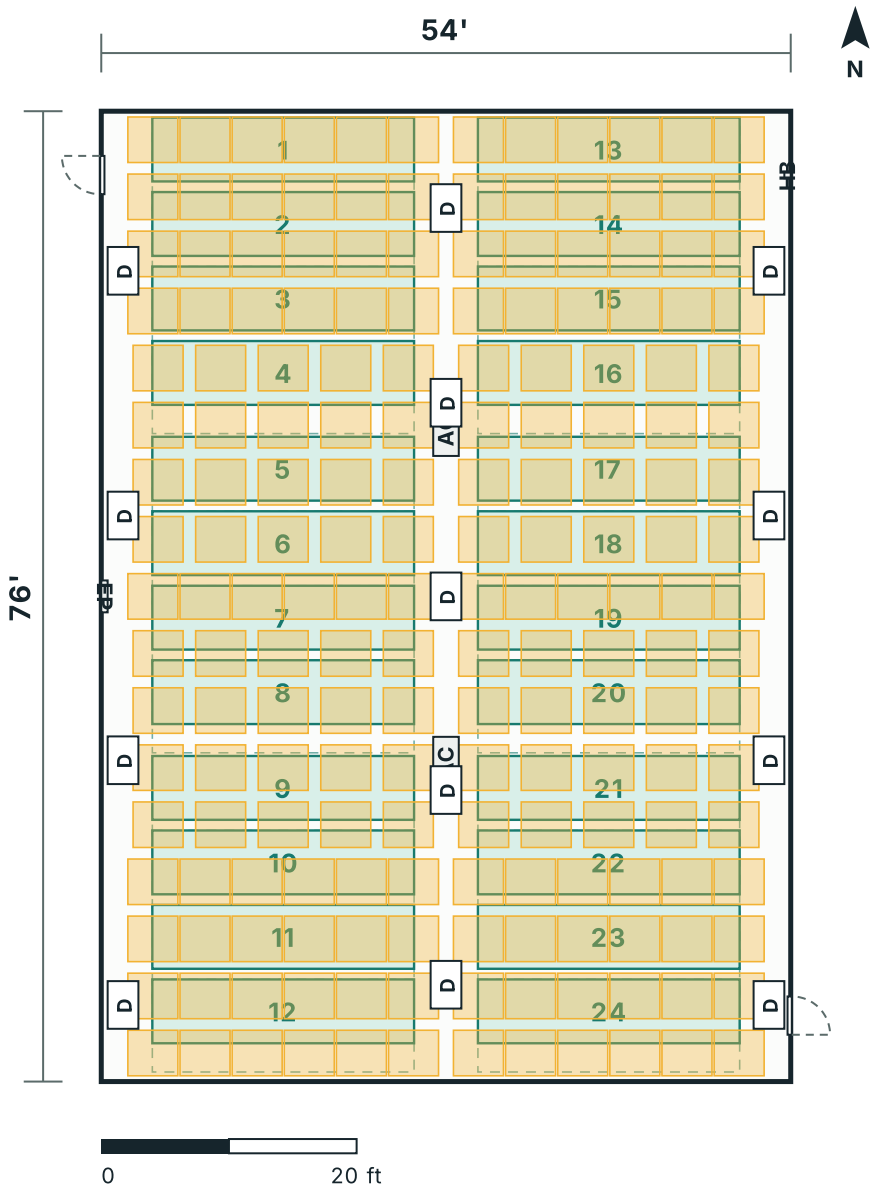
Light and loads by room

Room	Top lights	Under-canopy bars	PPFD	DLI	Lighting kW	Cooling tons	Dehu pints/day	Water gal/day
Flower Room 1	188	0	850	36.7 (12 h)	119.9	99.5	5,572	690
Flower Room 2	188	0	850	36.7 (12 h)	119.9	99.5	5,572	690
Veg Room	36	0	494	32 (18 h)	23	38	3,634	450
Mother Room	8	0	686	44.5 (18 h)	5.1	3.5	194	24
Clone Room	9	0	218	14.1 (18 h)	0.9	5.3	654	81
Facility	**429**	**0**			**268.9**	**245.8**	**15,625**	**1,935**

PPFD is the canopy-weighted average under the top lights; DLI = PPFD × light hours × 0.0036. Cooling is each room's design load with margin; facility totals are simple sums.

Flower Room 1 — plan

Flower · 54' × 76', 12' ceiling · 24 × rolling bench · Phase 1



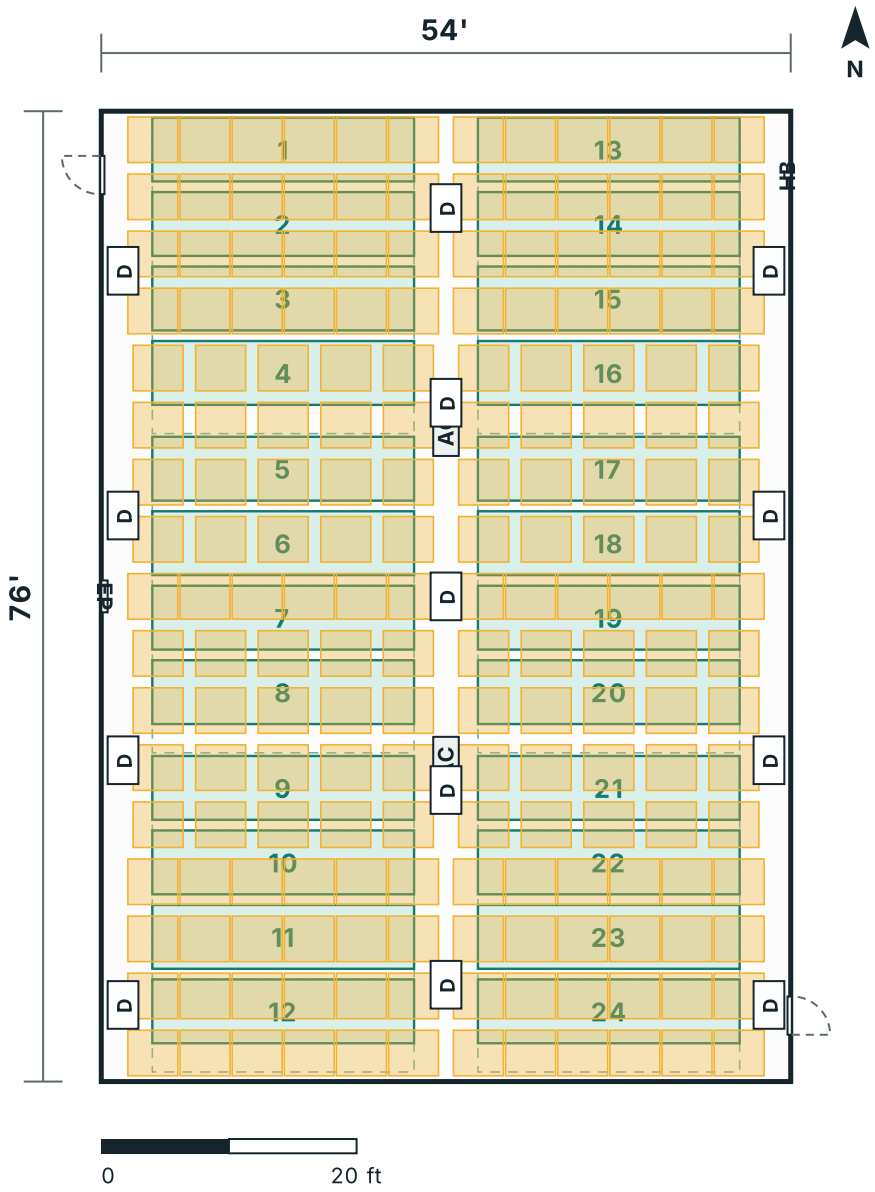
Bench / rack (number · tiers) · Rolling travel · Top light · Under-canopy bar
Door, panel (EP), HVAC (AC), dehumidifier (D), fan (F)

CANOPY	LIGHTS	COOLING	WATER
2,460 sq ft	**188**	**99.5** tons	**690** gal/day
2,760 plants	850 PPFD · 119.9 kW	5,572 pints/day dehu	6 zones · pump 9.6 GPM

Planning layout, not a construction drawing. Confirm dimensions, door swings and clearances on site.

Flower Room 2 — plan

Flower · 54' × 76', 12' ceiling · 24 × rolling bench · Phase 2



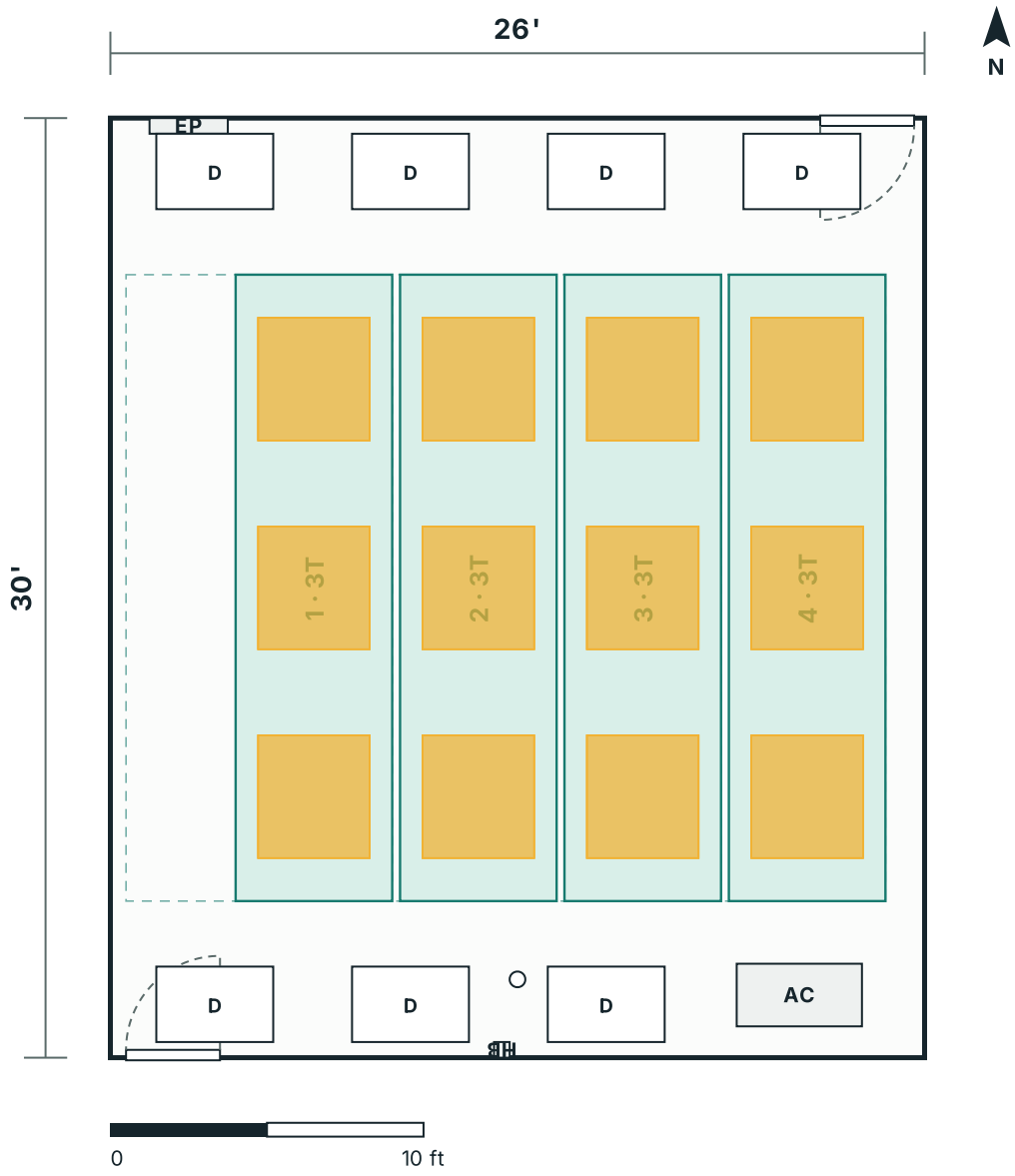
Bench / rack (number · tiers) · Rolling travel · Top light · Under-canopy bar
Door, panel (EP), HVAC (AC), dehumidifier (D), fan (F)

CANOPY	LIGHTS	COOLING	WATER
2,460 sq ft	**188**	**99.5** tons	**690** gal/day
2,760 plants	850 PPFD · 119.9 kW	5,572 pints/day dehu	6 zones · pump 9.6 GPM

Planning layout, not a construction drawing. Confirm dimensions, door swings and clearances on site.

Veg Room — plan

Veg · 26' × 30', 12' ceiling · 4 × mobile multi-tier rack, 3 tiers · Phase 1



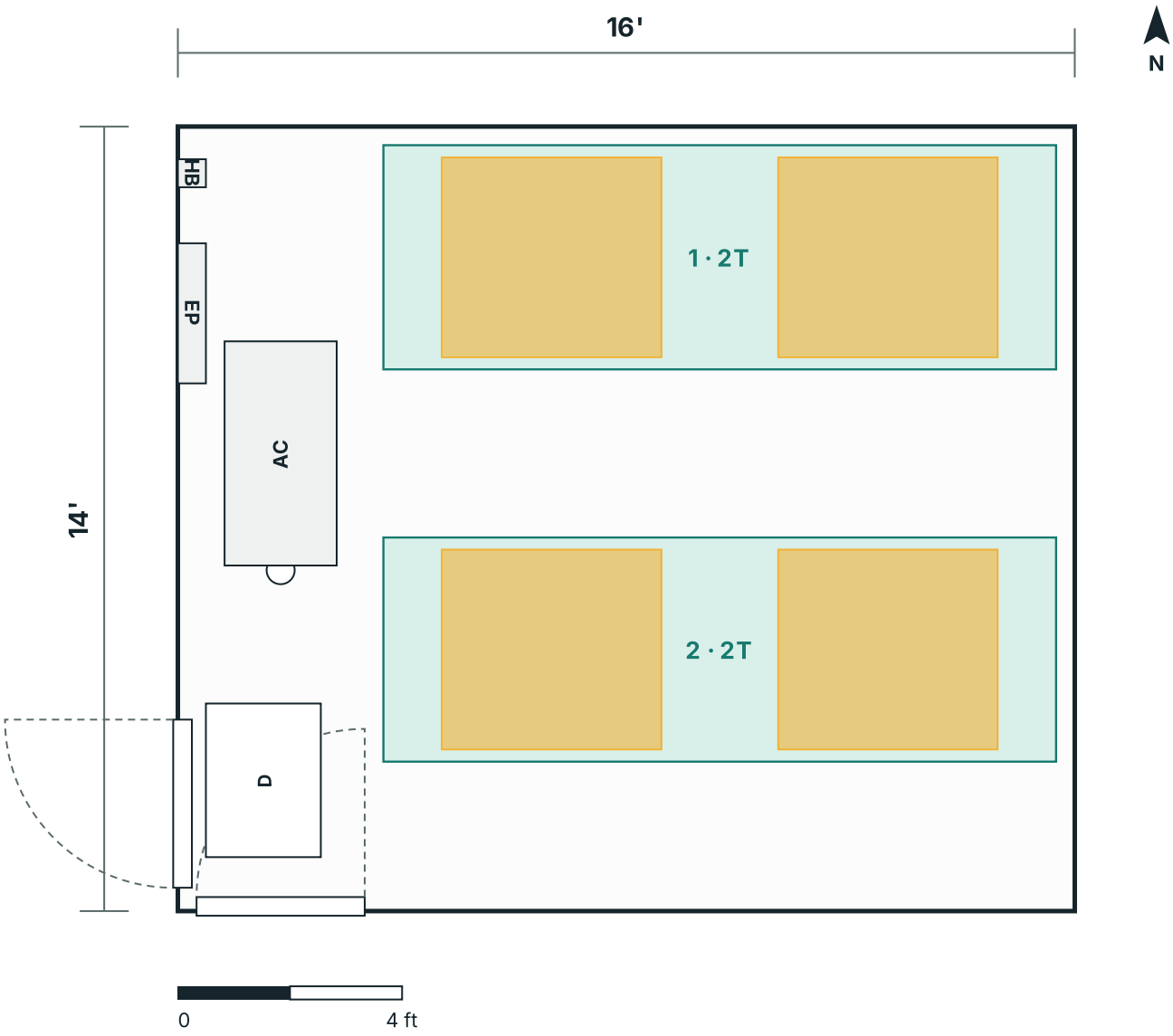
Bench / rack (number · tiers) · Rolling travel · Top light · Under-canopy bar
Door, panel (EP), HVAC (AC), dehumidifier (D), fan (F)

CANOPY	LIGHTS	COOLING	WATER
1,200 sq ft	**36**	**38** tons	**450** gal/day
1,800 plants	494 PPFD · 23 kW	3,634 pints/day dehu	4 zones · pump 9.4 GPM

Planning layout, not a construction drawing. Confirm dimensions, door swings and clearances on site.

Mother Room — plan

Mother · 16' × 14', 10' ceiling · 2 × fixed multi-tier rack, 2 tiers · Phase 1



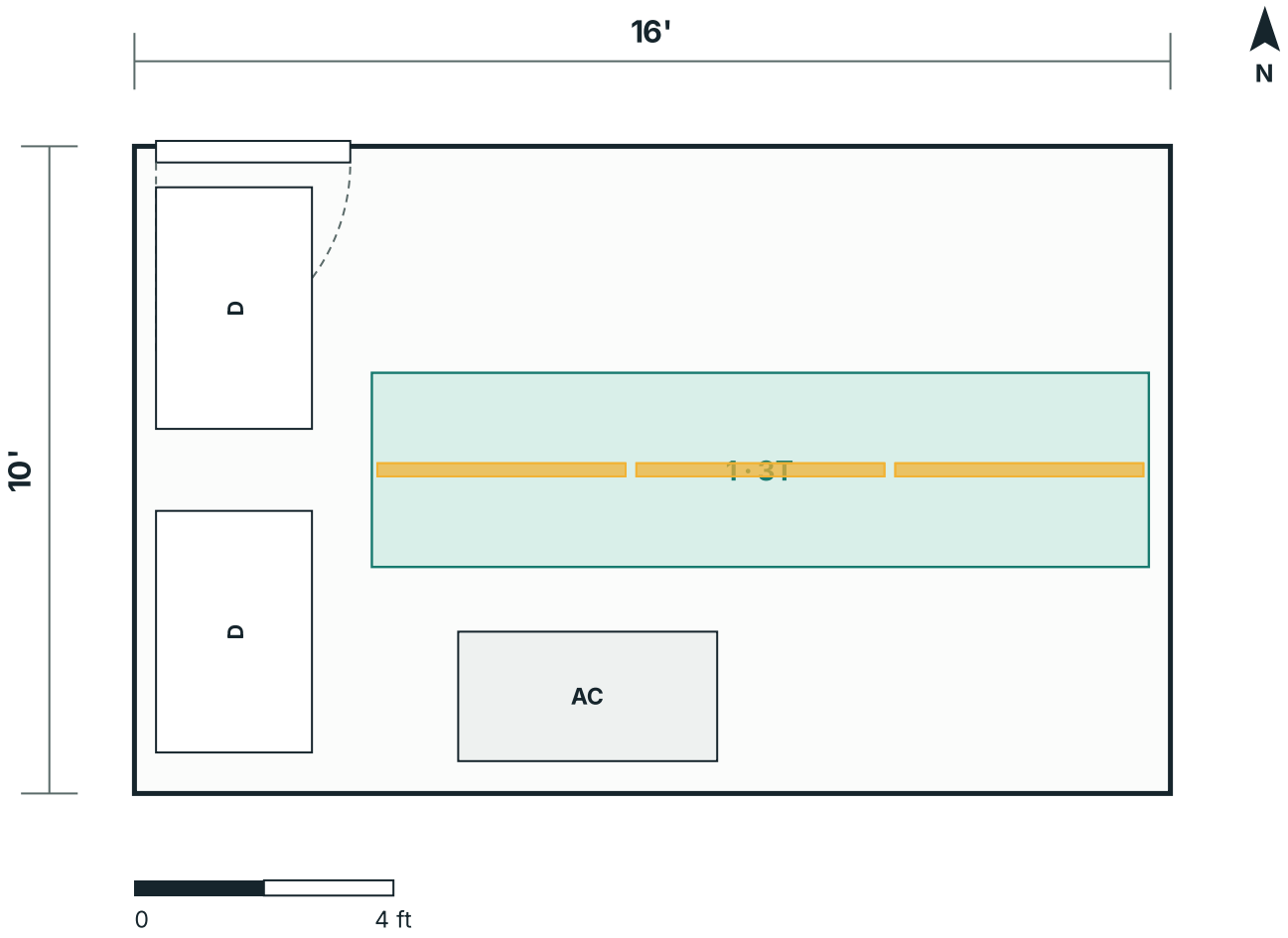
Bench / rack (number · tiers) · Rolling travel · Top light · Under-canopy bar
Door, panel (EP), HVAC (AC), dehumidifier (D), fan (F)

CANOPY	LIGHTS	COOLING	WATER
192 sq ft	**8**	**3.5** tons	**24** gal/day
48 plants	686 PPFD · 5.1 kW	194 pints/day dehu	1 zone · pump 2 GPM

Planning layout, not a construction drawing. Confirm dimensions, door swings and clearances on site.

Clone Room — plan

Clone · 16' × 10', 10' ceiling · 1 × fixed multi-tier rack, 3 tiers · Phase 1



Bench / rack (number · tiers) · Rolling travel · Top light · Under-canopy bar
Door, panel (EP), HVAC (AC), dehumidifier (D), fan (F)

CANOPY	LIGHTS	COOLING	WATER
108 sq ft	**9**	**5.3** tons	**81** gal/day
2,700 plants	218 PPFD · 0.9 kW	654 pints/day dehu	1 zone · pump 0 GPM

Planning layout, not a construction drawing. Confirm dimensions, door swings and clearances on site.

Equipment schedule

These are our retail prices. Facility customers don't pay retail: once we talk — by phone or in person — every price is adjusted on your final quote, and our facility pricing is competitive.

Flower Room 1

Qty	Item	Brand · SKU	Category	Retail each	Retail total
188	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	Fluence · 400000020167	lighting	$1,199.99	$225,598.12
24	Botanicare Slide Bench 5' Extra Roll 5' x 20.5', 30 in	Botanicare	bench	quote	quote
13	Quest 746 Overhead Dehumidifier (M-CoRR), 730 pints/day, 480V 3-phase	Quest · 115129	dehumidifier	quote	quote
2,760	Drip emitters, 1.00 GPH (generic)	—	irrigation	quote	quote
1	Irrigation pump, at least 9.6 GPM at 78 ft head (generic)	—	pump	quote	quote
1	Reservoir, at least 1,380 gal (generic)	—	reservoir	quote	quote
	Room total at retail				**$394,597.47**

Flower Room 2

Qty	Item	Brand · SKU	Category	Retail each	Retail total
188	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	Fluence · 400000020167	lighting	$1,199.99	$225,598.12
24	Botanicare Slide Bench 5' Extra Roll 5' x 20.5', 30 in	Botanicare	bench	quote	quote
13	Quest 746 Overhead Dehumidifier (M-CoRR), 730 pints/day, 480V 3-phase	Quest · 115129	dehumidifier	quote	quote
2,760	Drip emitters, 1.00 GPH (generic)	—	irrigation	quote	quote
1	Irrigation pump, at least 9.6 GPM at 78 ft head (generic)	—	pump	quote	quote
1	Reservoir, at least 1,380 gal (generic)	—	reservoir	quote	quote
	Room total at retail				**$394,597.47**

Veg Room

Qty	Item	Brand · SKU	Category	Retail each	Retail total
36	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	Fluence · 400000020167	lighting	$1,199.99	$43,199.64
4	Rolling rack 5' × 20', 3 tiers (generic — quote)	—	rack	quote	quote
7	Quest 746 Overhead Dehumidifier (M-CoRR), 730 pints/day, 480V 3-phase	Quest · 115129	dehumidifier	quote	quote
1,800	Drip emitters, 1.00 GPH (generic)	—	irrigation	quote	quote
1	Irrigation pump, at least 9.4 GPM at 78 ft head (generic)	—	pump	quote	quote
1	Reservoir, at least 900 gal (generic)	—	reservoir	quote	quote
	Room total at retail				**$134,199.29**

Mother Room

Qty	Item	Brand · SKU	Category	Retail each	Retail total
8	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	Fluence · 400000020167	lighting	$1,199.99	$9,599.92
2	Fixed rack 4' × 12', 2 tiers (generic — quote)	—	rack	quote	quote
1	Quest 335 Overhead Dehumidifier (M-CoRR), 345 pints/day, 277V	Quest · 115130	dehumidifier	quote	quote
96	Drip emitters, 1.00 GPH (generic)	—	irrigation	quote	quote
1	Irrigation pump, at least 2.0 GPM at 78 ft head (generic)	—	pump	quote	quote
1	Reservoir, at least 48 gal (generic)	—	reservoir	quote	quote
	Room total at retail				**$15,299.87**

Clone Room

Qty	Item	Brand · SKU	Category	Retail each	Retail total
9	Mammoth Lighting 100W Single Bar LED with Dimmer Knob	Mammoth Lighting · 104082	lighting	$209.99	$1,889.91
1	Fixed rack 3' × 12', 3 tiers (generic — quote)	—	rack	quote	quote
2	Quest 506 Overhead Dehumidifier (M-CoRR), 500 pints/day, 277V	Quest · 115128	dehumidifier	quote	quote
1	Reservoir, at least 162 gal (generic)	—	reservoir	quote	quote
	Room total at retail				**$19,208.91**

Facility total at retail: $957,903.01 + 18 lines priced on your quote. Facility pricing comes on your quote.

Climate: cooling, dehumidification and set points

Is every room covered?

Room	Cooling needed	Selected		Dehu needed	Units	Capacity		Peak hour
Flower Room 1	99.5 tons	—	your HVAC contractor sizes the units	5,572 pints/day	13 × Quest 746 480V	6,614 pints/day	covered	covered
Flower Room 2	99.5 tons	—	your HVAC contractor sizes the units	5,572 pints/day	13 × Quest 746 480V	6,614 pints/day	covered	covered
Veg Room	38 tons	—	your HVAC contractor sizes the units	3,634 pints/day	7 × Quest 746 480V	3,892 pints/day	covered	covered
Mother Room	3.5 tons	—	your HVAC contractor sizes the units	194 pints/day	1 × Quest 335 277V	263 pints/day	covered	covered
Clone Room	5.3 tons	—	your HVAC contractor sizes the units	654 pints/day	2 × Quest 506 277V	827 pints/day	covered	covered

Dehumidifier capacity is derated to the room's lights-off condition. “Peak hour” checks the lights-on moisture rate against the units' hourly capacity, not just the daily total. Cooling is the design load with margin; units are selected with your HVAC contractor.

Set points and VPD

Room	Lights on	Leaf VPD	Lights off	VPD	CO_2
Flower Room 1	80 °F · 60 % RH	1.18 kPa	72 °F · 55 % RH	1.21 kPa	1,200 ppm (tank)
Flower Room 2	80 °F · 60 % RH	1.18 kPa	72 °F · 55 % RH	1.21 kPa	1,200 ppm (tank)
Veg Room	80 °F · 65 % RH	1.00 kPa	72 °F · 60 % RH	1.07 kPa	ambient
Mother Room	80 °F · 65 % RH	1.00 kPa	72 °F · 60 % RH	1.07 kPa	ambient
Clone Room	80 °F · 70 % RH	0.83 kPa	72 °F · 65 % RH	0.94 kPa	ambient

Outside conditions and the building

Design weather for **Milford, MA**: cooling 91.0 °F with a 62.9 °F dew point (0.4 %); humid design 73.6 °F dew point at 79.5 °F; heating 9.9 °F (99.6 %). Source: NASA POWER hourly (MERRA-2) 2 m temperature and dew point at 42.15, -71.53; 0.4 % of 43,824 hours, 2021–2025.

Room	Exposure	Envelope + outside air at design	Used in cooling
Flower Room 1	76 ft outside wall, under the roof	8,040 BTU/h	8,040 BTU/h
Flower Room 2	76 ft outside wall, under the roof	8,040 BTU/h	8,040 BTU/h
Veg Room	30 ft outside wall, under the roof	2,427 BTU/h	2,427 BTU/h
Mother Room	0 ft outside wall, under the roof	565 BTU/h	565 BTU/h
Clone Room	0 ft outside wall, under the roof	404 BTU/h	404 BTU/h

Electrical and lighting circuits

Room	Service	Connected kW	Amps at service	Suggested service	Lighting kW	Lighting circuits
Flower Room 1	480 V 3-phase	267.1	338	600 A	119.9	32 × 20 A at 277 V
Flower Room 2	480 V 3-phase	267.1	338	600 A	119.9	32 × 20 A at 277 V
Veg Room	480 V 3-phase	86.6	110	150 A	23	6 × 20 A at 277 V
Mother Room	480 V 3-phase	10.3	13	100 A	5.1	2 × 20 A at 277 V
Clone Room	480 V 3-phase	10.7	13	100 A	0.9	1 × 20 A at 277 V
Facility		**641.8**			**268.9**	**73**

Lighting circuits by fixture

Room	Fixture	Units	Watts each	Per circuit	Circuits
Flower Room 1	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	188	638	6	32
Flower Room 2	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	188	638	6	32
Veg Room	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	36	638	6	6
Mother Room	Fluence SPYDR 2i LED Grow Light, 47 in (no AC cord)	8	638	6	2
Clone Room	Mammoth Lighting 100W Single Bar LED with Dimmer Knob	9	100	44	1

How it's worked out: Lighting runs on 20 A branch circuits loaded to 80 % (16 A continuous). Fixtures per circuit = 16 A × circuit voltage ÷ fixture watts, rounded down; 480 V services use 277 V lighting circuits, other services their own voltage. Fixture watts are the maker's input watts at full power. Your electrician sets the final panel and circuit design. Connected load counts everything on at once, with no diversity; suggested service is the next standard size at 125 % of it.

Water, RO and storage

FEED WATER
1,935 gal/day

RO SIZE
4,000 GPD
at 77 °F; 1,935 gal/day needed

SOURCE WATER
3,870 gal/day
50 % recovery

STORAGE
5,000 gal
2.6 days of RO water

RO REJECT
1,935 gal/day

RUNOFF
290 gal/day

TO DRAIN
2,225 gal/day
reject + runoff

COLD-WATER CORRECTION
0.65
55 °F source water

Feed water by room

Room	Feed gal/day	Runoff gal/day	Zones	Pump GPM	Pump head ft	Reservoir gal
Flower Room 1	690	104	6	9.6	78	1,380
Flower Room 2	690	104	6	9.6	78	1,380
Veg Room	450	68	4	9.4	78	900
Mother Room	24	4	1	2	78	48
Clone Room	81	12	1	0	0	162
Facility	**1,935**	**290**				

How it's worked out: Feed water 1,935 gal/day (sum of the rooms' watering schedules); 100 % made with RO → 1,935 gal/day of RO product. RO size = product × (24 h ÷ 20 h run time) ÷ temperature correction 0.65 at 55 °F source water = 3,582 GPD at 77 °F, rounded up to a 4,000 GPD unit. Source water = product ÷ 50 % recovery = 3,870 gal/day; reject 1,935 gal/day. Storage = 2 days of product = 3,870 gal → 5,000 gal tank. The irrigation designer confirms pipe sizes, pressure losses and pump and injector models.

CO_2 enrichment

PER DAY	PER MONTH	PER YEAR	MORNING PEAK
61.5 lb	**1,870** lb	**22,456** lb	**13.2** lb/h

CYLINDERS	BULK TANK
9 per week 50 lb each	**1,000** lb planning size

By room

Room	Target	Source	Lights-on hours	lb/day	Peak lb/h
Flower Room 1	1,200 ppm	tank	12	30.8	6.6
Flower Room 2	1,200 ppm	tank	12	30.8	6.6

How it's worked out: Each enriched room's daily CO_2 from the room sizing (one charge from ambient to the target, then the makeup that holds it through the lights-on hours) adds to 61.5 lb/day. Month = day × 30.4; year = day × 365 (every lights-on day). Peak = every tank-fed room charging and holding in the same hour = 13.2 lb/h. 430.7 lb/week ÷ 50 lb cylinders = 9 a week. More than 4 a week, so a bulk tank is suggested: 14 days ÷ 0.9 usable = 957 lb → 1000 lb planning size. CO_2 monitors and alarms are required in enriched rooms. The gas supplier sizes the tank, vaporizer, regulators and piping.

Nutrients: Athena Pro Line per cycle and per year

ATHENA PRO CORE
4,883 lb/year
196 × 25 lb bags

ATHENA PRO GROW
2,937 lb/year
118 × 25 lb bags

ATHENA PRO BLOOM
6,879 lb/year
276 × 25 lb bags

ATHENA FADE
484.9 gal/year
97 × 5 gal jugs

ATHENA CLEANSE
1,089.1 gal/year
218 × 5 gal jugs

By room

Room	Feeding	Feed gal/day	Cycle	Pro Core lb	Pro Grow lb	Pro Bloom lb	Fade gal	Cleanse gal
Flower Room 1	flower	690	56 days, 5/yr	293.9	—	655.9	48.5	71.5
Flower Room 2	flower	690	56 days, 5/yr	293.9	—	655.9	48.5	71.5
Veg Room	veg / mothers	450	every day (per 4 weeks)	127.8	213.9	—	—	23.3
Mother Room	veg / mothers	24	every day (per 4 weeks)	6.8	11.4	—	—	1.2
Clone Room	clones	81	every day (per 4 weeks)	14.5	—	24.5	—	4.2

How it's worked out: Feed water per room per day (its watering schedule) × Athena's Pro Line chart rates per gallon: clones Pro Core 2.9 g + Pro Bloom 4.9 g; veg and mothers Pro Core 4.6 g + Pro Grow 7.7 g; flower Pro Core 4.6 g + Pro Bloom 7.7 g, with Pro Core replaced by Fade 19 mL for the last 14 days. Cleanse at 7 mL/gal. Flower rooms: 56-day cycles, 5 a year; veg, mother and clone rooms feed every day (shown per 4 weeks). Early weeks usually use less water than the schedule, so treat these as planning quantities.

We stock Athena Pro Core, Pro Grow and Pro Bloom in 25 lb bags and full pallets, and Fade and Cleanse in 5 gallon jugs. Facility pricing comes on your quote for a year's supply.

Compliance, rebates and yield

Canopy and lighting power

MA: 6,312 sq ft of canopy counted (every tier counts) → MA Tier 2, up to 10,000 sq ft.

Room	Lighting W per canopy sq ft	Limit		DLC-listed lights
Flower Room 1	48.8	50	pass	188 of 188
Flower Room 2	48.8	50	pass	188 of 188
Veg Room	19.1	50	pass	36 of 36
Mother Room	26.6	50	pass	8 of 8
Clone Room	0	—	—	0 of 9

Utility rebates

420 of 429 fixtures in this design are DLC-listed — typically rebate-eligible. Wherever you are, we work with you to get every rebate your state and utility offer. Mass Save custom incentives (Eversource, National Grid, Unitil, Cape Light Compact): Grow lights aren't among Mass Save's standard lighting offers, so projects go through custom incentives: before you install, you send your electric utility the application, an itemized proposal, spec sheets and energy-savings calculations, and the technical review averages about 40 days. Listing on the DesignLights Consortium (DLC) Horticultural Qualified Products List is the usual eligibility gate for utility grow-light rebates, so this design shows how many of the chosen fixtures are DLC-listed.

Estimated yield (flower rooms)

Room	Per harvest, typical → dialed-in	Per year
Flower Room 1	174–261 lb	870–1,305 lb
Flower Room 2	174–261 lb	870–1,305 lb

Estimated dry flower per harvest, untrimmed. An estimate, not a guarantee: licensed facilities span a roughly threefold range and genetics alone shift yield 30–40 %; environment, irrigation and plant health matter as much as light.

Build phases

Phase	Rooms	Canopy sq ft	Plants	Lighting kW	Connected kW	Cooling tons	Equipment at retail
Phase 1	Flower Room 1, Veg Room, Mother Room, Clone Room	3,960	7,308	148.9	374.7	146.3	$563,305.54 + 14 quoted
Phase 2	Flower Room 2	2,460	2,760	119.9	267.1	99.5	$394,597.47 + 4 quoted

Notes and next steps

What this is. A planning design for equipment sizing and layout: preliminary equipment sizing. It is not a construction drawing and not an engineered design. Your mechanical, electrical and plumbing engineers confirm the loads, codes and final equipment, and stamp drawings for permits.

Prices. These are our retail prices. Facility customers don't pay retail: once we talk — by phone or in person — every price is adjusted on your final quote, and our facility pricing is competitive.

Assumptions. Every default the sizing uses is listed with its source in the engineer detail that follows this report, and every one can be changed in the designer's assumptions panel.

Next step. Call 508-296-0470 or email hello@mattshydroponics.com to go over this design. Our store: 125 East Main St, Unit B, Webster, MA (508-461-5850). We work with you on the layout, lead times and every rebate your state and utility offer.