Central Falls High School

100% Construction Documents

Central Falls, RI

Ai3 Project #2202.02

Addendum #3

January 9, 2024

The attention of Bidders submitting proposals for Central Falls High School 100% Construction Documents is called to the following changes to the Bidding Contract Documents dated October 13, 2023 as prepared by Ai3 Architects, LLC. The items set forth therein below, whether of revision, omission, addition, substitution or clarification are all to be included as changes to Information to Bidders, the Conditions of the Contract, Specifications and Drawings of the Contract.

The number of this Addendum (Number 3) must be entered in the appropriate spaces provided on the Bid Form.

CLARIFICATIONS:

ADD 3-001 ***Bidder Question****: In the 096723 specifications (resinous flooring) it says there is a resinous flooring system "Type 1" and "Type 2 (kitchen)". Does this mean the products listed under type 2 are for the kitchen only, and those listed under type 1 can be used throughout the rest of the resinous flooring areas?* ***Response:*** *Confirmed, Type 2 is for the kitchen only and all other locations are Type 1.*

ADD 3-002 ***Bidder Question****: There doesn't seem to be drawings with Window Shade (Section 12 24 00) locations or any notes of the shades on the finished plans. The specs under part 2.1, they state there are roller shades manual, dual roller shades manual, blackout shades manual, and blackout shades motorized with locations for the blackout shades manual and blackout shade motorized. Where are these located?* ***Response:*** *Refer to opening details, interior wall sections, enlarged floor plans and elevations for keynoted shade*

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locations. See additional clarifications on A7.73, A9.25A, A10.20C and A10.41 in Addendum #3.

ADD 3-003 ***Bidder Question**: Are the blackout shades in the locations specified in the specification dual rollers or single roller blackouts? If they are single roller blackouts where are the locations for the dual rollers? Confirm where there are blackout shades that side channels are required. **Response:** All shades are single rollers and all identified blackout shade locations require side channels.*

ADD 3-004 ***Bidder Question**: Reference 116100, TH.02 and TH.03 Confirm the connector strip lengths for CS-B and CS-C are 50' or 51' not 56'. **Response:** The pipes are 52' in length and the connector strips are 51' in length.*

ADD 3-005 ***Bidder Question**: Reference A10.51/11 and 116100-66/5.08A7 confirm one or two track segments are required for the Band Room. **Response:** Yes, two (2) tracks are required. One (1) track is for the curtain and one (1) track is for the green screen.*

ADD 3-006 ***Bidder Question**: Reference A10.66 detail 3 confirm projection screen by 11 61 00; 4.05 not 11 52 13. **Response**: Project Screen is keynoted correctly as part of Section 11 52 13.*

ADD 3-007 ***Bidder Question**: Reference A10.66 detail 7 and 8, confirm projector and projector shelf by 11 61 00; 4.05, not 27 40 00, 06 20 00 or 09 84 00. **Response:** Drawings are keynoted correctly for the projector and associated shelf as NOT part of Section 11 61 00.*

ADD 3-008 ***Bidder Question**: Reference 116100-38/B and TH.21 verify (8) 450EDLT with ColorSource Spot V engines are required. **Response:** Change the Quantity to 6 required.*

ADD 3-009 ***Bidder Question**: Reference TH.21 Confirm Fixture Key and distinguish 436EDLT and 426EDLT with ColorSource Spot V engines and verify counts with 116100-38. **Response:** Change the Quantity of the 436 EDLT and Engine to 8 required. Change the Quantity of 426EDLT and Engines to 30.*

ADD 3-010 ***Bidder Question**: Reference TH0.1 and 116100-39/2.16C. There are (4) lighting position areas and (3) ECPB DMX outputs specified. Please verify. **Response:** Change the Quantity to 4 required. One for the FOH pipe, one for each Torm position and One for the pipe grid.*

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ADD 3-011 ***Bidder Question**: Reference TH0.1 and 116100-39/2.16C. Verify (7) Amaran COB 200X S are required in this contract.* ***Response:*** *Seven (7) are Required and 5 Mini domes*

ADD 3-012 ***Bidder Question**: Reference TH0.1 and 116100-66: Verify if two or three Tracks shall be rigged for one way travel CWANA in the Auditorium Stage.* ***Response:*** *Three (3) one-way pull tracks are required, line sets 10, 16 and 17. Note a curtain track is also required in the band room but does not appear to listed in the specification; see TH.01 and the response to ADD 3-005. Wall-mount brackets will be required for support.*

ADD 3-013 ***Bidder Question**: Construction Estimate for this project?* ***Response:*** *Cost estimate is $86,095,420 from the 90% construction documents.*

ADD 3-014 ***Bidder Question**: The description of work in the Instruction to Bidders references a "multi-use athletic field". Please advise if there is an athletic field or if this refers only to the shot put/discuss/javelin events near the basketball courts. The track & field, as depicted on the Civil drawings (in lightly shaded print) appears to be existing/NIC, except for the drainage piping. Please confirm or correct.* ***Response:*** *Confirmed, the 'multi-purpose athletic field' refers to the lower field at the south end of the site around the relocated basketball courts.*

ADD 3-015 ***Bidder Questions**: Section 13 34 23 provides specifications for a "pre-engineered restroom building". We cannot find this in the plan set, however, L1.21 identifies a "future location of concession facility". Please clarify. If the pre-engineered building is part of this contract, please provide plans/details.* ***Response:*** *This Specification Section to be removed, not part of the scope of work.*

ADD 3-016 ***Bidder Question**: Alternate 5 references a "freight farm". Can you direct us to or provide a specification for this?* ***Response**: Refer to the attachments for the product brochure for the Freight Farms Greenery S unit to be used as the Basis of Design. Specification to follow in a subsequent addendum.*

ADD 3-017 ***Bidder Question**: We did not have to register as a plan holder for this project, on the City of Central Falls website. Just curious, how are plan holders notified when an addenda is issued, or do we just check back periodically on the website?* ***Response:*** *If the plan holder is utilizing the City of Central Falls Website, it is the responsibility of the plan holder to periodically check the City's Website.*

ADD 3-018 ***Bidder Question:*** *Section 03 45 00 calls for architectural precast "panels, copings, caps, structural lintels and trim elements". Can you advise where all of this is located? Aside from the concrete seat blocks, we're unable to locate architectural precast concrete in the plan set.* ***Response:*** *This Specification Section to be removed, not part of the scope of work.*

ADD 3-019 ***Bidder Question:*** *Can the AWI/QCP requirement for the millwork be waived?* ***Response:*** *No*

SPECIFICATIONS:

ADD 3-020 *Document 00 01 10 "Table of Contents"; REMOVE in entirety and REPLACE with new Document 00 01 10, dated January 5, 2024, Addendum #3.*

ADD 3-021 *Section 01 23 00 "Alternates"; REMOVE in entirety and REPLACE with new Section 01 23 00, dated January 5, 2024, Addendum #3.*

ADD 3-022 *REMOVE Section 03 45 00 "Precast Architectural Concrete" in entirety per Addendum #3; not in project scope.*

ADD 3-023 *Section 09 91 00 "Painting"; REMOVE in entirety and REPLACE with new Section 09 91 00, dated January 5, 2024, Addendum #3.*

ADD 3-024 *Document 09 91 13 "Exterior Painting Schedule"; REMOVE in entirety and REPLACE with new Document 09 91 13, dated January 5, 2024, Addendum #3.*

ADD 3-025 *Document 09 91 23 "Interior Painting Schedule"; REMOVE in entirety and REPLACE with new Document 09 91 23, dated January 5, 2024, Addendum #3.*

ADD 3-026 *Section 09 96 00 "High-Performance Coatings"; REMOVE in entirety and REPLACE with new Section 09 96 00, dated January 5, 2024, Addendum #3.*

ADD 3-027 *REMOVE Section 10 22 13 "Wire Mesh Partitions" in entirety per Addendum #3; not in project scope.*

ADD 3-028 *REMOVE Section 13 34 23 "Pre-engineered Restroom Building" in entirety per Addendum #3; not in project scope.*

DRAWINGS:

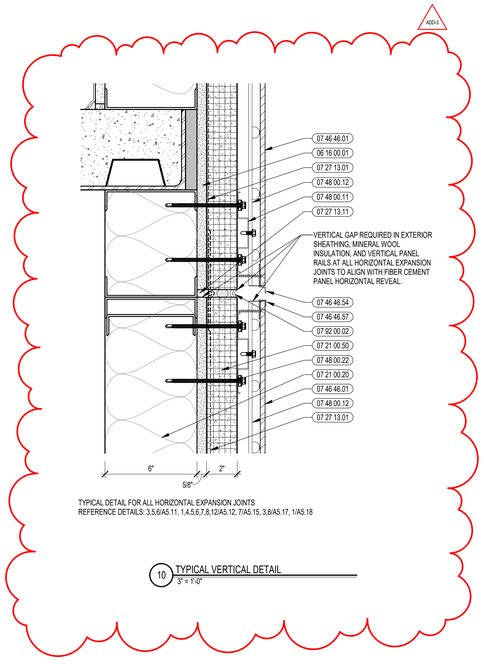
ADD 3-029 *A5.17 – VERTICAL WALL DETAILS*

ADD 3-030 *A7.73 – INTERIOR WALL SECTIONS*

ADD 3-031	*A9.25A – CTE COMMUNITY LAW & ADVOCACY ENLARGED PLANS AND INTERIOR ELEVATIONS*
ADD 3-032	*A10.20C – MEDIA COMMONS ENLARGED PLAN AND ELEVATIONS – FOURTH FLOOR*
ADD 3-033	*A10.41 – CTE ENGINEERING / ROBOTICS ENLARGED PLANS AND INTERIOR ELEVATIONS*
ADD 3-034	*FP1.11A – FIRE PROTECTION FIRST FLOOR PLAN – ZONE A*
ADD 3-035	*FP1.11C – FIRE PROTECTION FIRST FLOOR PLAN – ZONE C*
ADD 3-036	*FP1.12A – FIRE PROTECTION SECOND FLOOR PLAN – ZONE A*
ADD 3-037	*FP1.12B – FIRE PROTECTION SECOND FLOOR PLAN – ZONE B*
ADD 3-038	*FP1.12C – FIRE PROTECTION SECOND FLOOR PLAN – ZONE C*
ADD 3-039	*FP1.13A – FIRE PROTECTION THIRD FLOOR PLAN – ZONE A*
ADD 3-040	*FP1.13B – FIRE PROTECTION THIRD FLOOR PLAN – ZONE B*
ADD 3-041	*FP1.14A – FIRE PROTECTION FOURTH FLOOR PLAN – ZONE A*
ADD 3-042	*FP5.01 – FIRE PROTECTION RISER DIAGRAM*
ADD 3-043	*P3.06 – PLUMBING ENLARGED LOCKER ROOM FLOOR PLANS*
ADD 3-044	*M5.02 – MECHANICAL SCHEDULES*
ADD 3-045	*EDS.01 – ELECTRICAL SITE DEMOLITION PLAN*
ADD 3-046	*EDS.02 – ELECTRICAL SITE DEMOLITION PLAN*
ADD 3-047	*ES.01 – ELECTRICAL SITE POWER PLAN*
ADD 3-048	*ES.02 – ELECTRICAL SITE POWER PLAN*
ADD 3-049	*ES.05 – ELECTRICAL SITE DETAILS*
ADD 3-050	*E1.11A – ELECTRICAL FIRST FLOOR LIGHTING PLAN – ZONE A*
ADD 3-051	*E1.11B – ELECTRICAL FIRST FLOOR LIGHTING PLAN – ZONE B*
ADD 3-052	*E1.11C – ELECTRICAL FIRST FLOOR LIGHTING PLAN – ZONE C*
ADD 3-053	*E1.12A – ELECTRICAL SECOND FLOOR LIGHTING PLAN – ZONE A*
ADD 3-054	*E1.12B – ELECTRICAL SECOND FLOOR LIGHTING PLAN – ZONE B*
ADD 3-055	*E1.12C – ELECTRICAL SECOND FLOOR LIGHTING PLAN – ZONE C*
ADD 3-056	*E1.13A – ELECTRICAL THIRD FLOOR LIGHTING PLAN – ZONE A*
ADD 3-057	*E1.13B – ELECTRICAL THIRD FLOOR LIGHTING PLAN – ZONE B*
ADD 3-058	*E1.13C – ELECTRICAL THIRD FLOOR LIGHTING PLAN – ZONE C*
ADD 3-059	*E1.14A – ELECTRICAL FOURTH FLOOR LIGHTING PLAN – ZONE A*
ADD 3-060	*E1.14B – ELECTRICAL FOURTH FLOOR LIGHTING PLAN – ZONE B*
ADD 3-061	*E6.03 – ELECTRICAL DETAILS*

ATTACHMENTS:

ADD 3-062	*SECTION 00 01 10 – TABLE OF CONTENTS*
ADD 3-063	*SECTION 01 23 00 – ALTERNATES*
ADD 3-064	*SECTION 09 91 00 – PAINTING*
ADD 3-065	*SECTION 09 91 13 – EXTERIOR PAINTING SCHEDULE*
ADD 3-066	*SECTION 09 91 23 – INTERIOR PAINTING SCHEDULE*
ADD 3-067	*SECTION 09 96 00 – HIGH-PERFORMANCE COATINGS*
ADD 3-068	*FREIGHT FARM GREENERY S – product brochure*
ADD 3-069	*REMEDIAL ACTION WORK PLAN (RAWP) - submitted by Sage Environmental to State of Rhode Island Department of Environmental Management (RIDEM) for approval on January 2, 2024. Comments provided by RIDEM will be issued once they are received.*



TYPICAL DETAIL FOR ALL HORIZONTAL EXPANSION JOINTS
REFERENCE DETAILS: 3,5,6/A5.11, 1,4,5,6,7,8,12/A5.12, 7/A5.15, 3,8/A5.17, 1/A5.18

10 TYPICAL VERTICAL DETAIL
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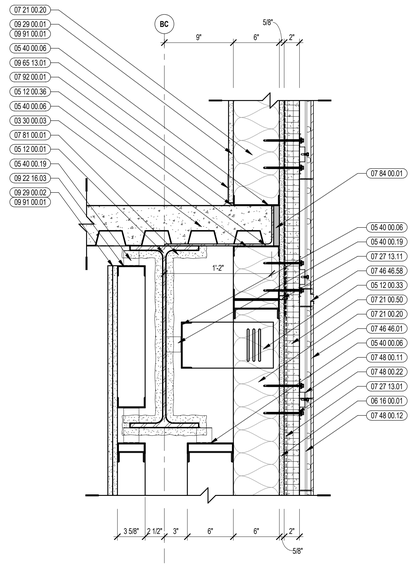
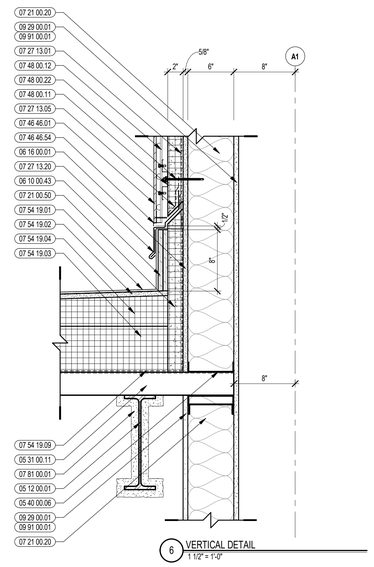


8 VERTICAL DETAIL
1 1/2" = 1'-0"



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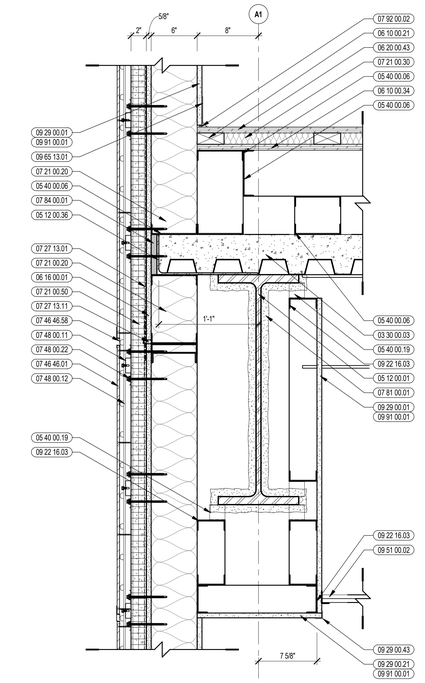

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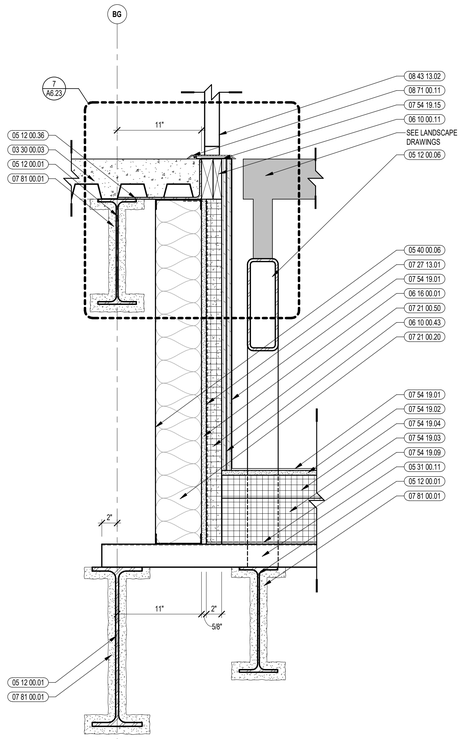
1 1/2" = 1'-0"



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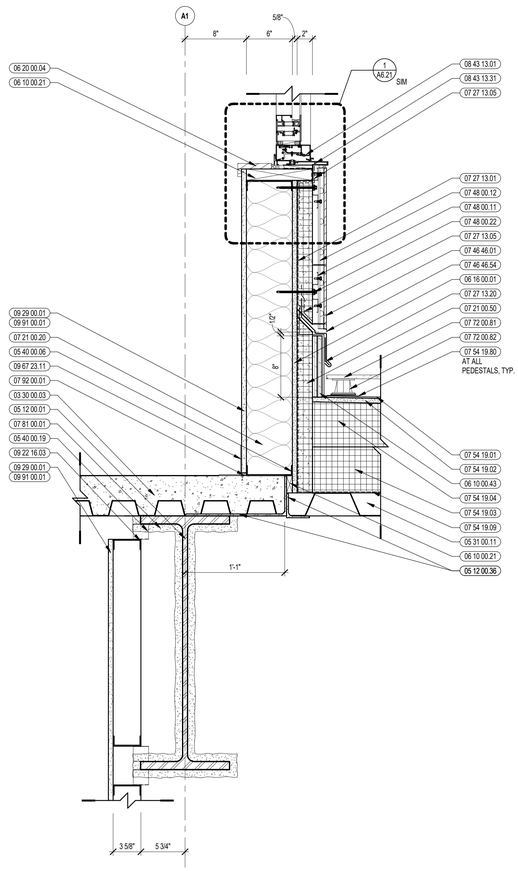

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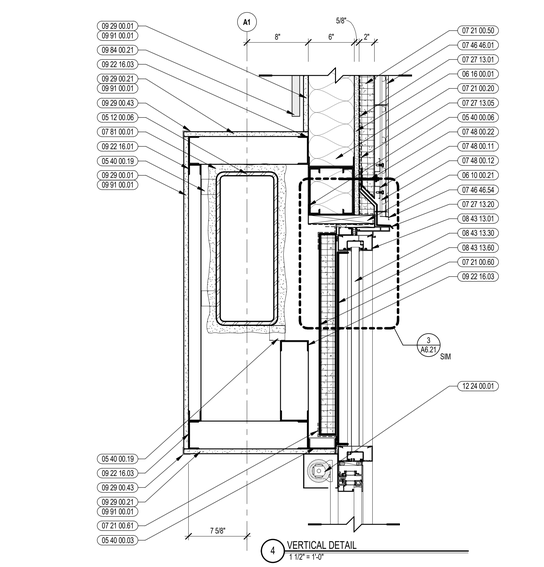

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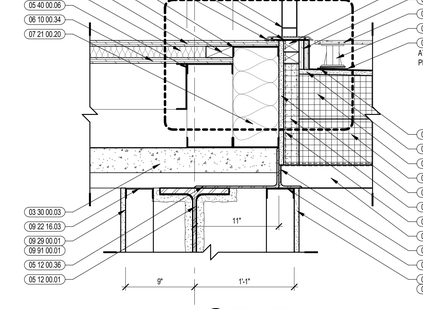
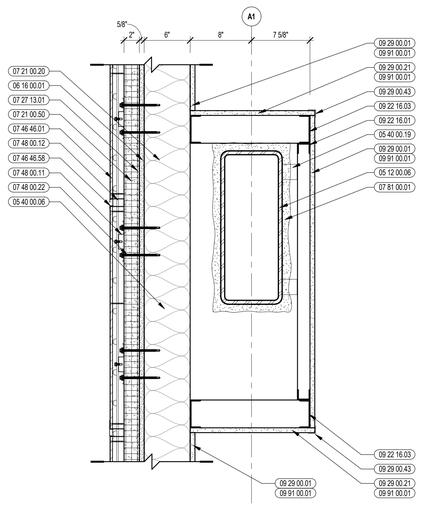
1 1/2" = 1'-0"



2 VERTICAL DETAIL
1 1/2" = 1'-0"

4 VERTICAL DETAIL
1 1/2" = 1'-0"



1 VERTICAL DETAIL
1 1/2" = 1'-0"

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CENTRAL FALLS HIGH SCHOOL
10 HIGGINSON AVE, CENTRAL FALLS, RI

KEYNOTE LEGEND:

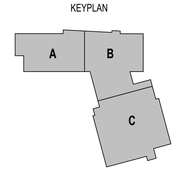
03 30 00.03	CONCRETE SLAB ON DECK - SEE STRUCTURAL
05 12 00.01	STEEL BEAM - SEE STRUCTURAL
05 12 00.06	STEEL TUBE - SEE STRUCTURAL
05 12 00.33	STEEL STIFFENER - SEE STRUCTURAL
05 12 00.36	STEEL PLATE BENT - SEE STRUCTURAL
05 31 00.11	STEEL ROOF DECK - 3 INCH GALVANIZED - SEE STRUCTURAL
05 40 00.03	STEEL STUDS - 3 5/8 INCH - 16 INCHES O.C. MAX
05 40 00.06	STEEL STUDS - 6 INCH - 16 INCHES O.C. MAX
05 40 00.19	STEEL Z-CLIP - 16 GAGE MIN. - 1 INCH MIN. DEPTH - 16 INCHES O.C. MAX
06 10 00.11	WOOD BLOCKING - (2X) PRESSURE TREATED - SIZE AS NOTED OR DRAWN
06 10 00.21	WOOD BLOCKING - (2X) FIRE RETARDANT TREATED - SIZE AS NOTED OR DRAWN
06 10 00.34	PLYWOOD - 3/4 INCH
06 10 00.43	PLYWOOD PRESSURE TREATED - 5/8 INCH
06 16 00.01	GYPSUM EXTERIOR SHEATHING - 5/8 INCH
06 20 00.04	HARDWOOD TRIM - BULLNOSE - TRANSPARENT FINISH
06 20 00.33	HARDWOOD VENEER PLYWOOD - 3/4 INCH - TRANSPARENT FINISH
06 20 00.43	PLYWOOD - 3/4 INCH
07 21 00.20	GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
07 21 00.30	MINERAL WOOL INSULATION
07 21 00.50	MINERAL WOOL INSULATION - RIGID - EXTERIOR - 2 INCH
07 21 00.60	MINERAL WOOL INSULATION - FOIL-FACED
07 21 00.61	FOIL, SCRIM, AND KRAFT TAPE
07 27 13.01	AIR/VAPOR BARRIER MEMBRANE - SELF-ADHERING
07 27 13.05	AIR/VAPOR BARRIER TRANSITION MEMBRANE - SELF-ADHERING
07 27 13.11	BACKER ROD - SIZE AND TYPE AS REQUIRED
07 27 13.20	FLASHING - STAINLESS STEEL
07 46 46.01	MINERAL FIBER CEMENT PANEL - REFERENCE ELEVATIONS FOR COLOR
07 46 46.54	HORIZONTAL Z TRIM
07 46 46.57	J MOLD TRIM
07 46 46.58	DOUBLE HORIZONTAL TRIM
07 48 00.11	HORIZONTAL GIRT - REFER TO SHOP DRAWINGS FOR SIZE
07 48 00.12	VERTICAL PANEL RAIL - REFER TO SHOP DRAWINGS FOR SIZE
07 48 00.22	STAINLESS STEEL SELF-DRILLING SCREW WITH THERMAL ISOLATION
07 54 19.01	PVC SINGLE PLY MEMBRANE ROOFING
07 54 19.02	HIGH DENSITY POLYISO RECOVERY BOARD
07 54 19.03	POLYISO RIGID INSULATION
07 54 19.04	POLYISO TAPERED INSULATION
07 54 19.09	SHEET VAPOR RETARDER - TAPE SEAMS
07 54 19.15	3-SIDED METAL PAN
07 54 19.80	WALKWAY PADS
07 72 00.81	ROOF PAVER - CONCRETE
07 72 00.82	ROOF PAVER - ADJUSTABLE PEDESTAL
07 72 00.83	ROOF PAVER - DRAINAGE PAVER
07 81 00.01	CEMENTITIOUS FIREPROOFING
07 84 00.01	FIRE SAFING MINERAL WOOL
07 92 00.01	JOINT SEALANT - TYPE AS REQUIRED
07 92 00.02	BACKER ROD AND SEALANT - TYPE AS REQUIRED
08 43 13.01	ALUMINUM STOREFRONT FRAME
08 43 13.02	ALUMINUM ENTRANCE DOOR
08 43 13.30	SPANDREL GLASS
08 43 13.31	SUB-FRAME / RECEPTOR

ADD-3 ADDENDUM #3 01.09.2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

VERTICAL WALL DETAILS

DRAWN BY: BFC

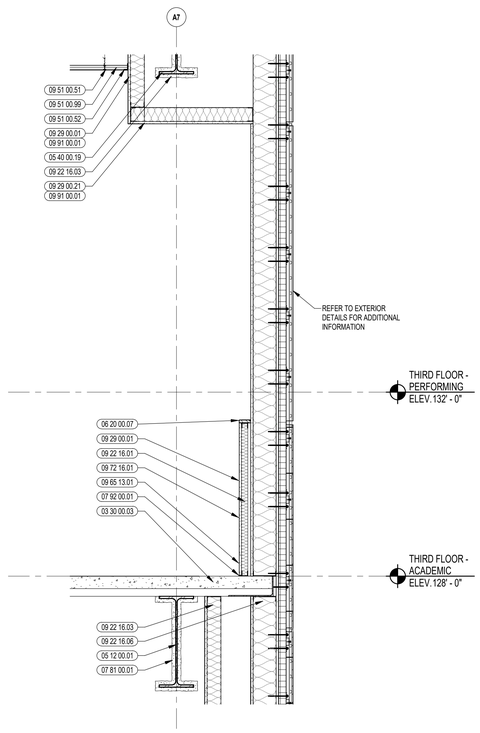
REVIEWED BY: CHR/KK

SCALE: AS INDICATED

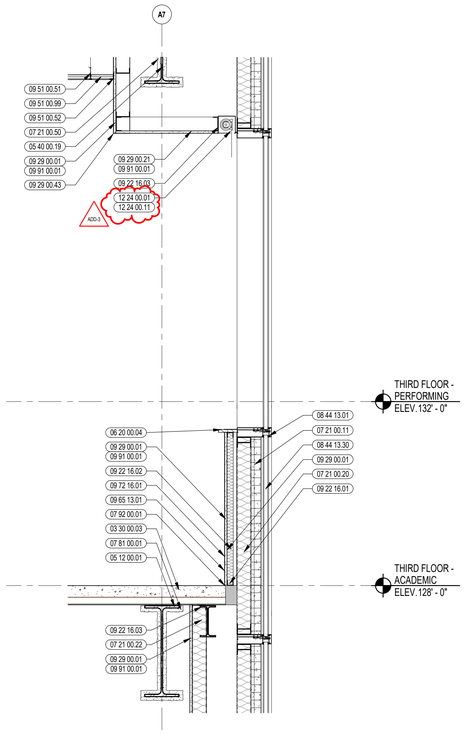
JOB NO.: 2202.02

DATE: OCTOBER 13, 2023

DRAWING NUMBER: A5.17



7 INTERIOR WALL SECTION
3/4" = 1'-0"



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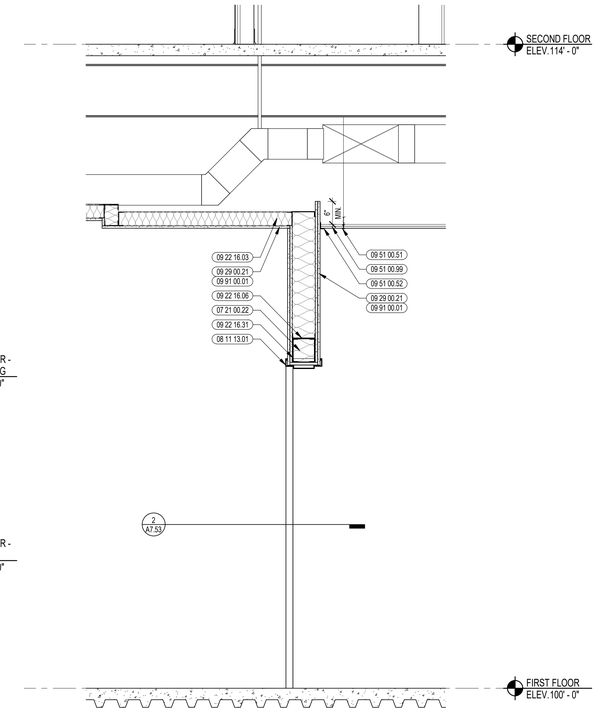
3/4" = 1'-0"



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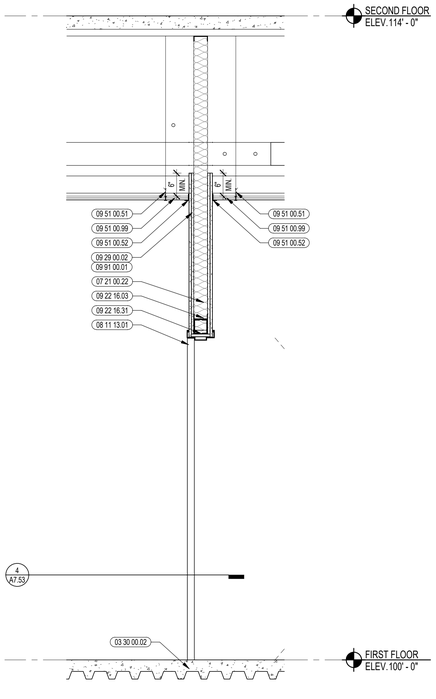

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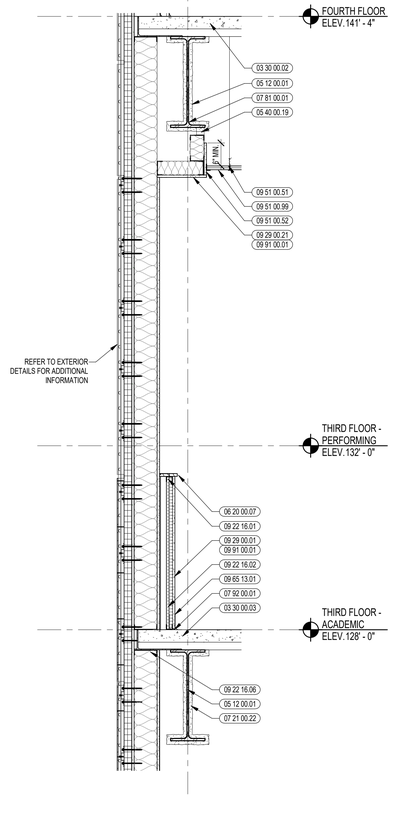
3/4" = 1'-0"



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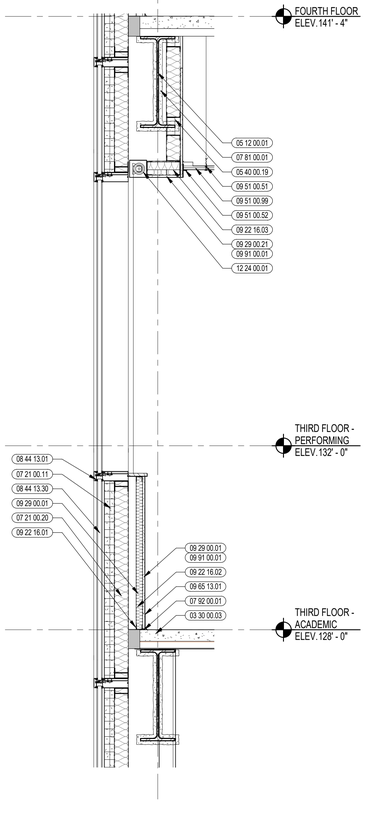
3/4" = 1'-0"



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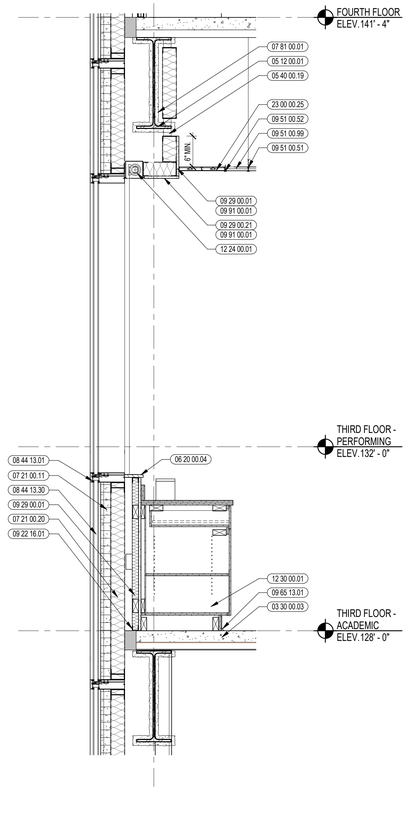
3/4" = 1'-0"



1 INTERIOR WALL SECTION
3/4" = 1'-0"

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CENTRAL FALLS HIGH SCHOOL
10 HIGGINSON AVE, CENTRAL FALLS, RI

KEYNOTE LEGEND:

03 30 00.02	CONCRETE SLAB ON GRADE - SEE STRUCTURAL
03 30 00.03	CONCRETE SLAB ON DECK - SEE STRUCTURAL
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05 40 00.19	STEEL Z-CLIP - 16 GAGE MIN. - 1 INCH MIN. DEPTH - 16 INCHES O.C. MAX
06 20 00.04	HARDWOOD TRIM - BULLNOSE - TRANSPARENT FINISH
06 20 00.07	HARDWOOD SILL - TRANSPARENT FINISH
07 21 00.11	INSULATING NAIL BASE - 2 5/8 INCH - EXTERIOR WALL
07 21 00.20	GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
07 21 00.22	GLASS FIBER ACOUSTICAL BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
07 21 00.50	MINERAL WOOL INSULATION - RIGID - EXTERIOR - 2 INCH
07 81 00.01	CEMENTITIOUS FIREPROOFING
07 92 00.01	JOINT SEALANT - TYPE AS REQUIRED
08 11 13.01	DOOR AND FRAME - SEE DOOR SCHEDULE
08 44 13.01	ALUMINUM CURTAIN WALL FRAME
08 44 13.30	SPANDREL GLASS
09 22 16.01	METAL STUD 1-5/8 INCH - 16 INCHES O.C. MAX
09 22 16.02	METAL STUD 2-1/2 INCH - 16 INCHES O.C. MAX
09 22 16.03	METAL STUD 3-5/8 INCH - 16 INCHES O.C. MAX
09 22 16.06	METAL STUD 6 INCH - 16 INCHES O.C. MAX
09 22 16.31	BOXED HEADER
09 29 00.01	5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 1 LAYER
09 29 00.02	5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 2 LAYERS
09 29 00.21	5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - SAG-RESISTANT
09 29 00.43	CORNER BEAD
09 51 00.51	ACT SUSPENSION SYSTEM
09 51 00.52	EDGE MOLDING SYSTEM
09 51 00.99	ACOUSTICAL CEILING - REFERENCE REFLECTED CEILING PLANS FOR TYPE AND HEIGHT
09 65 13.01	RUBBER BASE - 4 INCH
09 72 16.01	VINYL WALL CLADDING - REFERENCE ELEVATIONS FOR TYPE
09 91 00.01	PAINT - SEE SCHEDULE
12 24 00.01	ROLLER SHADE
12 24 00.11	BLACKOUT SHADE
12 30 00.01	BASE CABINET
23 00 00.25	RADIANT PANEL - SEE HVAC

GENERAL NOTES:

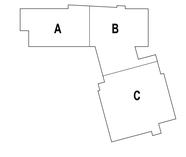
1. REFER TO SHEET(S) A0.0C FOR PARTITION TYPES.
2. REFERENCE FLOOR PLANS, INTERIOR ELEVATIONS, AND REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

ADD-3 ADDENDUM #3 01.09.2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

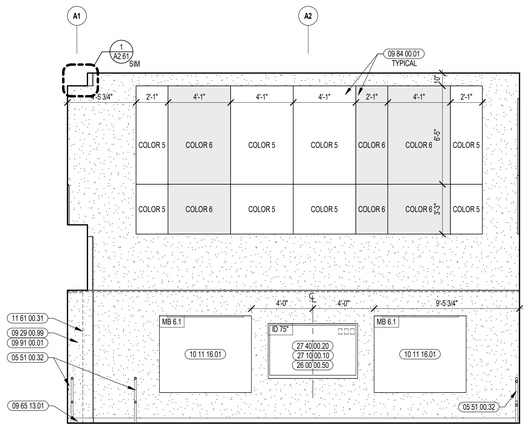
KEYPLAN



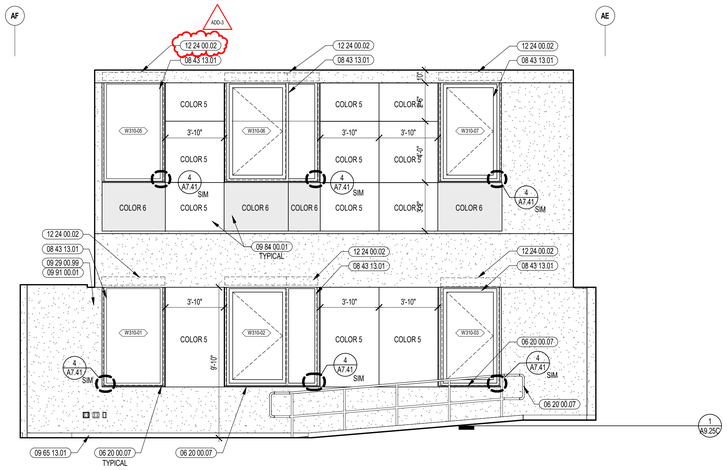
DRAWING NAME:

INTERIOR WALL SECTIONS

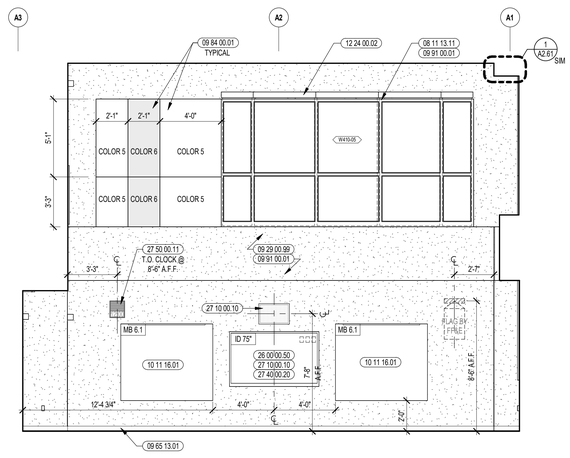
DRAWN BY:	MS / CHR
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	A7.73



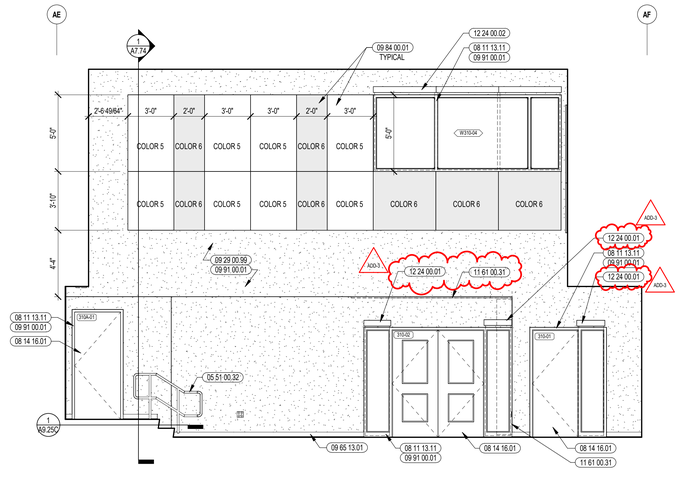
5 CTE (COMMUNITY LAW & ADVOCACY) INTERIOR ELEVATION
1/4" = 1'-0"



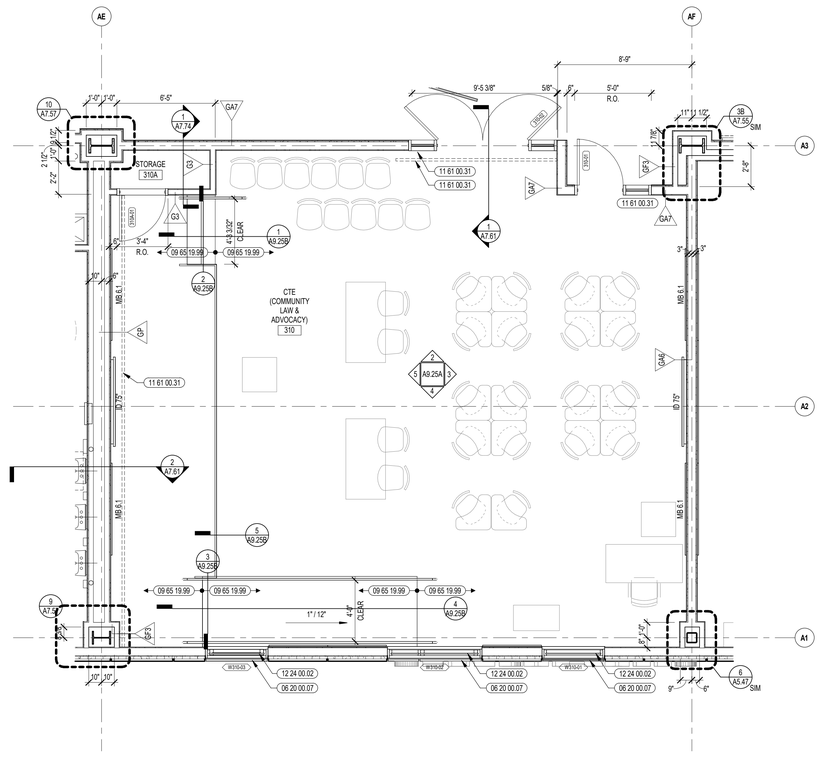
4 CTE (COMMUNITY LAW & ADVOCACY) INTERIOR ELEVATION
1/4" = 1'-0"



3 CTE (COMMUNITY LAW & ADVOCACY) INTERIOR ELEVATION
1/4" = 1'-0"



2 CTE (COMMUNITY LAW & ADVOCACY) INTERIOR ELEVATION
1/4" = 1'-0"



1 CTE (COMMUNITY LAW & ADVOCACY) ENLARGED PLAN
1/4" = 1'-0"

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KEYNOTE LEGEND:

05 51 00.32	STAINLESS STEEL INTERMEDIATE HANDRAIL WITH POSTS ANCHORED TO FLOOR
06 20 00.07	HARDWOOD SILL - TRANSPARENT FINISH
08 11 13.11	STEEL FRAME - SEE SCHEDULE FOR TYPES
08 14 16.01	SOLID CORE FLUSH WOOD DOOR- SEE DOOR SCHEDULE
08 43 13.01	ALUMINUM STOREFRONT FRAME
09 29 00.99	GYPSUM BOARD SYSTEM - LEVEL 4 FINISH - REFER TO FLOOR PLANS AND WALL TYPES FOR COMPONENTS
09 65 13.01	RUBBER BASE - 4 INCH
09 65 19.99	RTF - REFERENCE SCHEDULE AND SAMPLE PATTERNS FOR TYPE
09 84 00.01	ACOUSTICAL PANEL - WALL MOUNTED - FELT - TYPE 1
09 91 00.01	PAINT - SEE SCHEDULE
10 11 16.01	DRY MARKER BOARD
11 61 00.31	CURTAIN TRACK ASSEMBLY
12 24 00.01	ROLLER SHADE
12 24 00.02	ROLLER SHADE - ELECTRICALLY OPERATED
26 00 00.50	ELECTRICAL OUTLET - SEE ELECTRICAL
27 10 00.10	DATA OUTLET - SEE TECHNOLOGY
27 40 00.20	DISPLAY - INTERACTIVE - SEE TECHNOLOGY
27 50 00.11	CLOCK - SEE TECHNOLOGY

ACOUSTIC PANEL LEGEND

COLOR 1	COLOR 2	COLOR 3	COLOR 4
COLOR 5	COLOR 6		

GENERAL NOTES:

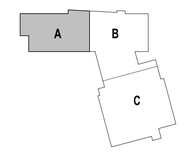
1. NOT ALL POWER AND DATA OUTLET/ SWITCHING LOCATIONS SHOWN. COORDINATE WITH ELECTRICAL AND TECHNOLOGY DRAWINGS FOR ALL LOCATIONS.
2. REFER TO DETAILS ON A7.51 FOR FIRE EXTINGUISHER DETAILS AND MOUNTING HEIGHTS.
3. REFERENCE TOILET ACCESSORIES LEGEND AND SCHEDULE ON DRAWING A8.31 FOR ADDITIONAL INFORMATION.
4. WHERE EXPOSED, ALL STRUCTURAL MEMBERS & MEPFP SHALL RECIEVE PAINTED FINISH, U.N.O.. HORIZONTAL PAINT TRANSITION LINE TO BE COORDINATED ON WALLS OF SPACES WITH EXPOSED DECKING.

ADD-3 ADDENDUM #3 01.09.2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

CTE COMMUNITY LAW & ADVOCACY ENLARGED PLANS AND INTERIOR ELEVATIONS

DRAWN BY:	CHR / BFC / MCT / MS
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	A9.25A

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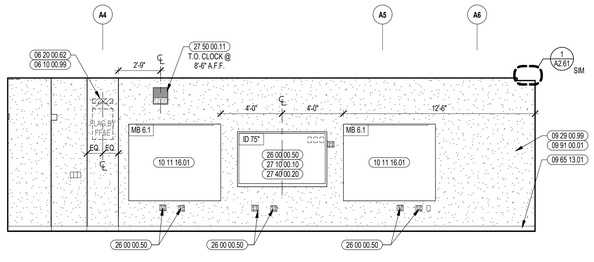
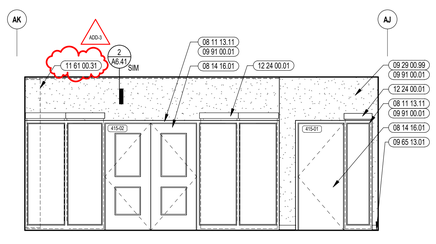
CENTRAL FALLS HIGH SCHOOL
10 HIGGINSON AVE, CENTRAL FALLS, RI

KEYNOTE LEGEND:

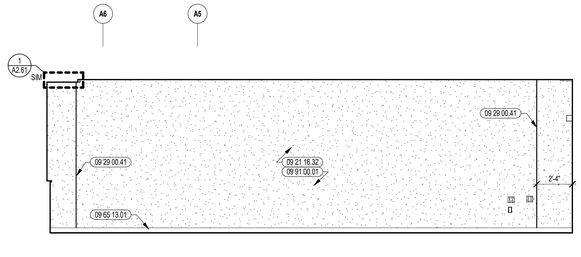
06 10 00.99	WOOD BLOCKING - SIZE AS NOTED OR DRAWN
06 20 00.07	HARDWOOD SILL - TRANSPARENT FINISH
06 20 00.62	FLAG HOOK STANDOFF WITH CAP
08 11 13.11	STEEL FRAME - SEE SCHEDULE FOR TYPES
08 14 16.01	SOLID CORE FLUSH WOOD DOOR- SEE DOOR SCHEDULE
08 44 13.01	ALUMINUM CURTAIN WALL FRAME
09 21 16.32	GYPSUM BOARD - 5/8 INCH TYPE X - 2 LAYERS
09 29 00.41	CONTROL JOINT - 1/4 INCH
09 29 00.99	GYPSUM BOARD SYSTEM - LEVEL 4 FINISH - REFER TO FLOOR PLANS AND WAL TYPES FOR COMPONENTS
09 65 13.01	RUBBER BASE - 4 INCH
09 91 00.01	PAINT - SEE SCHEDULE
10 11 16.01	DRY MARKER BOARD
11 61 00.31	CURTAIN TRACK ASSEMBLY
12 24 00.01	ROLLER SHADE
12 24 00.11	BLACKOUT SHADE
26 00 00.50	ELECTRICAL OUTLET - SEE ELECTRICAL
27 10 00.10	DATA OUTLET - SEE TECHNOLOGY
27 40 00.20	DISPLAY - INTERACTIVE - SEE TECHNOLOGY
27 50 00.11	CLOCK - SEE TECHNOLOGY



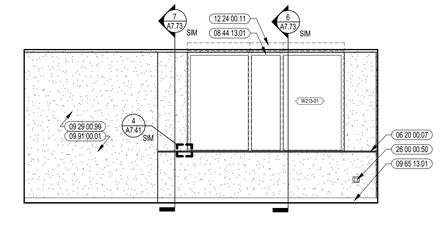
5 MEDIA COMMONS INTERIOR ELEVATION
1/4" = 1'-0"



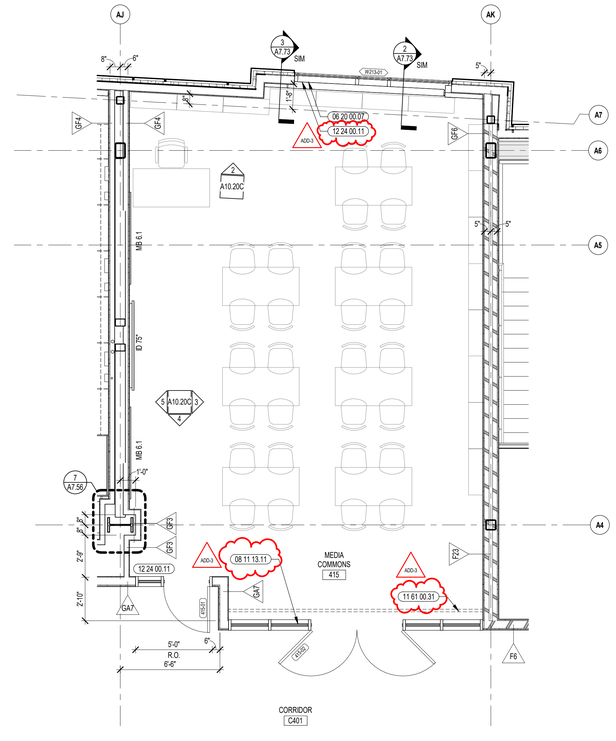
4 MEDIA COMMONS INTERIOR ELEVATION
1/4" = 1'-0"



3 MEDIA COMMONS INTERIOR ELEVATION
1/4" = 1'-0"



2 MEDIA COMMONS INTERIOR ELEVATION
1/4" = 1'-0"



1 MEDIA COMMONS ENLARGED PLAN
1/4" = 1'-0"

GENERAL NOTES:

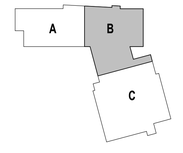
1. NOT ALL POWER AND DATA OUTLET/ SWITCHING LOCATIONS SHOWN. COORDINATE WITH ELECTRICAL AND TECHNOLOGY DRAWINGS FOR ALL LOCATIONS.
2. REFER TO DETAILS ON A7.51 FOR FIRE EXTINGUISHER DETAILS AND MOUNTING HEIGHTS.
3. REFERENCE TOILET ACCESSORIES LEGEND AND SCHEDULE ON DRAWING A8.31 FOR ADDITIONAL INFORMATION.
4. WHERE EXPOSED, ALL STRUCTURAL MEMBERS & MEP/FP SHALL RECEIVE PAINTED FINISH, U.N.O. . HORIZONTAL PAINT TRANSITION LINE TO BE COORDINATED ON WALLS OF SPACES WITH EXPOSED DECKING.

ADD-3 ADDENDUM #3 01.09.2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

MEDIA COMMONS ENLARGED PLAN AND INTERIOR ELEVATIONS - FOURTH FLOOR

DRAWN BY:	CHR / BFC / MCT
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	A10.20C

ENGINEERING TECHNOLOGY EQUIPMENT LIST

THE MANUFACTURER & MODEL NUMBERS IDENTIFIED BELOW ARE INTENDED TO ESTABLISH A GENERAL LEVEL OF QUALITY, CONFIGURATION & APPEARANCE REQUIRED. THIS IS NOT A PROPRIETARY SPECIFICATION & IT SHOULD BE NOTED THAT "OR APPROVED EQUAL" APPLIES TO ALL UNITS NOTED HEREIN. IT IS UNDERSTOOD THAT ALL MANUFACTURERS WILL HAVE MINOR VARIATIONS IN APPEARANCE & PRODUCT SPECIFICATIONS & SUCH MINOR VARIATIONS SHALL NOT ELIMINATE SUCH MANUFACTURERS AS AN APPROVED EQUAL.

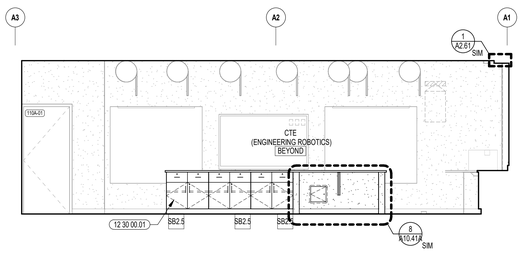
SYMBOL	ITEM DESCRIPTION	MANUFACTURER	MODEL #	OVERALL SIZE (LxWxH)	ELEC. REQ.	HVAC REQ.	PLUMB REQ.	OTHER NOTES
OWNER FURNISHED & INSTALLED								
1	GLOWFORGE			20 3/4" x 38" x 8 1/4" APPROXIMATE	REF. ELECTRICAL DRAWINGS	REF. MECHANICAL		EXISTING TO BE SALVAGED
2	INDUSTRIAL CHILLER			18" x 10 1/4" x 15" APPROXIMATE	REF. ELECTRICAL DRAWINGS		REF. PLUMBING DRAWINGS	EXISTING TO BE SALVAGED
3	LASER ENGRAVER			22 1/2" x 32" x 16" APPROXIMATE	REF. ELECTRICAL DRAWINGS	REF. MECHANICAL		EXISTING TO BE SALVAGED

SINKS, FIXTURES & FITTINGS

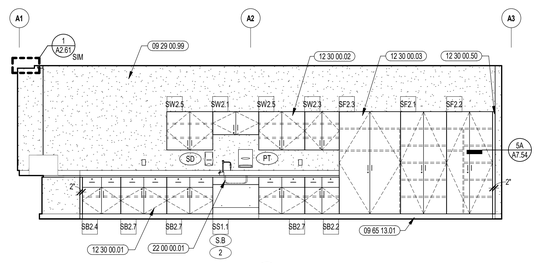
THE MANUFACTURER & MODEL NUMBERS IDENTIFIED BELOW ARE INTENDED TO ESTABLISH A GENERAL LEVEL OF QUALITY, CONFIGURATION & APPEARANCE REQUIRED. THIS IS NOT A PROPRIETARY SPECIFICATION & IT SHOULD BE NOTED THAT "OR APPROVED EQUAL" APPLIES TO ALL UNITS NOTED HEREIN. IT IS UNDERSTOOD THAT ALL MANUFACTURERS WILL HAVE MINOR VARIATIONS IN APPEARANCE & PRODUCT SPECIFICATIONS & SUCH MINOR VARIATIONS SHALL NOT ELIMINATE SUCH MANUFACTURERS AS AN APPROVED EQUAL.

NUMBERED ITEMS ARE FURNISHED BY 12 30 00 AND INSTALLED BY 22 00 00. LETTERED ITEMS ARE FURNISHED AND INSTALLED BY 12 30 00.

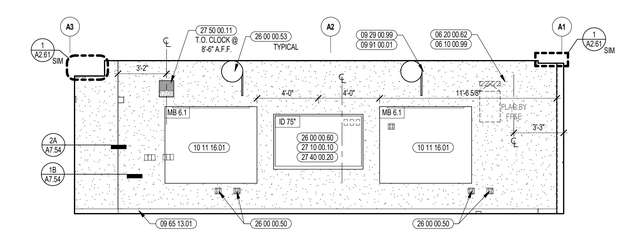
	MANUFACTURER	MODEL NO. / DESCRIPTION
1	REFER TO FIXTURE SCHEDULE ON PLUMBING DRAWINGS	GC TO COORDINATE ALL DRILLED OPENINGS IN COUNTRETOP WITH ACCEPTED FIXTURES PRIOR TO INSTALLATION..
2	REFER TO FIXTURE SCHEDULE ON PLUMBING DRAWINGS	GC TO COORDINATE ALL DRILLED OPENINGS IN COUNTRETOP WITH ACCEPTED FIXTURES PRIOR TO INSTALLATION..
3.2	REFER TO FIXTURE SCHEDULE ON PLUMBING DRAWINGS	GC TO COORDINATE ALL DRILLED OPENINGS IN COUNTRETOP WITH ACCEPTED FIXTURES PRIOR TO INSTALLATION..
4	REFER TO FIXTURE SCHEDULE ON PLUMBING DRAWINGS	GC TO COORDINATE ALL DRILLED OPENINGS IN COUNTRETOP WITH ACCEPTED FIXTURES PRIOR TO INSTALLATION..
S.A	EPOXY RESIN INTEGRAL SINK	18"L x 14"W x 8"D CLEAR
S.B	EPOXY RESIN INTEGRAL SINK	18"L x 13"W x 6"D CLEAR



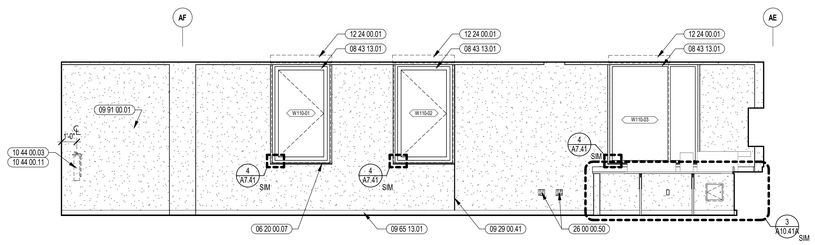
6 ENGINEERING/ROBOTICS INTERIOR ELEVATION
1/4" = 1'-0"



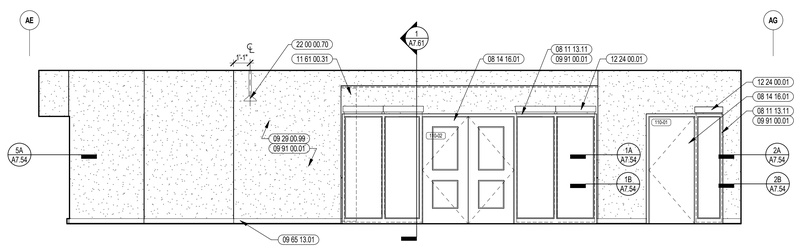
5 ENGINEERING/ROBOTICS INTERIOR ELEVATION
1/4" = 1'-0"



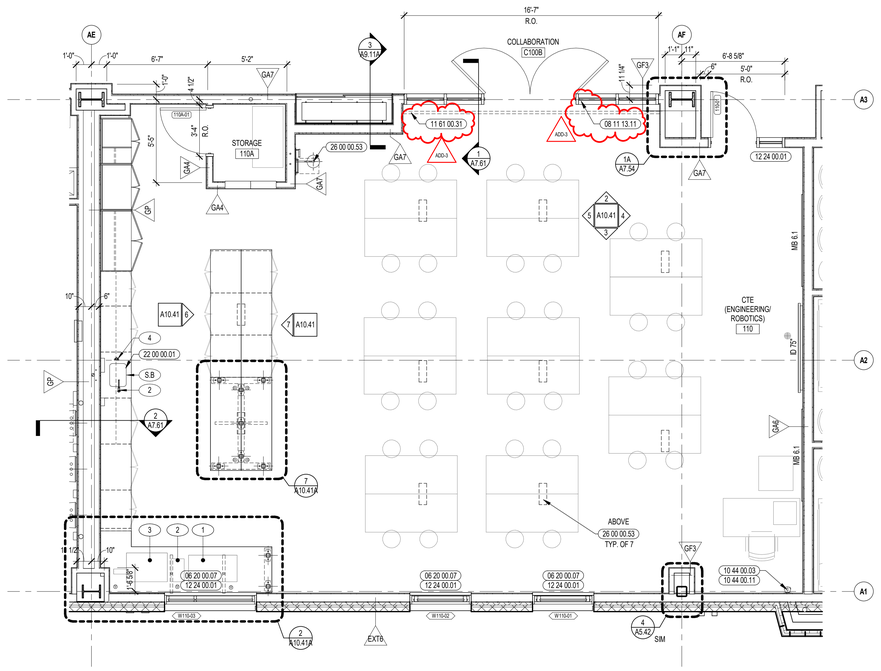
4 ENGINEERING/ROBOTICS INTERIOR ELEVATION
1/4" = 1'-0"



3 ENGINEERING/ROBOTICS INTERIOR ELEVATION
1/4" = 1'-0"



2 ENGINEERING/ROBOTICS INTERIOR ELEVATION
1/4" = 1'-0"



1 CTE ENGINEERING/ROBOTICS ENLARGED PLAN
1/4" = 1'-0"

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CENTRAL FALLS HIGH SCHOOL
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KEYNOTE LEGEND:

06 10 00.99	WOOD BLOCKING - SIZE AS NOTED OR DRAWN
06 20 00.07	HARDWOOD SILL - TRANSPARENT FINISH
06 20 00.62	FLAG HOOK STANDOFF WITH CAP
08 11 13.11	STEEL FRAME - SEE SCHEDULE FOR TYPES
08 14 16.01	SOLID CORE FLUSH WOOD DOOR- SEE DOOR SCHEDULE
08 43 13.01	ALUMINUM STOREFRONT FRAME
09 29 00.41	CONTROL JOINT - 1/4 INCH
09 29 00.99	GYPSUM BOARD SYSTEM - LEVEL 4 FINISH - REFER TO FLOOR PLANS AND WALL TYPES FOR COMPONENTS
09 65 13.01	RUBBER BASE - 4 INCH
09 91 00.01	PAINT - SEE SCHEDULE
10 11 16.01	DRY MARKER BOARD
10 44 00.03	FIRE EXTINGUISHER WALL MOUNTED BRACKET
10 44 00.11	FIRE EXTINGUISHER
11 61 00.31	CURTAIN TRACK ASSEMBLY
12 24 00.01	ROLLER SHADE
12 30 00.01	BASE CABINET
12 30 00.02	WALL CABINET
12 30 00.03	TALL CABINET
12 30 00.50	FILLER PIECE SCRIBED TO ADJACENT SURFACE - FINISH TO MATCH CASEWORK
22 00 00.01	SINK - SEE PLUMBING
22 00 00.70	EMERGENCY EYEWASH/SHOWER STATION
26 00 00.50	ELECTRICAL OUTLET - SEE ELECTRICAL
26 00 00.53	ELECTRICAL RETRACTABLE OVERHEAD OUTLET - SEE ELECTRICAL
26 00 00.60	LCD ANNUNCIATOR - SEE ELECTRICAL
27 10 00.10	DATA OUTLET - SEE TECHNOLOGY
27 40 00.20	DISPLAY - INTERACTIVE - SEE TECHNOLOGY
27 50 00.11	CLOCK - SEE TECHNOLOGY

GENERAL NOTES:

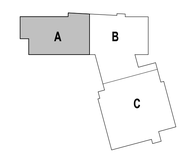
1. NOT ALL POWER AND DATA OUTLET/ SWITCHING LOCATIONS SHOWN. COORDINATE WITH ELECTRICAL AND TECHNOLOGY DRAWINGS FOR ALL LOCATIONS.
2. REFER TO DETAILS ON A7.51 FOR FIRE EXTINGUISHER DETAILS AND MOUNTING HEIGHTS.
3. REFERENCE TOILET ACCESSORIES LEGEND AND SCHEDULE ON DRAWING A8.31 FOR ADDITIONAL INFORMATION.
4. WHERE EXPOSED, ALL STRUCTURAL MEMBERS & MEP/FP SHALL RECIEVE PAINTED FINISH, U.N.O.. HORIZONTAL PAINT TRANSITION LINE TO BE COORDINATED ON WALLS OF SPACES WITH EXPOSED DECKING.

ADD-3 ADDENDUM #3 01.09.2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

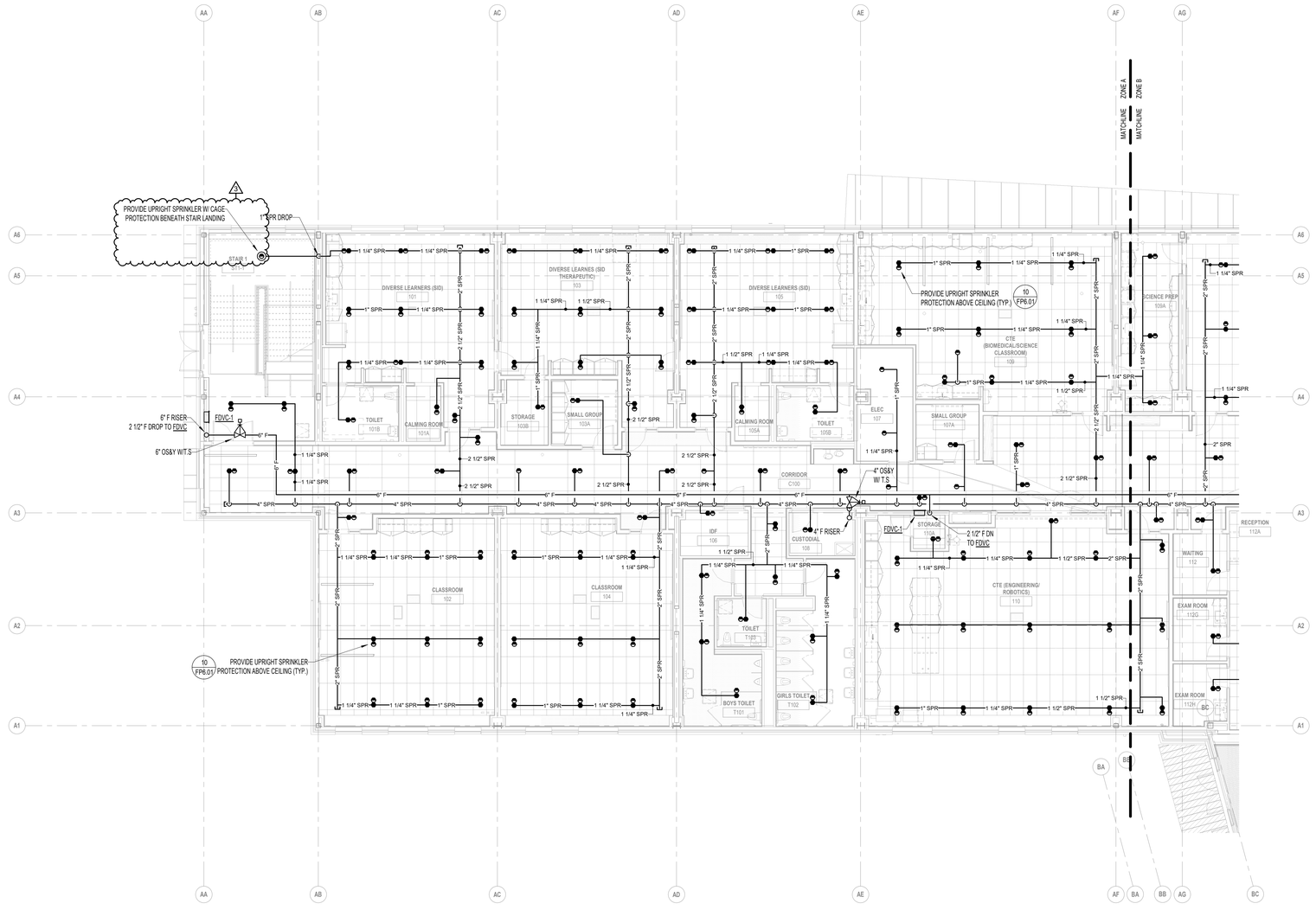
KEYPLAN



DRAWING NAME:

CTE ENGINEERING / ROBOTICS ENLARGED PLANS AND INTERIOR ELEVATIONS

DRAWN BY:	MS / BFC
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	A10.41



1 FIRST FLOOR PLAN - ZONE A
1/8" = 1'-0"

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CENTRAL FALLS HIGH SCHOOL
10 HIGGINSON AVE, CENTRAL FALLS, RI

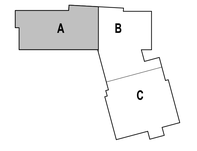
KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

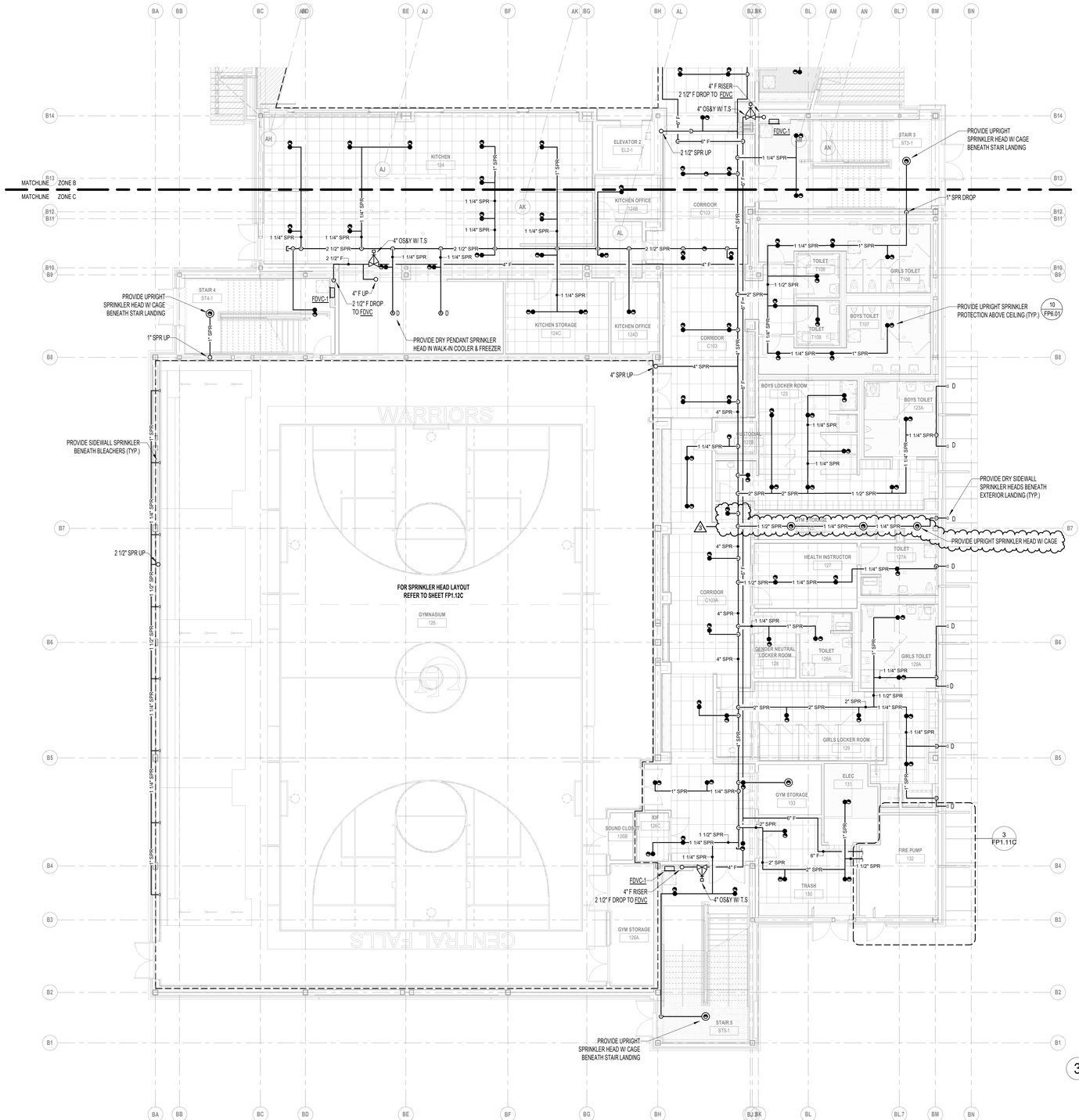
KEYPLAN



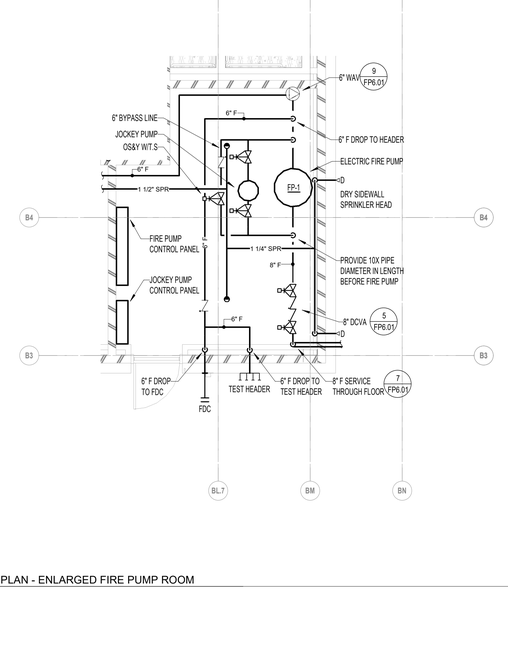
DRAWING NAME:

FIRE PROTECTION FIRST FLOOR PLAN - ZONE A

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	FP1.11A



1 FIRST FLOOR PLAN - ZONE C
Scale: 1/8" = 1'-0"



3 1-FIRST FLOOR PLAN - ENLARGED FIRE PUMP ROOM
Scale: 1/4" = 1'-0"

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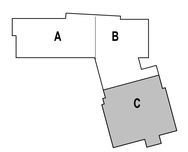
KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN

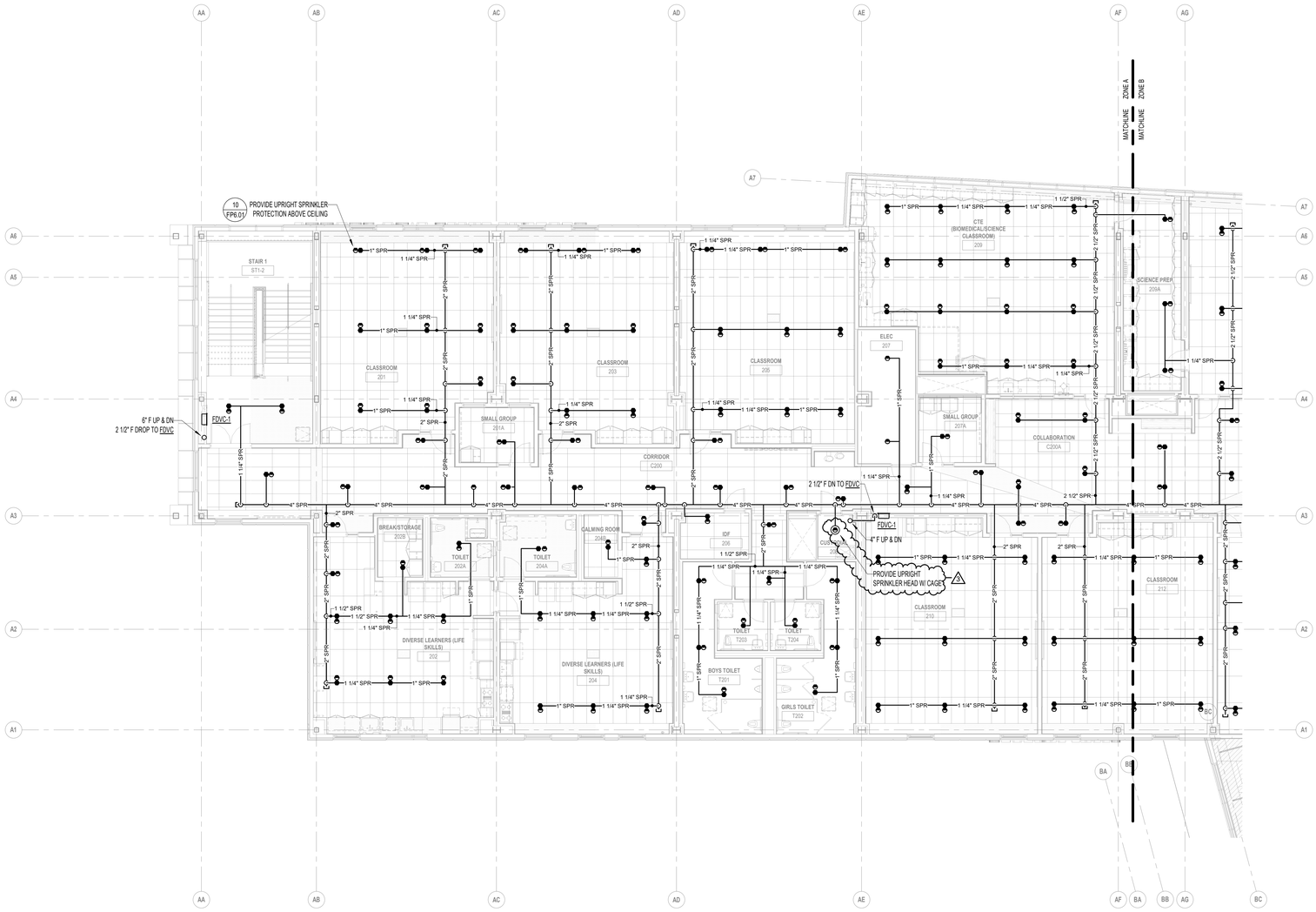


DRAWING NAME:

FIRE PROTECTION FIRST FLOOR PLAN - ZONE C

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP1.11C



1 SECOND FLOOR PLAN - ZONE A
1/8" = 1'-0"

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KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

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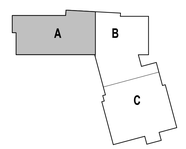
KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

FIRE PROTECTION SECOND FLOOR PLAN - ZONE A

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP1.12A

1 SECOND FLOOR PLAN - ZONE B
1/8" = 1'-0"

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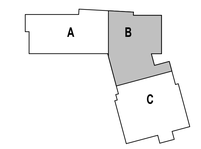
KEY PLAN NORTH ARROW

KEYPLAN

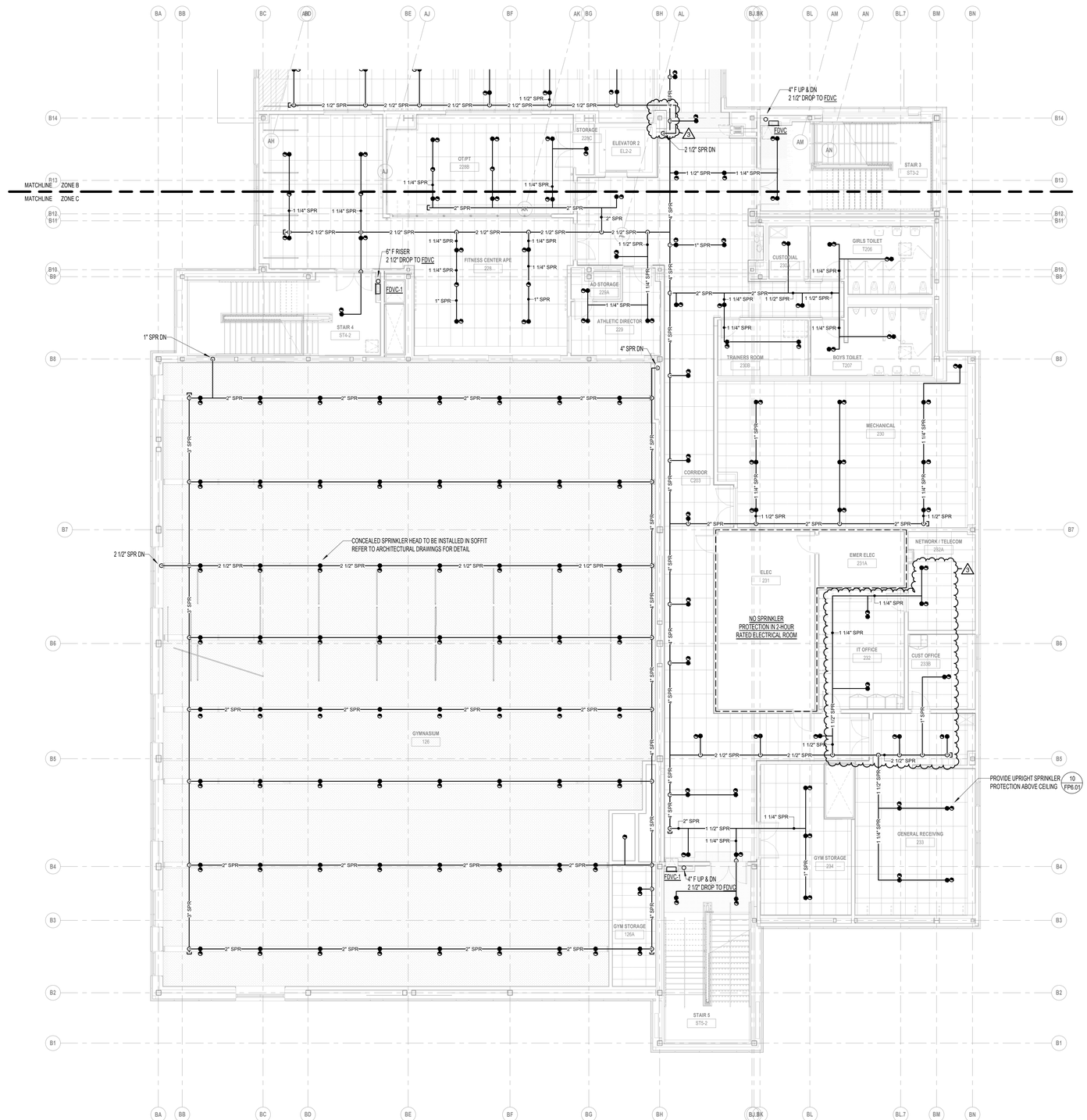


DRAWING NAME:

FIRE PROTECTION SECOND FLOOR PLAN - ZONE B

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP1.12B



1 SECOND FLOOR PLAN - ZONE C
1/8" = 1'-0"

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KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

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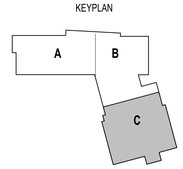
KEY PLAN NORTH ARROW

KEYPLAN

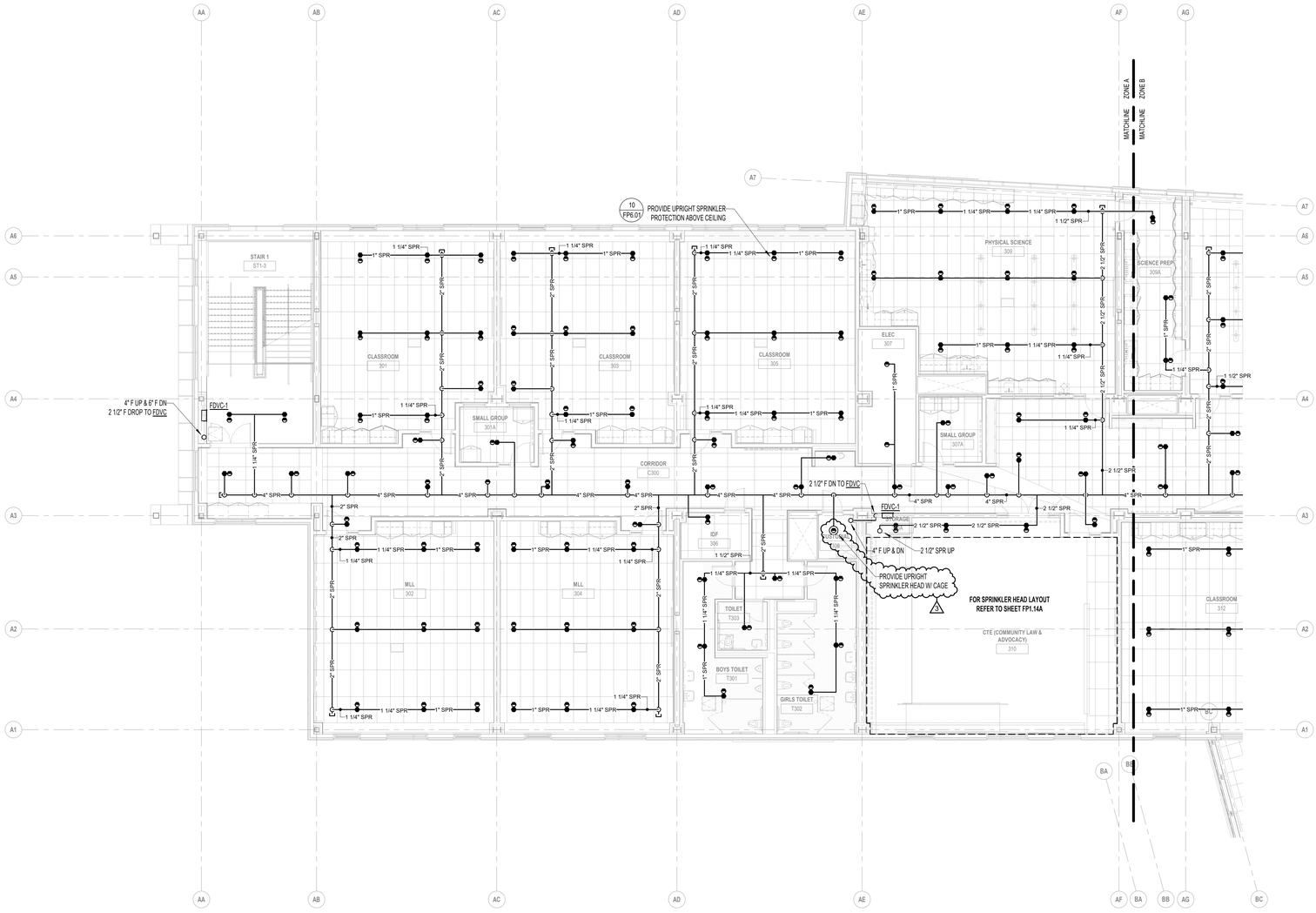


DRAWING NAME:

FIRE PROTECTION SECOND FLOOR PLAN - ZONE C

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP1.12C



1 THIRD FLOOR PLAN - ZONE A
1/8" = 1'-0"

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3	ADDENDUM 3	01/09/2024

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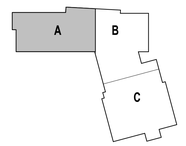
KEYPLAN



DRAWING NAME:

FIRE PROTECTION THIRD FLOOR PLAN - ZONE A

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP1.13A

1 THIRD FLOOR PLAN - ZONE B
1/8" = 1'-0"

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KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

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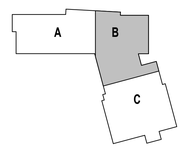
KEY PLAN NORTH ARROW

KEYPLAN

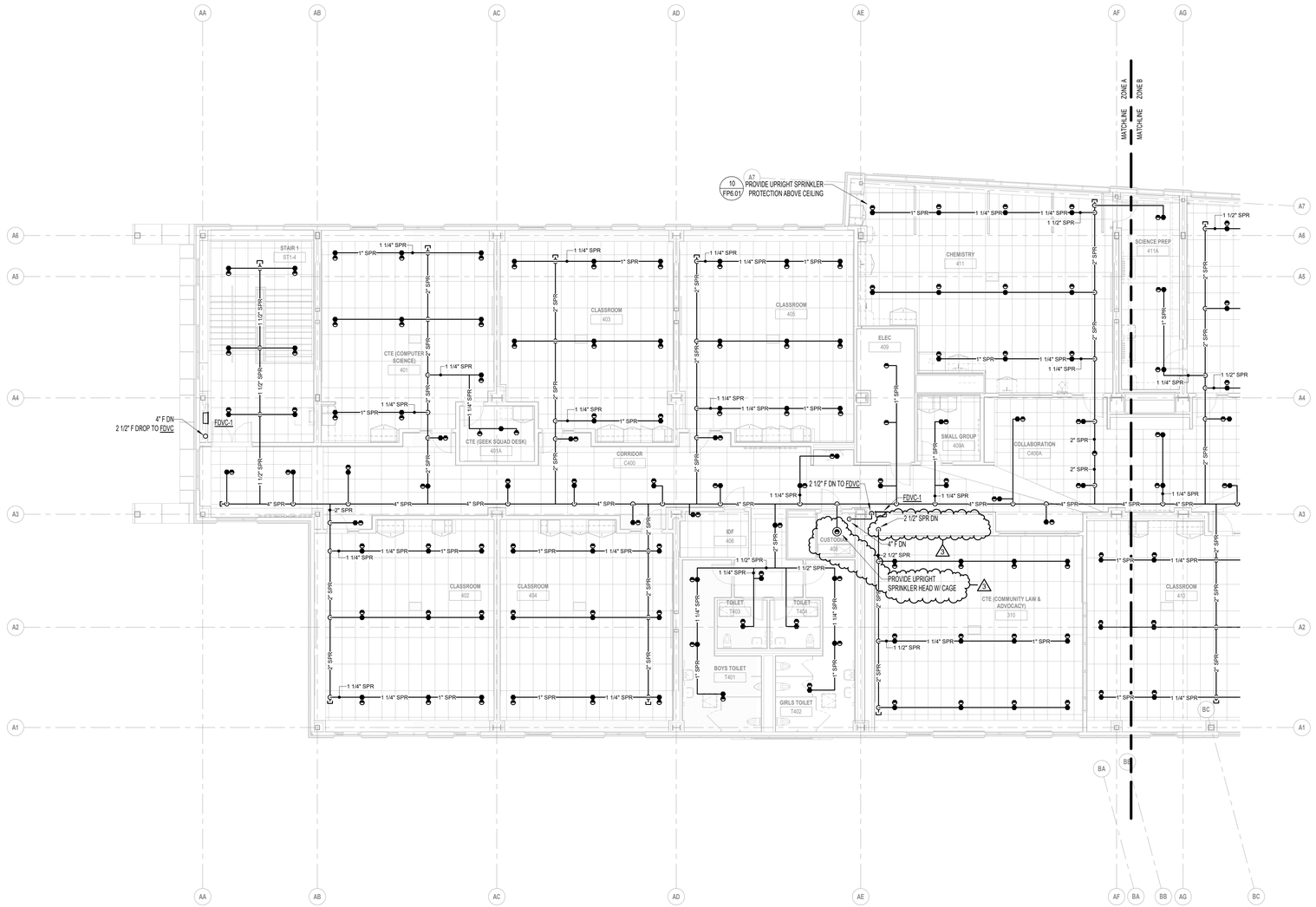


DRAWING NAME:

FIRE PROTECTION THIRD FLOOR PLAN - ZONE B

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP1.13B



1 FOURTH FLOOR PLAN - ZONE A
1/8" = 1'-0"

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KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

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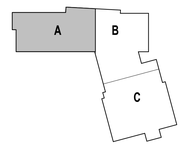
KEY PLAN NORTH ARROW

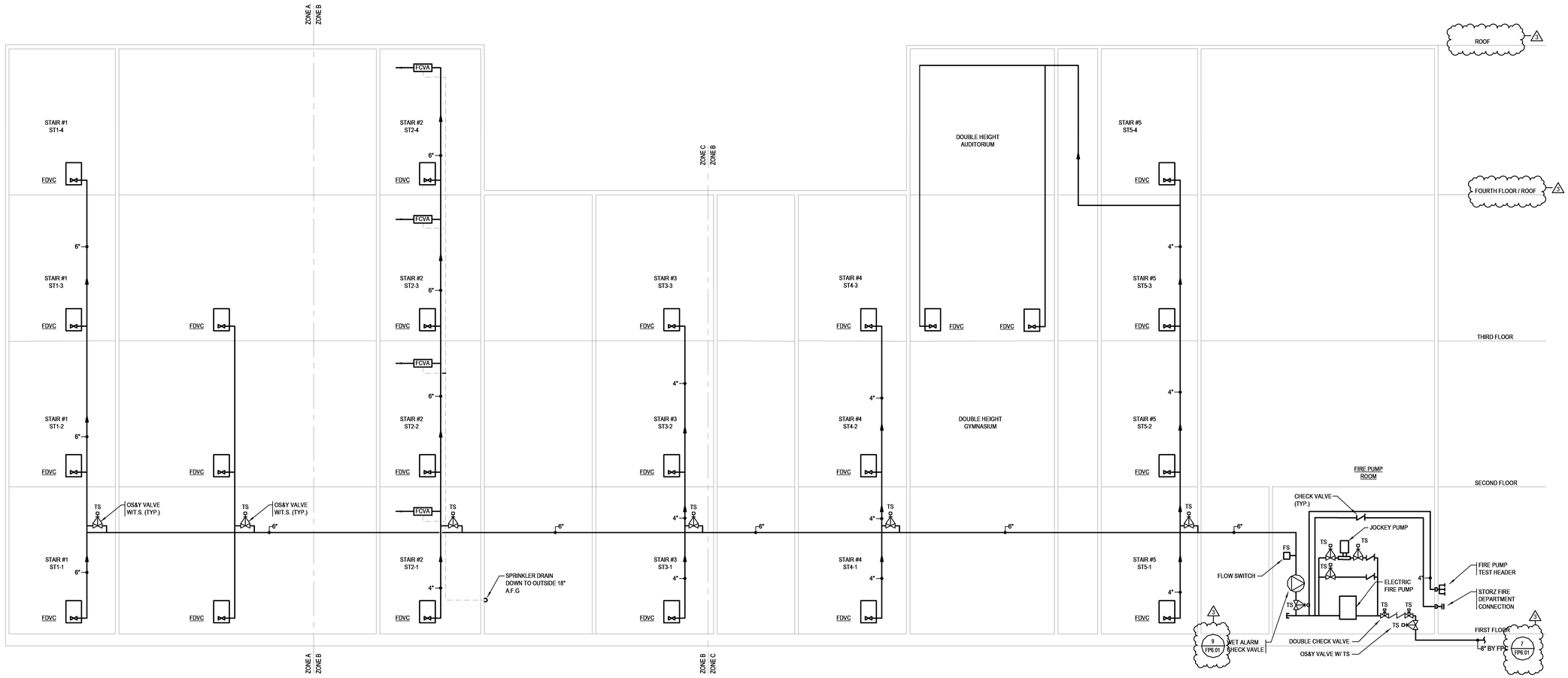
KEYPLAN



DRAWING NAME:

FIRE PROTECTION FOURTH FLOOR PLAN - ZONE A

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	FP1.14A



FIRE RISER
NTS

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KEYNOTE LEGEND:

3	ADDENDUM 3	01/09/2024

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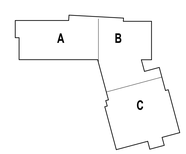
KEY PLAN NORTH ARROW

KEYPLAN

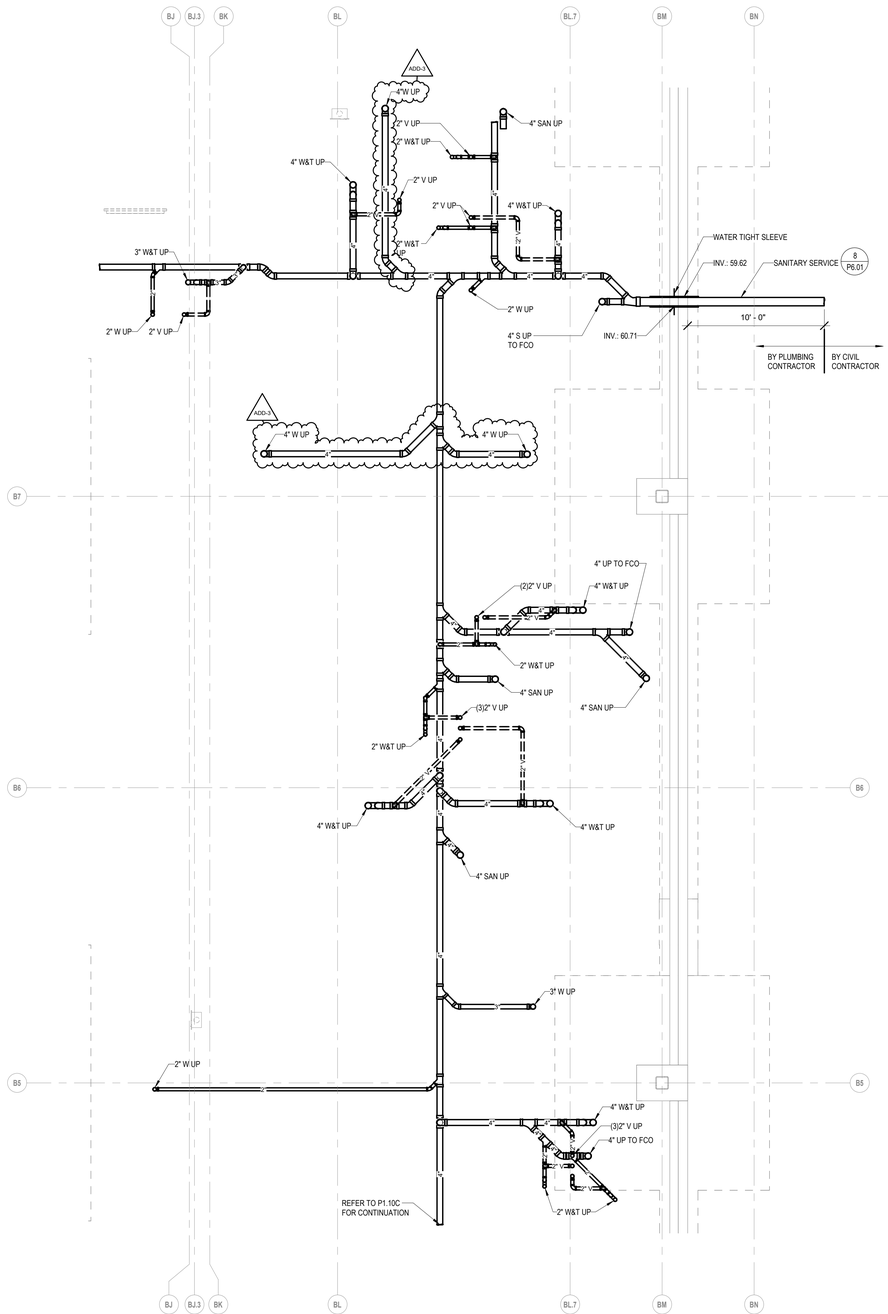


DRAWING NAME:

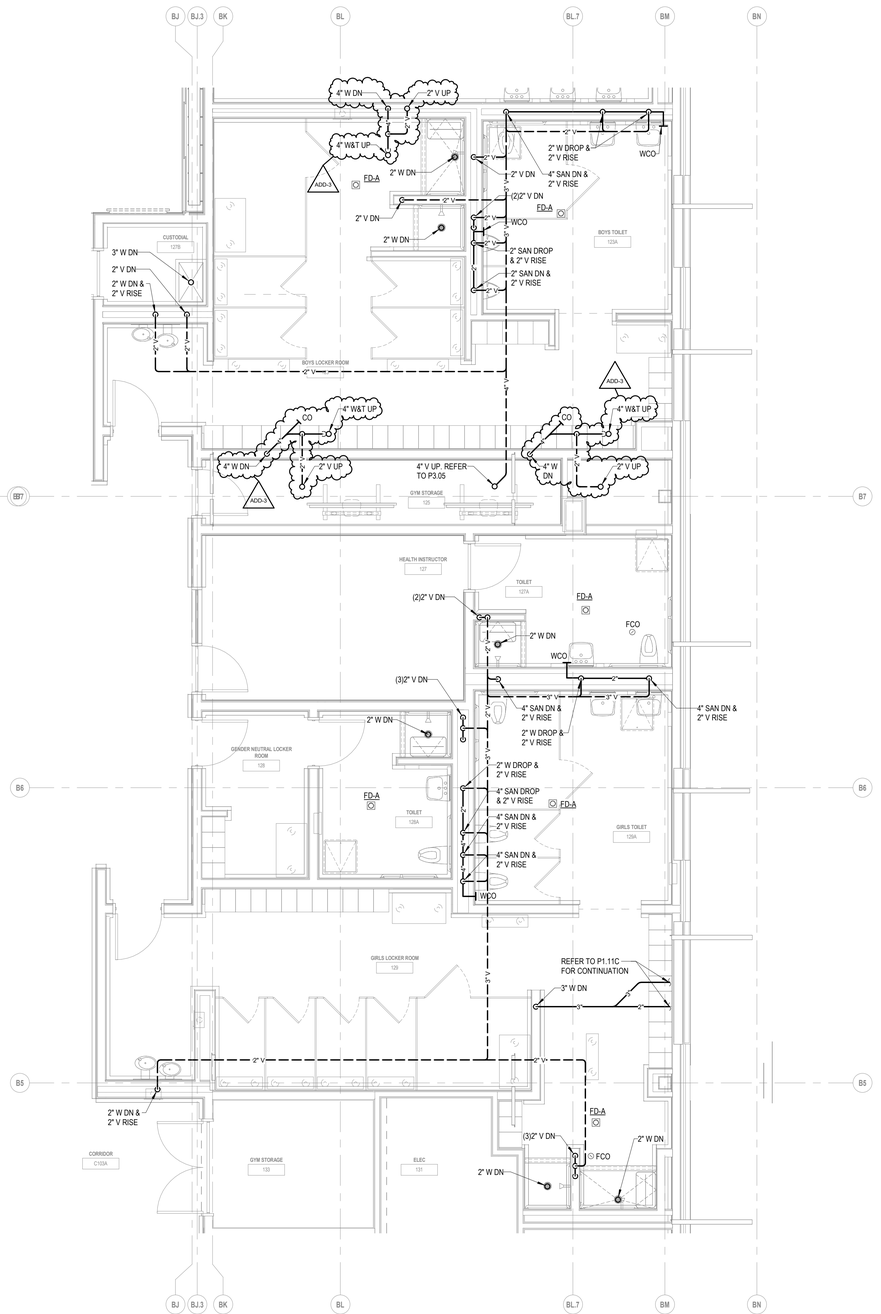
FIRE PROTECTION RISER DIAGRAM

DRAWN BY:	BSG
REVIEWED BY:	AMD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: FP5.01



1 ENLARGED UNDERGROUND LOCKER ROOM
Scale: 1/4" = 1'-0"



2 ENLARGED FIRST FLOOR LOCKER ROOM
Scale: 1/4" = 1'-0"

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KEYNOTE LEGEND:

ADD-3 **Addendum #3** **1/9/24**

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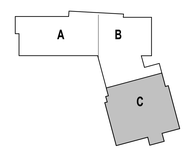
KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:
PLUMBING
ENLARGED
LOCKER ROOM
FLOOR PLANS

DRAWN BY:	EB
REVIEWED BY:	AD
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER:
P3.06

EXHAUST FAN SCHEDULE

ITEM	MFG'R. (5)	MODEL	DRIVE	SERVICE	INTERLOCK	CFM	SP IN. WC.	HP	FAN RPM	ELECTRICAL DATA V	PH	HZ	SONES	REMARKS
EF-1	GREENHECK	22 USF-200/300	BELT	KITCHEN HOOD EXH.	(7)	5907	2.0"	3.0	1253	208	3	60	·	
EF-2	GREENHECK	GB-120	BELT	DISHWASER ROOM	BMS	600	0.625"	1/4	1189	120	1	60	·	
EF-3	GREENHECK	G-090	DIRECT	GEN. KITCHEN EXH.	BMS	200	0.5"	1/4	1206	120	1	60	·	
EF-4	GREENHECK	G-090	DIRECT	CUSTODIAL	BMS	300	0.5"	1/4	1206	120	1	60	·	
EF-5	GREENHECK	SQ-70-VG	DIRECT	TRASH ROOM EXH.	BMS	200	0.25"	1/15	1439	120	1	60	3.7	
EF-6	FANTECH	DBF110	DIRECT	DRYER EXH. BOOSTER	PROOF SWITCH	167	·	80 WATTS	·	120	1	60	·	
EF-7	GREENHECK	SQ-70-VG	DIRECT	CHEM. STORAGE 418	BMS	150	0.25"	1/15	1439	120	1	60	3.7	
EF-8	GREENHECK	G-090-VG	DIRECT	KILN ROOM 317B	BMS	200	0.25"	1/6	1304	120	1	60	5.6	
EF-9	GREENHECK	SQ-70-VG	DIRECT	JAN. CLOSET 127B	BMS	100	0.25"	1/15	1439	120	1	60	3.7	
EF-10	GREENHECK	G-080-VG	DIRECT	JAN. CLOSET 325	BMS	100	0.25"	1/10	1201	115	1	60	5.3	
EF-11	FANTECH	DBF110	DIRECT	DRYER EXH. BOOSTER	PROOF SWITCH	167	·	80 WATTS	·	120	1	60	·	
EF-12	FANTECH	DBF110	DIRECT	DRYER EXH. BOOSTER	PROOF SWITCH	167	·	80 WATTS	·	120	1	60	·	
EF-13	GREENHECK	GB-140	BELT	CONCESSIONS STAND	TIME CLOCK (8)	800	0.35"	1/4	1004	120	1	60	5.1	
EF-14	GREENHECK	G-080-VG	DIRECT	JAN. CLOSET 230A	BMS	100	0.25"	1/10	1201	120	1	60	5.3	
EF-15	GREENHECK	SQ-100-VG	DIRECT	MECHANICAL 230	BMS	500	0.35"	1/4	1026	120	1	60	·	
EF-16	GREENHECK	SQ-90	DIRECT	DIVERSE LEAR. 202	INTERLOCK WITH HOOD CONTROLS	300	0.5"	1/10	1550	120	1	60	6.7	
EF-17	GREENHECK	SQ-90	DIRECT	DIVERSE LEAR. 204	INTERLOCK WITH HOOD CONTROLS	300	0.5"	1/10	1550	120	1	60	6.7	

(1) FAN TO BE FURNISHED WITH FACTORY MOUNTED AND WIRED DISCONNECT SWITCH, GREASE TRAP, VENTED CURB EXTENSION & HINGING KIT TO MEET NFPA96. FAN SHALL HAVE U.L. 762 LISTING.
(2) PROVIDE WITH ROOF CURB, BIRDSCREEN, MOTORIZED DAMPER & DISCONNECT SWITCH (FACTORY MOUNTED AND WIRED).
(3) PROVIDE WITH ROOF CURB, BIRDSCREEN, MOTORIZED DAMPER AND FACTORY MOUNTED AND WIRED SOLID STATE SPEED CONTROL MOUNTED AS A DISCONNECT SWITCH.
(4) PROVIDE WITH PITCH ROOF CURB, BIRDSCREEN, MOTORIZED DAMPER & DISCONNECT SWITCH (FACTORY MOUNTED AND WIRED).
(5) ACCEPTABLE ALT. MANUFACTURERS: PENN VENTILATOR CORP., COOK OR APPROVED EQUAL.
(6) FAN TO BE FURNISHED WITH GREASE TRAP, VENTED CURB EXTENSION & HINGING KIT TO MEET NFPA96. FAN SHALL HAVE U.L. 762 LISTING.
(7) FAN SHALL BE INTERLOCKED WITH KITCHEN HOOD CONTROL SYSTEM FURNISHED BY OTHERS.
(8) TIME CLOCK FURNISHED BY DIV 23 00 00, INSTALLED BY 26 00 00.

DUCTLESS SPLIT-TYPE AIR CONDITIONER SCHEDULE

ITEM	MFG'R	INDOOR UNIT MODEL	OUTDOOR UNIT MODEL	COOLING CAP. TOTAL MBH	HEATING CAP. TOTAL MBH	INDOOR FAN DATA MAX CFM	INDOOR ELEC. DATA VOLTS	ø	Hz	OUTDOOR COMP. DATA MOCP	MCA	OUTDOOR FAN DATA FLA	OUTDOOR ELEC. DATA VOLTS	ø	Hz	SEER	ROOM SERVED	REMARKS
DFC-1-1/CU-1-1	MITSUBISHI	PLA-A24EA7	PUY-A24NHA7	24.0	N/A	810	POWERED BY OUTDOOR			26	19	0.5 + 0.5	208	1	60	24.2	DIVERSE LEARNERS 101	(1)(2)(3)
DFC-1-2/CU-1-2	MITSUBISHI	PLA-A24EA7	PUY-A24NHA7	24.0	N/A	810	POWERED BY OUTDOOR			26	19	0.5 + 0.5	208	1	60	24.2	DIVERSE LEARNERS 103	(1)(2)(3)
DFC-1-3/CU-1-3	MITSUBISHI	PLA-A24EA7	PUY-A24NHA7	24.0	N/A	810	POWERED BY OUTDOOR			26	19	0.5 + 0.5	208	1	60	24.2	DIVERSE LEARNERS 105	(1)(2)(3)
DFC-1-4/CU-1-4	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	IDF 106	(1)(2)(3)
DFC-1-5/CU-1-5	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 107	(1)(2)(3)
DFC-1-6/CU-1-6	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	KITCH OFF. 124B	(1)(2)(3)
DFC-1-7/CU-1-7	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	KITCH OFF. 124D	(1)(2)(3)
DFC-1-8/CU-1-8	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	HEALTH INST. 127	(1)(2)(3)
DFC-1-9/CU-1-9	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 131	(1)(2)(3)
DFC-1-10/CU-1-10	MITSUBISHI	PKA-A36KAB	PUY-A36NKA7	36.0	N/A	920	POWERED BY OUTDOOR			31	25	0.5 + 0.5	208	1	60	19.4	IDF 126C	(1)(2)(3)
DFC-1-11/CU-1-11	MITSUBISHI	PKA-A12LA1	PUY-A12NKA7	12.0	N/A	385	POWERED BY OUTDOOR			28	11	0.5	208	1	60	21.3	SOUND CLOSET 126B	(1)(2)(3)
DFC-2-1/CU-2-1	MITSUBISHI	PLA-A24EA7	PUY-A24NHA7	24.0	N/A	810	POWERED BY OUTDOOR			26	19	0.5 + 0.5	208	1	60	24.2	DIVERSE LEARNERS 202	(1)(2)(3)
DFC-2-2/CU-2-2	MITSUBISHI	PLA-A24EA7	PUY-A24NHA7	24.0	N/A	810	POWERED BY OUTDOOR			26	19	0.5 + 0.5	208	1	60	24.2	DIVERSE LEARNERS 204	(1)(2)(3)
DFC-2-3/CU-2-3	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	IDF 206	(1)(2)(3)
DFC-2-4/CU-2-4	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 207	(1)(2)(3)
DFC-2-5/CU-2-5	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	ATH. DIR. 229	(1)(2)(3)
DFC-2-6/CU-2-6	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	TRAINER ROOM 230B	(1)(2)(3)
DFC-2-7/CU-2-7	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 231	(1)(2)(3)
DFC-2-8/CU-2-8	MITSUBISHI	PLA-A24EA7	PUY-A24NHA7	24.0	N/A	810	POWERED BY OUTDOOR			26	19	0.5 + 0.5	208	1	60	24.2	EM. EL. ROOM 231A	(1)(2)(3)
DFC-2-9/CU-2-9	MITSUBISHI	PLA-A42EA7	PUY-A42NKA7	42.0	N/A	880	POWERED BY OUTDOOR			31	25	0.4	208	1	60	21.0	NETWORK ROOM 232A	(1)(2)(3)
DFC-2-9A/CU-2-9A	MITSUBISHI	PLA-A42EA7	PUY-A42NHA7	42.0	N/A	880	POWERED BY OUTDOOR			31	25	0.4	208	1	60	21.0	NETWORK ROOM 232A	(1)(2)(3)
DFC-2-10/CU-2-10	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	IT OFFICE 232	(1)(2)(3)
DFC-2-11/CU-2-11	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	CUST. OFFICE 233B	(1)(2)(3)
DFC-2-12/CU-2-12	MITSUBISHI	PEAD-A24AA7	PUZ-HA24NHA1	24.0	28.0	570	POWERED BY OUTDOOR			27	17	0.5 + 0.5	208	1	60	16.6	OT/PT 228B	(1)(2)(3)
DFC-2-13/CU-2-13	MITSUBISHI	PEAD-A36AA7	PUZ-HA36NKA	36.0	40.0	1024	POWERED BY OUTDOOR			40.0	24	0.5 + 0.5	208	1	60	17.1	FITNESS CENTER 228	(1)(2)(3)
DFC-2-14/CU-2-14	MITSUBISHI	PKA-A12LA1	PUY-A12NKA7	12.0	N/A	385	POWERED BY OUTDOOR			28	11	0.5	208	1	60	21.3	SOUND CLOSET 227A	(1)(2)(3)
DFC-3-1/CU-3-1	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	IDF 306	(1)(2)(3)
DFC-3-2/CU-3-2	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 307	(1)(2)(3)
DFC-3-3/CU-3-3	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	IDF 321B	(1)(2)(3)
DFC-3-4/CU-3-4	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 321E	(1)(2)(3)
DFC-3-5/CU-3-5	MITSUBISHI	PLA-A12EA7	PUY-A12NKA7	12.0	N/A	530	POWERED BY OUTDOOR			28	15	0.5 + 0.5	208	1	60	27	CONTROL ROOM 321D	(1)(2)(3)
DFC-4-1/CU-4-1	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	IDF 406	(1)(2)(3)
DFC-4-2/CU-4-2	MITSUBISHI	PLA-A36EA7	PUY-A36NKA7	36.0	N/A	1200	POWERED BY OUTDOOR			30	25	0.5 + 0.5	208	1	60	21.8	ELEC. 409	(1)(2)(3)

(1) UNITS TO BE FURNISHED WITH CONDENSATE DRAIN PUMP.
(2) UNITS TO BE FURNISHED WITH LOW AMBIENT OPERATION CAPABILITY.
(3) ACCEPTABLE ALT. MANUFACTURERS: DAIKIN, SANYO OR APPROVED EQUAL.

SOUND ATTENUATOR SCHEDULE

ITEM	MFG'R (1)	RTU	MODEL	CFM	TOTAL LENGTH IN.	INLET DIMENSIONS W X H	OUTLET DIMENSIONS W X H	VELOCITY FPM	SILENCER P.D. IN. W.G.	HORIZ. CENTERLINE LENGTH	VERT. CENTERLINE LENGTH	SHAPE	DYNAMIC INSERTION LOSS Hz 63	125	250	500	1K	2K	4K	8K	REMARKS
SA-1	COMMERCIAL ACOUSTICS	RTU-1 SUPPLY	18EV60	9980	60	82x36	40x16	487	0.03	3'-0"	2'-0"	ELBOW	4	8	16	25	37	35	30	24	
SA-2	COMMERCIAL ACOUSTICS	RTU-1 RETURN	16EV36	-9980	36	80x16	80x16	-1123	0.19	1'-0"	2'-0"	ELBOW	3	8	12	13	17	18	18	16	
SA-3	COMMERCIAL ACOUSTICS	RTU-2 SUPPLY	18EV60	12390	60	82X36	40x16	604	0.13	3'-0"	2'-0"	ELBOW	8	18	26	28	33	31	27	21	
SA-4	COMMERCIAL ACOUSTICS	RTU-2 RETURN	16EV60	-12390	60	80x16	80x20	-1394	0.15	3'-0"	2'-0"	ELBOW	6	11	19	22	28	27	21	17	
SA-5	COMMERCIAL ACOUSTICS	RTU-3 SUPPLY	SMP	7260	60	36X14	36X14	2074	0.28	5'-0"	0'-0"	STRAIGHT	5	10	18	28	41	38	27	14	
SA-6	COMMERCIAL ACOUSTICS	RTU-3 RETURN	16EV60	-7260	60	56X16	56X16	-1167	0.13	3'-0"	2'-0"	ELBOW	6	11	18	22	28	27	21	17	
SA-7	COMMERCIAL ACOUSTICS	RTU-4 SUPPLY	16EV60	6500	60	56X16	56X16	1045	0.14	3'-0"	2'-0"	ELBOW	5	9	16	23	29	28	24	19	
SA-8	COMMERCIAL ACOUSTICS	RTU-4 RETURN	14EV60	-6500	60	52x28	52x28	-643	0.14	3'-0"	2'-0"	ELBOW	7	10	17	24	31	30	26	20	
SA-9	COMMERCIAL ACOUSTICS	RTU-5 SUPPLY	HPA	2100	60	24x18	24x18	700	0.16	5'-0"	0'-0"	STRAIGHT	9	17	25	39	46	45	40	25	
SA-10	COMMERCIAL ACOUSTICS	RTU-5 RETURN	SP-LF	-2100	60	36X12	36x12	-700	0.10	5'-0"	0'-0"	STRAIGHT	11	14	27	30	29	17	15	12	
SA-11	COMMERCIAL ACOUSTICS	RTU-6 SUPPLY	14EV60	3250	60	36x14	36x14	929	0.14	3'-0"	2'-0"	ELBOW	6	10	17	24	31	30	26	20	
SA-12	COMMERCIAL ACOUSTICS	RTU-6 RETURN	14EV60	-3250	60	36x14	36X14	-929	0.05	3'-0"	2'-0"	ELBOW	3	6	11	17	28	26	22	18	
SA-13	COMMERCIAL ACOUSTICS	RTU-7 SUPPLY	21EV60	9225	60	43X43	43X43	718	0.05	3'-0"	2'-0"	ELBOW	5	8	15	21	28	26	22	18	
SA-14	COMMERCIAL ACOUSTICS	RTU-7 RETURN	12EV36	-9225	36	54X24	54X24	-1025	0.10	1'-0"	2'-0"	ELBOW	3	6	13	13	13	18	24	21	
SA-15	COMMERCIAL ACOUSTICS	RTU-8 SUPPLY	SP-LF	5500	60	42x20	42x20	943	0.19	5'-0"	0'-0"	STRAIGHT	9	12	24	28	27	16	12	11	
SA-16	COMMERCIAL ACOUSTICS	RTU-8 RETURN	20EV60	-5500	60	42x20	42x20	-943	0.14	3'-0"	2'-0"	ELBOW	7	10	20	28	40	38	30	24	
SA-17	COMMERCIAL ACOUSTICS	·	HP-EE	1500	24	16X12	16X12	1125	0.18	2'-0"	0'-0"	STRAIGHT	2	6	12	18	26	32	23	14	
SA-18	COMMERCIAL ACOUSTICS	·	SP-LF	-1500	24	24X12	24X12	-750	0.09	2'-0"	0'-0"	STRAIGHT	5	7	14	17	15	12	9	8	

ADD-3

(1) ACCEPTABLE ALT. MANUFACTURERS: VIBRO ACOUSTICS, KINETICS NOISE CONTROL OR APPROVED EQUAL.

ROOF INTAKE & RELIEF VENT SCHEDULE

ITEM	MFG'R	MODEL	CFM MAX.	THROAT AREA SQ. FT.	SP MAX	CURB HEIGHT	REMARKS
GV-1	GREENHECK	GRSR-12	450	0.82	0.031"	16"	FURNISH WITH WELDED ALUMINUM CURB AND MOTORIZED DAMPER

DIFFUSER, REGISTER & GRILLE SCHEDULE

ITEM	MFG'R (1)	MODEL	SIZE	NECK	CFM MAX.	THROW	BORDER TYPE	REMARKS
S-1	NAILOR	6500	–	6x6	125	SEE PLANS	S, L	
S-2	NAILOR	6500	–	9x9	280	SEE PLANS	S, L	
S-3	NAILOR	6500	–	12x12	500	SEE PLANS	S, L	
S-4	NAILOR	FLV	–	–	92 CF//LF	25'	·	1.5" SLOT WITH 1 SLOT MIN. L=60" W/ FIELD FABRICATED PLENUM
S-5	NAILOR	FLH	–	–	335	SEE PLANS	–	2.5" SLOT WIDTH, 2 SLOT 10" INLET 5FT. WITH NAILOR PLENUM
S-6	NAILOR	FLV	–	–	360	SEE PLANS	–	1" SLOT WIDTH, 1 SLOT 12" INLET 5FT. WITH NAILOR PLENUM
R-1	NAILOR	51EC	–	6x6	125	N/A	S, L	
R-2	NAILOR	51EC	–	8x8	250	N/A	S, L	
R-3	NAILOR	51EC	–	10x10	400	N/A	S, L	
R-4	NAILOR	51EC	–	12x12	600	N/A	S, L	
R-5	NAILOR	51EC	–	14x14	850	N/A	S, L	
R-6	NAILOR	FLR15	–	–	220 CFM/LF	N/A	–	1.5" SLOT WIDTH,2 SLOT WITH FIELD FABRICATED PLENUM
R-7	NAILOR	FLR15	–	–	120 CFM/LF	N/A	–	1.5" SLOT WIDTH,2 SLOT WITH CONTINUOUS PRESSURED PLENUM
R-8	NAILOR	5010R	–	–	154 CFM/LF	N/A	–	1" SLOT WIDTH,4 SLOT WITH FIELD FABRICATED PLENUM
E-1	NAILOR	51EC	–	6x6	125	N/A	S, L	
E-2	NAILOR	51EC	–	8x8	250	N/A	S, L	
E-3	NAILOR	51EC	–	10x10	400	N/A	S, L	
T-1	NAILOR	51EC	–	8x8	160	N/A	S, L	

(1) ACCEPTABLE ALT. MANUFACTURERS: METAL-AIRE, PRICE, OR APPROVED EQUAL.

WALL CAP SCHEDULE

ITEM	MFG'R (1)	MODEL	SIZE	DIMENSION	REMARKS
WC-1	BROAN	885BL	4"	6.5"x6.5"	
WC-2	BROAN	885BL	4"	6.5"x6.5"	WITHOUT SCREEN
WC-3	BROAN	WC63B	3-1/4X14	16.5"x6.0"	WITH BACKDRAFT DAMPER AND BIRD SCREEN
WC-4	BROAN	843BL	6"	9.0"x9.0"	WITH BACKDRAFT DAMPER AND BIRD SCREEN
WC-5	BROAN	610FA	10"	14-3/4"x10"	WITH BACKDRAFT DAMPER AND BIRD SCREEN

(1) OR APPROVED EQUAL.

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KEYNOTE LEGEND:

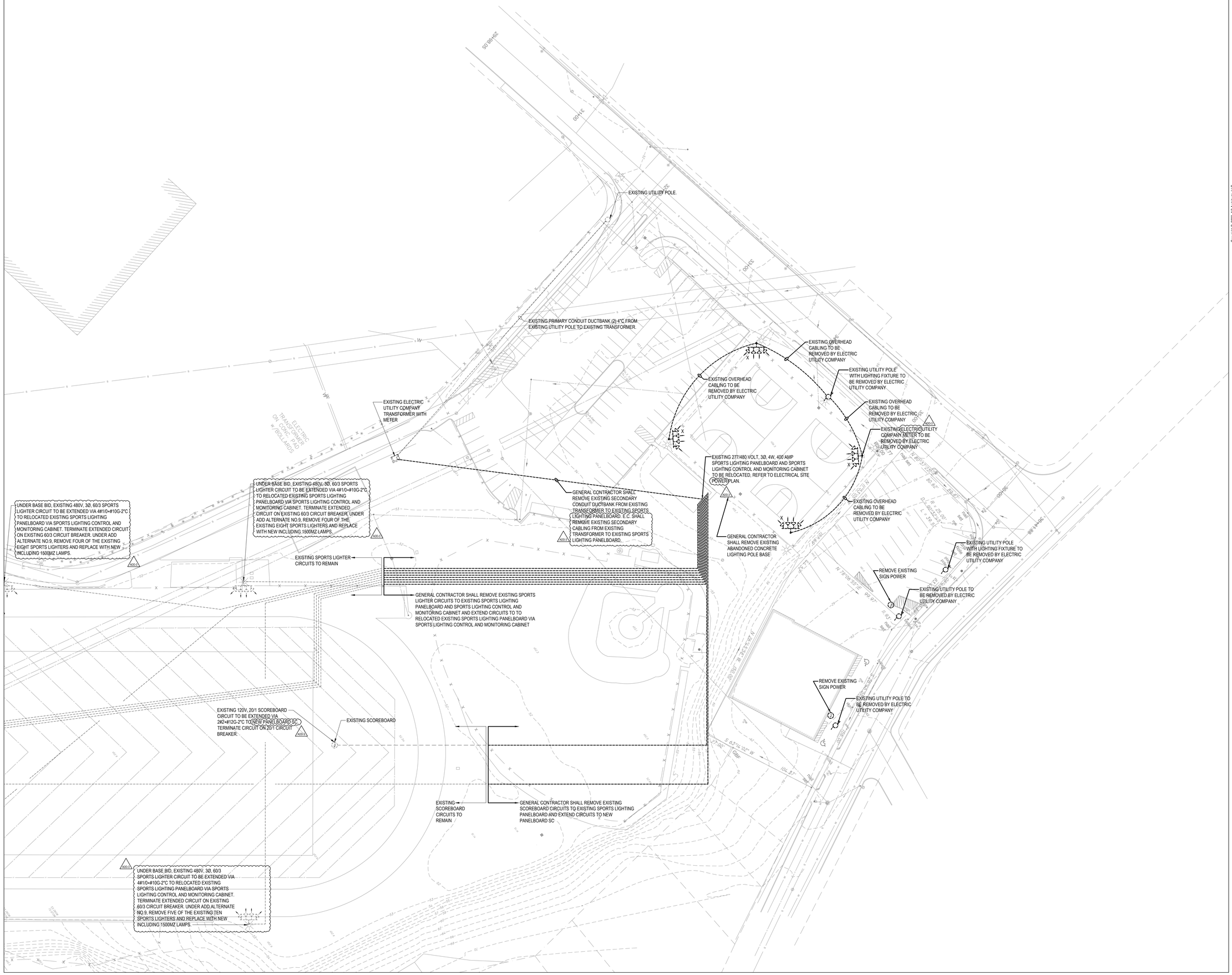
ADD-3 ADDENDUM #3 01.09.2024
100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:
MECHANICAL SCHEDULES

DRAWN BY: AP
REVIEWED BY: DAH
SCALE: NTS
JOB NO.: 2202.00
DATE: OCTOBER 13, 2023
DRAWING NUMBER: M5.02



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KEYNOTE LEGEND:

ADD-3 **ADDENDUM 3** **1/9/2024**

100% CONSTRUCTION DOCUMENTS

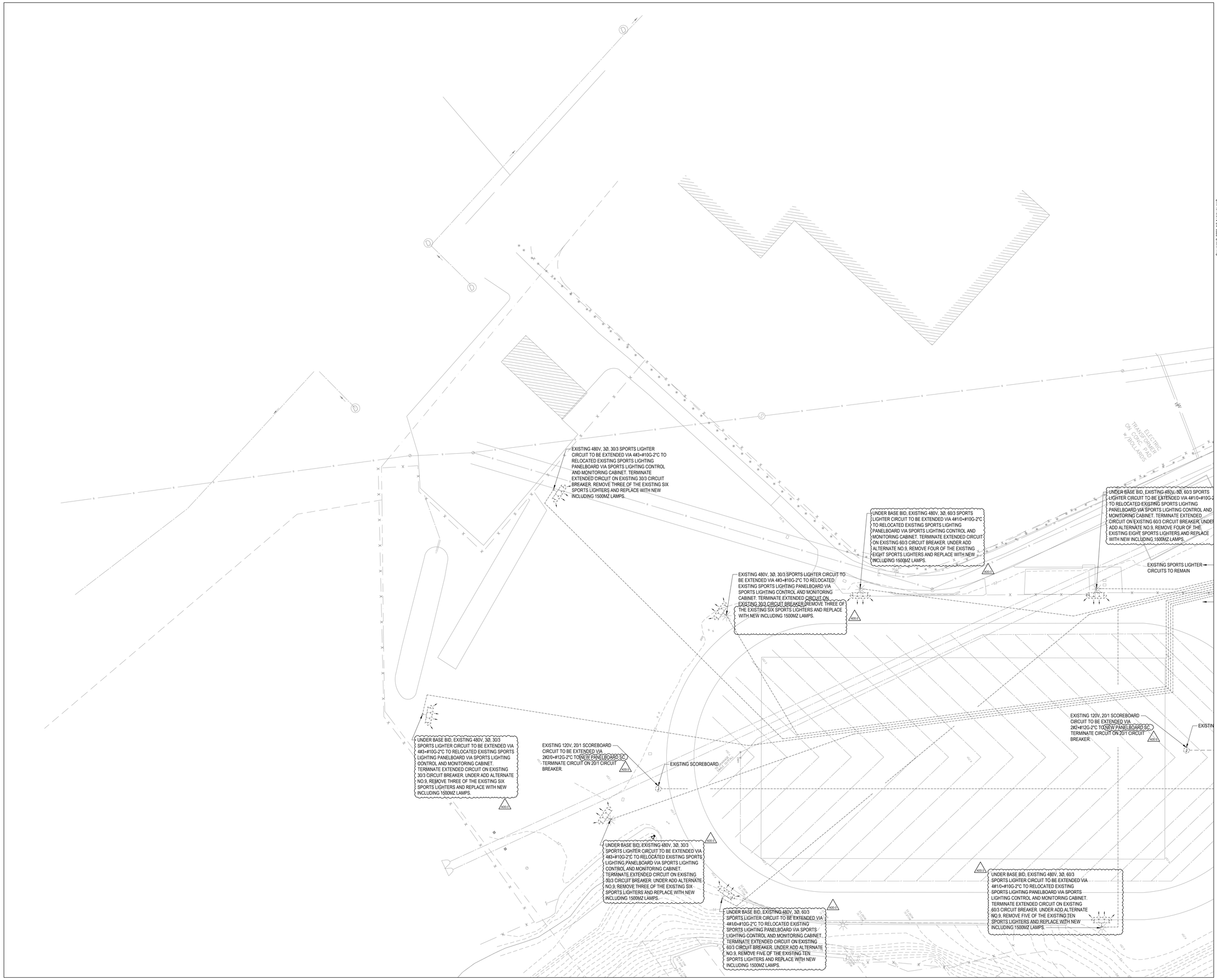
KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:
ELECTRICAL SITE DEMOLITION PLAN

DRAWN BY:	RCB
REVIEWED BY:	RCB
SCALE:	1" = 30'
JOB NO.:	2202.00
DATE:	OCTOBER 13, 2023

DRAWING NUMBER:
EDS.01



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EXCELLENCE - EQUITY - EMPOWERMENT

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KEYNOTE LEGEND:

ADD-3	ADDENDUM 3	1/9/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:

ELECTRICAL SITE DEMOLITION PLAN

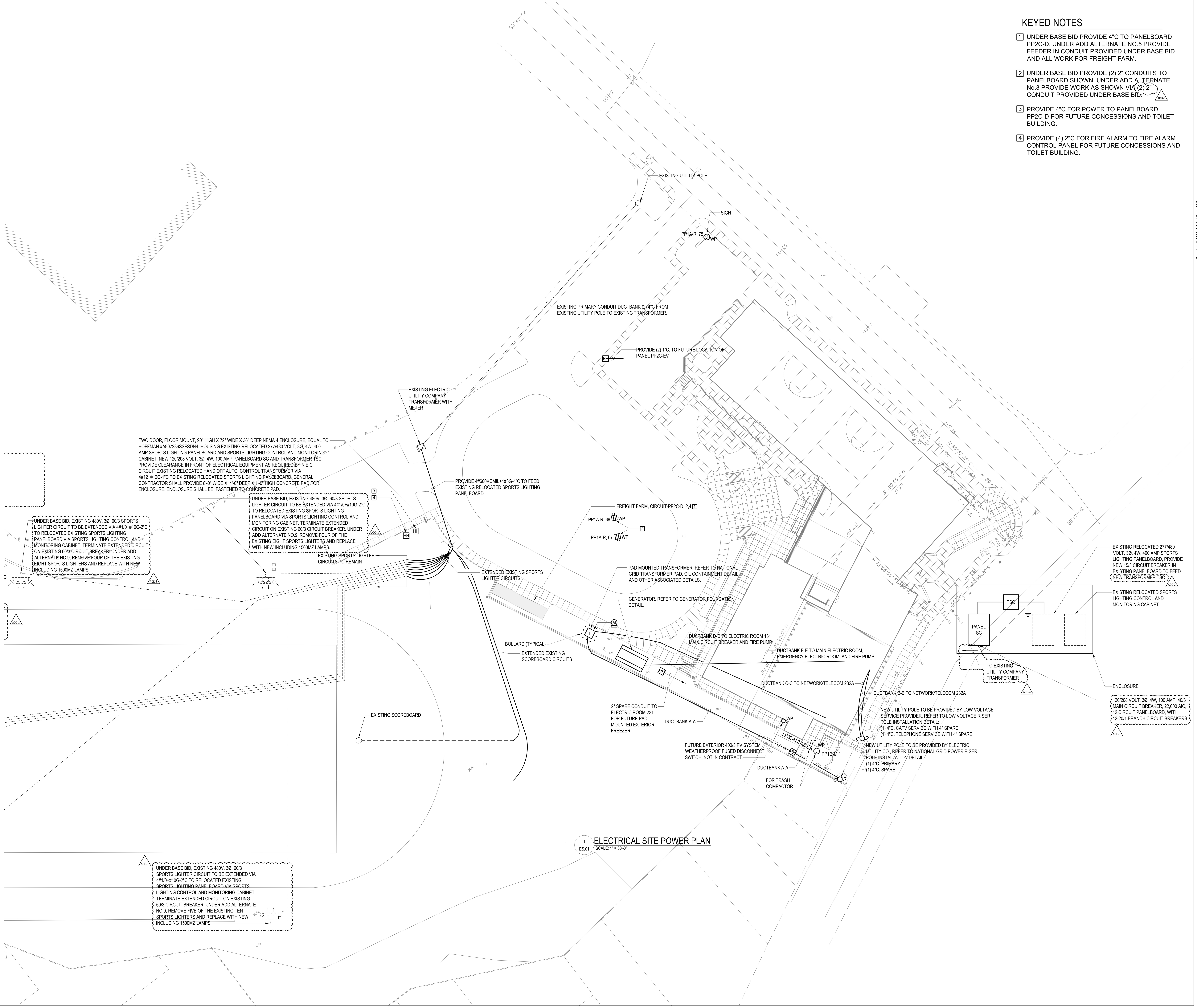
DRAWN BY:	RCB
REVIEWED BY:	RCB
SCALE:	1" = 30'
JOB NO.:	2202.00
DATE:	OCTOBER 13, 2023

DRAWING NUMBER:

EDS.02

KEYED NOTES

1. UNDER BASE BID PROVIDE 4"C TO PANELBOARD PP2C-D, UNDER ADD ALTERNATE NO.5 PROVIDE FEEDER IN CONDUIT PROVIDED UNDER BASE BID AND ALL WORK FOR FREIGHT FARM.
2. UNDER BASE BID PROVIDE (2) 2" CONDUITS TO PANELBOARD SHOWN. UNDER ADD ALTERNATE No.3 PROVIDE WORK AS SHOWN VIA (2) 2" CONDUIT PROVIDED UNDER BASE BID. ADD-3
3. PROVIDE 4"C FOR POWER TO PANELBOARD PP2C-D FOR FUTURE CONCESSIONS AND TOILET BUILDING.
4. PROVIDE (4) 2"C FOR FIRE ALARM TO FIRE ALARM CONTROL PANEL FOR FUTURE CONCESSIONS AND TOILET BUILDING.



1
ES.01
ELECTRICAL SITE POWER PLAN
SCALE: 1" = 30'-0"

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KEYNOTE LEGEND:

ADD-3	ADDENDUM 3	1/9/2024

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KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:
ELECTRICAL SITE POWER PLAN

DRAWN BY:	RBC
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.00
DATE:	OCTOBER 13, 2023

DRAWING NUMBER:
ES.01

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KEYNOTE LEGEND:

ADD-3	ADDENDUM 3	1/9/2024

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KEY PLAN NORTH ARROW

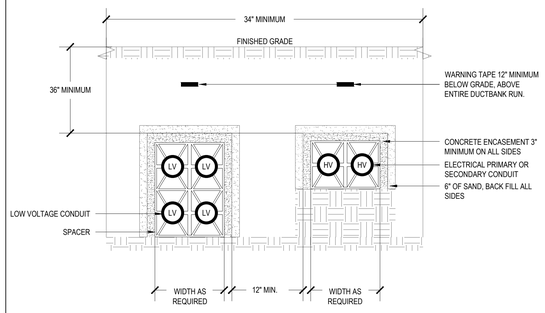
KEYPLAN

DRAWING NAME:

ELECTRICAL SITE POWER PLAN

DRAWN BY:	RBC
REVIEWED BY:	RCB
SCALE:	1" = 30'-0"
JOB NO.:	2202.00
DATE:	OCTOBER 13, 2023

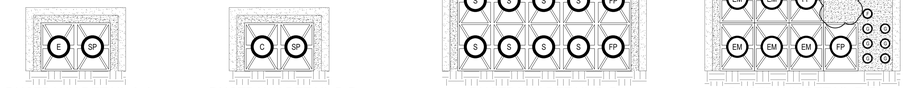
DRAWING NUMBER: ES.02



DUCTBANK CONSTRUCTION NOTES

1. ALL CONDUITS ARE PVC, SIZE PER DUCTBANK DETAILS.
2. ALL DIMENSIONS ARE MINIMUM.
3. ALL DESCRIPTIONS ARE TYPICAL FOR THIS DIAGRAM.
4. ALL BASE AND INTERMEDIATE SPACERS TO BE INTERLOCKING TYPE.
5. ALL SPACERS TO BE CONSTRUCTED OF HIGH IMPACT PVC.
6. ALL SPACERS TO BE INSTALLED AT 5'-0" CENTERS ALONG THE ENTIRE RUN.
7. CONDUIT DUCTBANK CROSS SECTION IS SUBJECT TO APPROVAL BY UTILITY COMPANY, PRIOR TO CONSTRUCTION.
8. DUCTBANK TRENCH MUST BE INSPECTED, APPROVED AND COORDINATED WITH THE UTILITY COMPANY REQUIREMENTS, PRIOR TO INSTALLATION AND PRIOR TO BACKFILL.
9. ALL TRENCHING, CONCRETE WORK, BACKFILLING, GRADING, AND RESURFACING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1	TYPICAL DUCTBANK CONSTRUCTION DETAIL	SCALE
		NOT TO SCALE



DUCTBANK DETAIL A-A
NOT TO SCALE

DUCTBANK DETAIL B-B
NOT TO SCALE

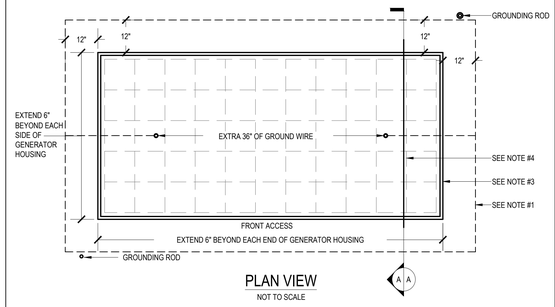
DUCTBANK DETAIL D-D
NOT TO SCALE

DUCTBANK DETAIL E-E
NOT TO SCALE

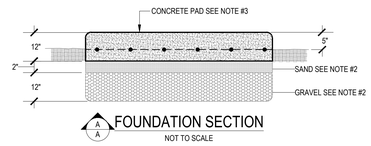
- C — 4" CONDUIT FOR CATV SERVICE
- E — 5" CONDUIT FOR PRIMARY ELECTRICAL SERVICE
- EM — 4" CONDUIT FOR EMERGENCY GENERATOR TO ATS FEEDER
- FA — 4" CONDUIT FOR FIRE ALARM SERVICE
- FP — 4" CONDUIT FOR FIRE PUMP
- ADD-3 — 1" CONDUIT FOR FIRE PUMP ATS CONTROL CIRCUIT.
- CONDUIT FOR REMOTE ANNUNCIATOR WIRING, ATS CONTROL CIRCUITS, BLOCK HEATER AND BATTERY CHARGER CIRCUITS. SIZE AS REQUIRED.
- S — 4" CONDUIT FOR SECONDARY ELECTRICAL SERVICE
- SP — SPARE 4" CONDUIT
- T — 4" CONDUIT FOR TELEPHONE SERVICE

DUCTBANK LEGEND NOTE
1. REFER TO TYPICAL DUCTBANK CONSTRUCTION DETAIL FOR ADDITIONAL INFORMATION

2	DUCTBANK LEGEND DETAIL	SCALE
		NOT TO SCALE



PLAN VIEW
NOT TO SCALE

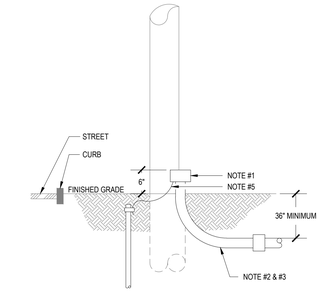


FOUNDATION SECTION
NOT TO SCALE

GENERATOR FOUNDATION NOTES

1. GROUND GRID - INSTALL #1/0 7 STRAND BARE COPPER WIRE LOOP 1'-0" BELOW GROUND. BOND TO ALL EXPOSED METALLIC CONDUIT AND LEAVE 3'-0" OF WIRE ABOVE PAD FOR GROUNDING GENERATOR AT TWO (2) OPPOSITE POINTS IN THE CABLE CONDUIT OPENINGS. INSTALL TWO (2) 8'-0" GALVANIZED STEEL (¾") GROUND RODS AND TWO (2) APPROVED CONNECTORS BELOW GRADE EXPOSED.
2. GRAVEL AND SAND - SHALL BE PLACED AS SHOWN IN SECTION "AA". THE GRAVEL BEING COMPACTED AND THE SAND BEING THOROUGHLY WETTED JUST BEFORE PLACING THE CONCRETE.
3. CONCRETE SLAB - INSTALL CONCRETE IN ACCORDANCE WITH MIX #4-STD 0211-UNLESS OTHERWISE SPECIFIED. ALL EXPOSED EDGES TO HAVE A ¾" CHAMFER.
4. REINFORCING - SHALL BE #4-GRADE 60 BARS AND SHALL CONFORM TO ASTM STD. A-615 OF LATEST DATE. REINFORCING RODS SHALL BE LOCATED IN CENTER OF THE SLAB WITH A MIN. OF 2" CLEARANCE FROM FACE OF CONCRETE.
5. CONFIRM FOUNDATION REQUIREMENTS WITH GENERATOR MANUFACTURER PRIOR TO INSTALLATION.
6. ALL TRENCHING, STEEL REINFORCING, CONCRETE WORK, BACKFILLING, GRADING, AND RESURFACING SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

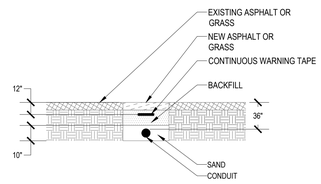
3	GENERATOR FOUNDATION DETAIL	SCALE
		NOT TO SCALE



RISER POLE NOTES

1. TELEPHONE, CATV, FIRE ALARM SERVICE AND SPARE CONDUIT 6" ABOVE FINISHED GRADE.
2. GALVANIZED STEEL CONDUIT AND BEND ARE TO USED. THE BEND SHALL BE CORROSION RESISTANT.
3. GALVANIZED STEEL CONDUIT, GALVANIZED STEEL SWEEP, ATTACHMENT CLAMPS AND GROUNDING CLAMP. THE ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH SERVICE PROVIDER PRIOR TO INSTALLATION.
4. THE CONDUIT BURIAL DEPTH SHALL BE 36" MINIMUM.
5. PROVIDE GROUNDING PER SERVICE PROVIDER REQUIREMENTS.
6. ALL TRENCHING, CONCRETE WORK, BACKFILLING, GRADING, AND RESURFACING, SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

4	LOW VOLTAGE RISER POLE INSTALLATION DETAIL	SCALE
		NOT TO SCALE



TRENCH DETAIL NOTES
1. ALL TRENCHING, BACKFILLING, AND RESURFACING OF GRADES SHALL BE BY GENERAL CONTRACTOR.

5	TRENCH DETAIL	SCALE
		NOT TO SCALE

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ADD-3 ADDENDUM 3 1/9/2024

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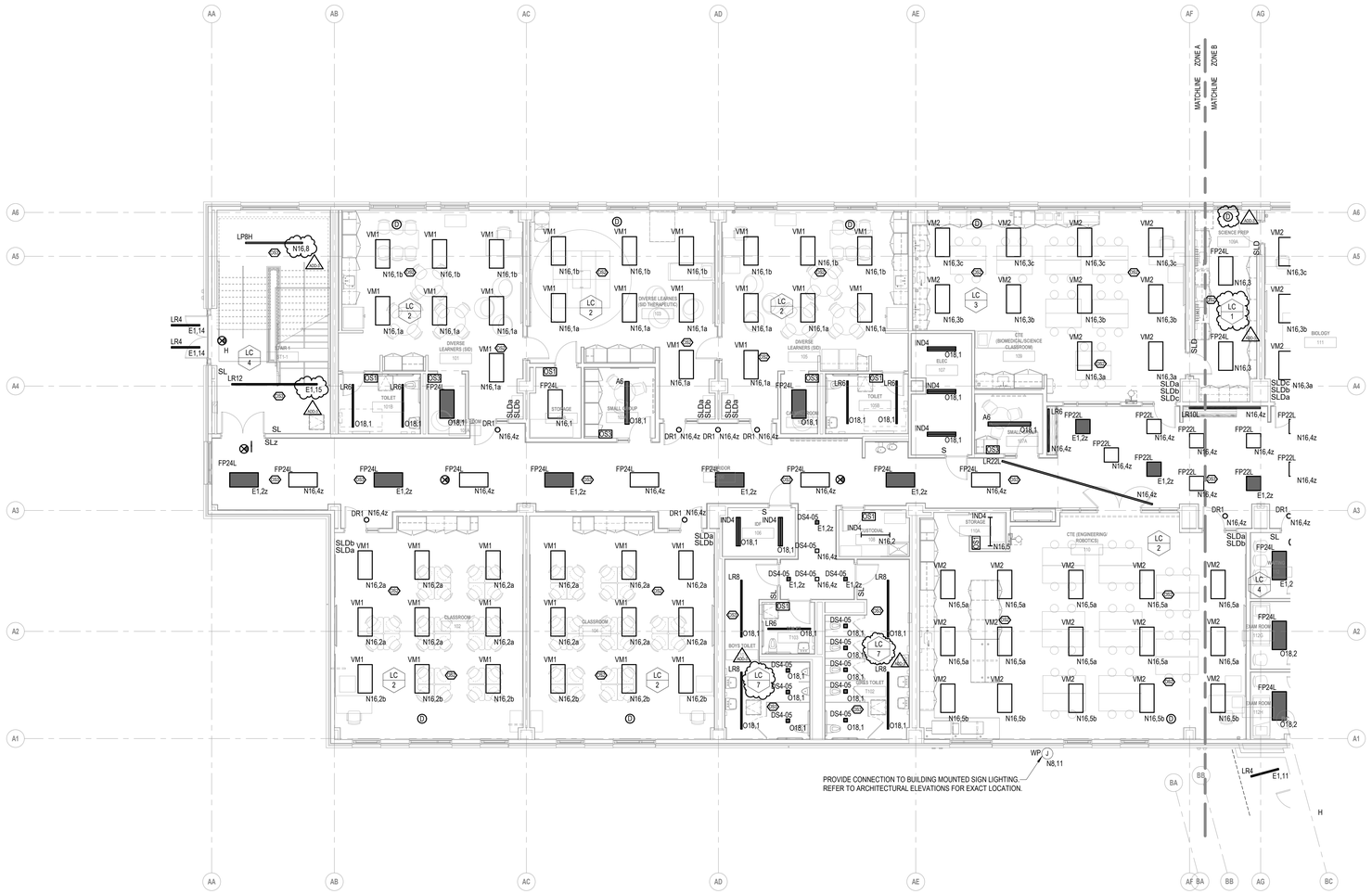
KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:
ELECTRICAL
SITE DETAILS

DRAWN BY: RBC
REVIEWED BY: RCB
SCALE: NONE
JOB NO.: 2202.00
DATE: OCTOBER 13, 2023
DRAWING NUMBER: ES.05



1 FIRST FLOOR LIGHTING PLAN - ZONE A
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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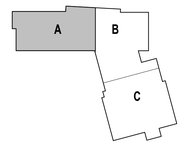
KEYNOTE LEGEND:

ADD-3 ADDENDUM 3 1/9/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

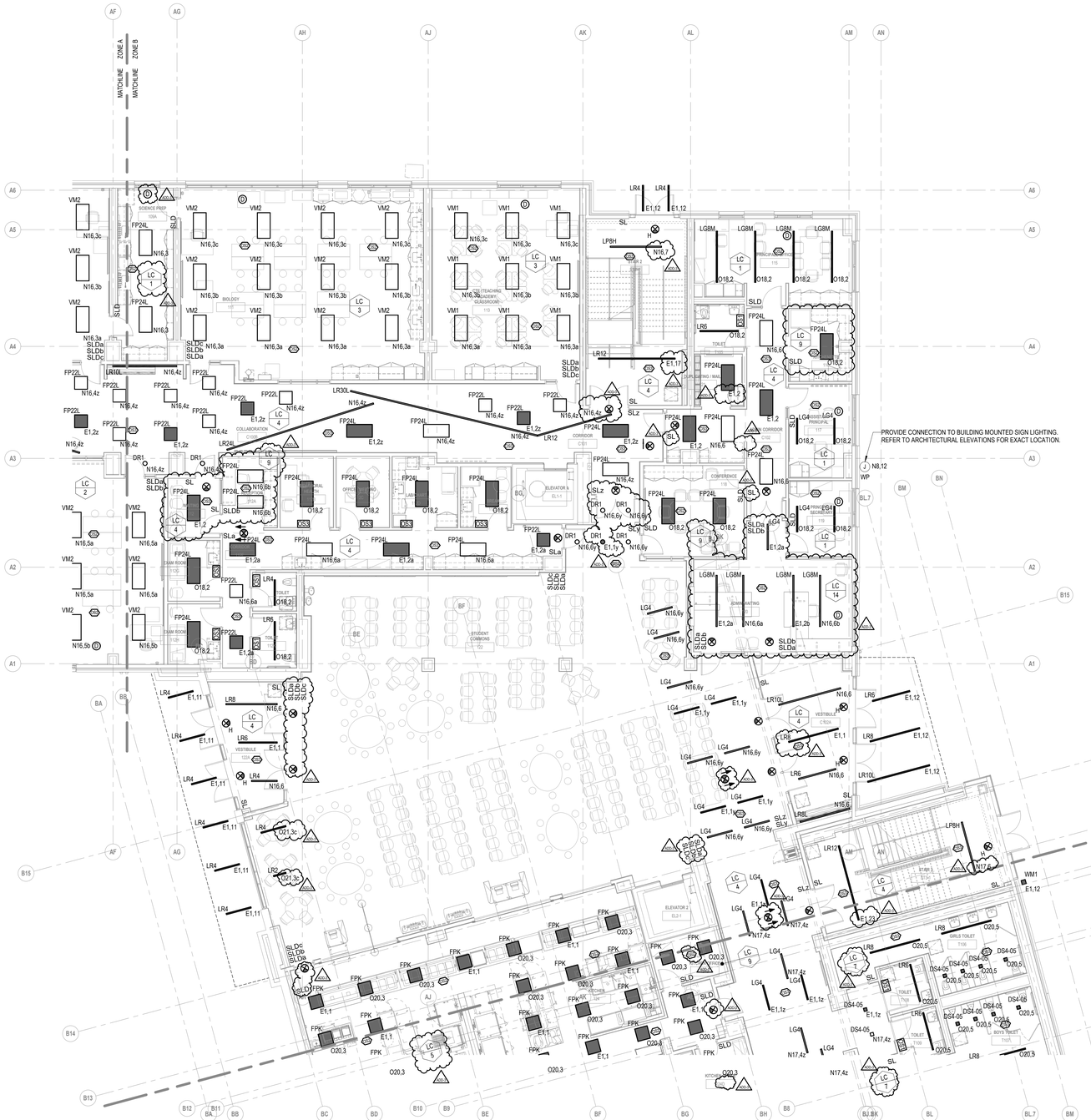
KEYPLAN



DRAWING NAME:

ELECTRICAL FIRST FLOOR LIGHTING PLAN - ZONE A

DRAWN BY:	RBC/JAJ
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	E1.11A



1 FIRST FLOOR LIGHTING PLAN - ZONE B
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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ADD-3	ADDENDUM 3	1/9/2024

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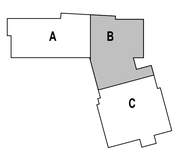
KEY PLAN NORTH ARROW

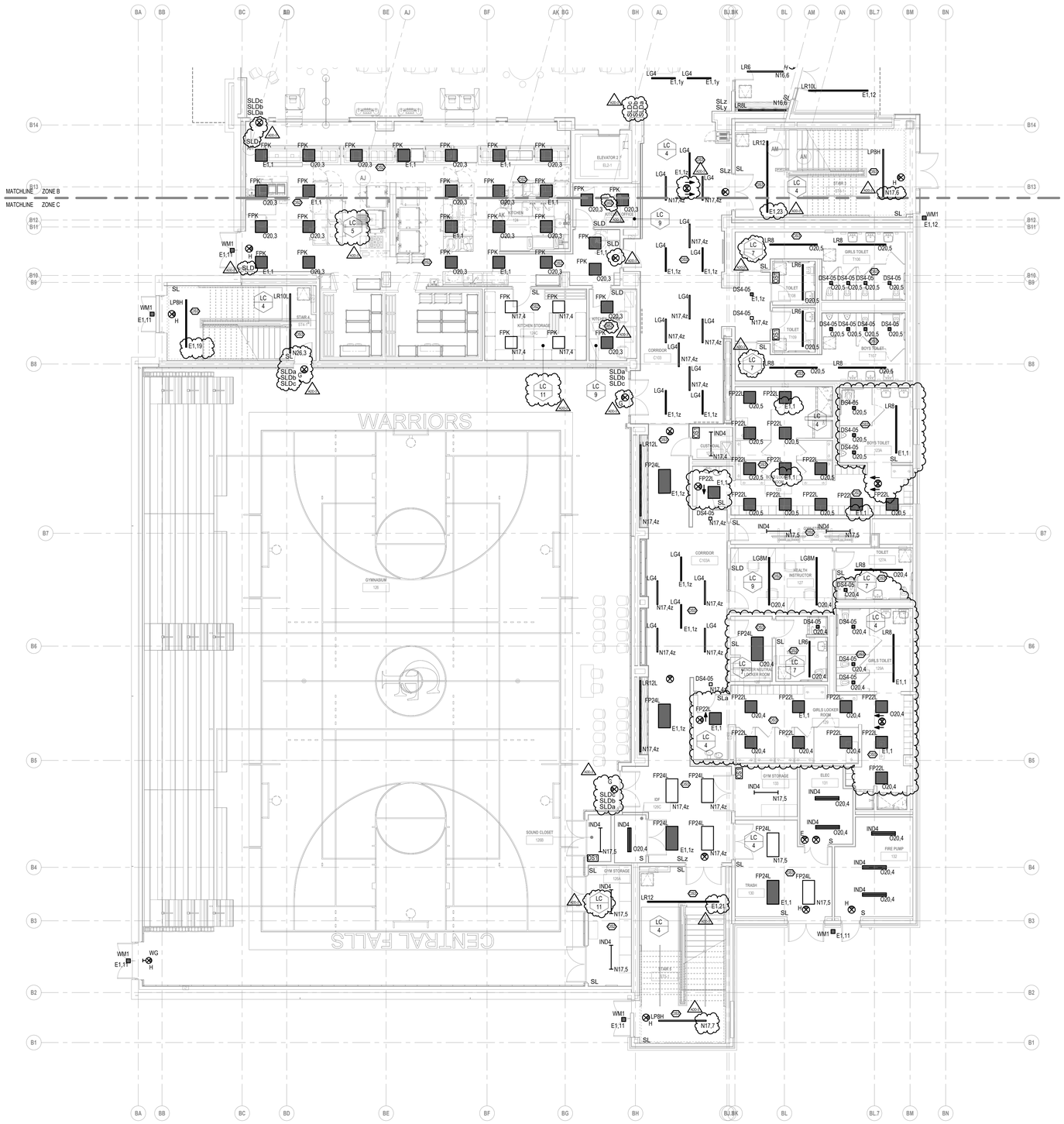
KEYPLAN



DRAWING NAME:

ELECTRICAL FIRST FLOOR LIGHTING PLAN - ZONE B

DRAWN BY:	RBC/JAJ
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	E1.11B



1 FIRST FLOOR LIGHTING PLAN - ZONE C
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP3A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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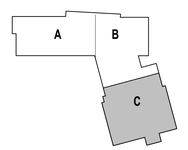
KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

ELECTRICAL FIRST FLOOR LIGHTING PLAN - ZONE C

DRAWN BY:	RBC/JAJ
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: E1.11C

1 SECOND FLOOR LIGHTING PLAN - ZONE A
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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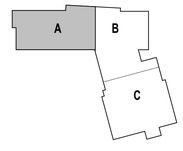
KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

ELECTRICAL SECOND FLOOR LIGHTING PLAN - ZONE A

DRAWN BY: RBC/JAJ
REVIEWED BY: RCB
SCALE: AS NOTED
JOB NO.: 2202.02
DATE: OCTOBER 13, 2023
DRAWING NUMBER: E1.12A

1 SECOND FLOOR LIGHTING PLAN - ZONE B
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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KEYNOTE LEGEND:

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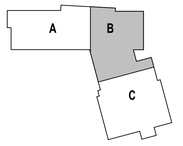
KEY PLAN NORTH ARROW

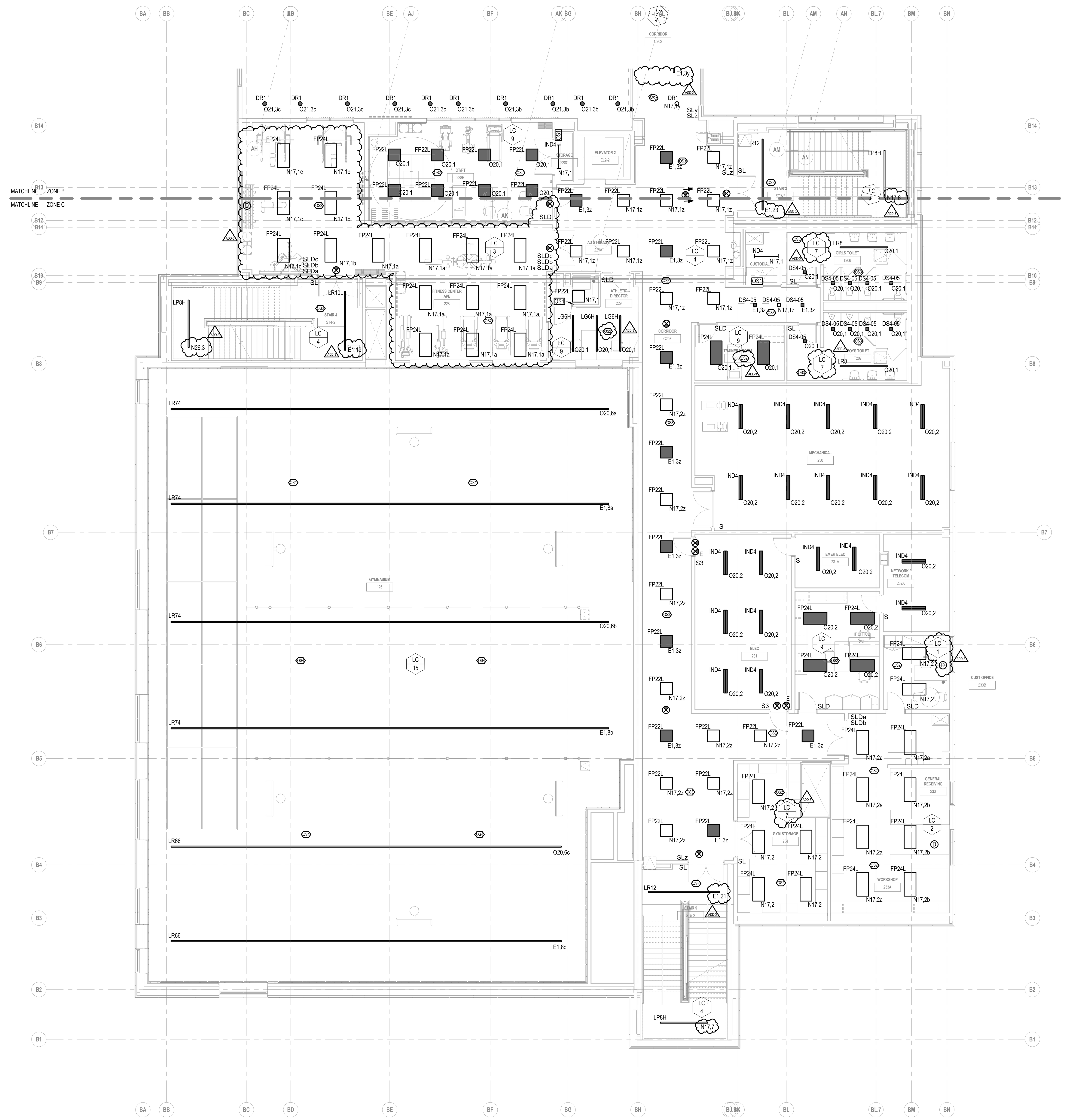
KEYPLAN



DRAWING NAME:

ELECTRICAL SECOND FLOOR LIGHTING PLAN - ZONE B

DRAWN BY: RBC/JAJ
REVIEWED BY: RCB
SCALE: AS NOTED
JOB NO.: 2202.02
DATE: OCTOBER 13, 2023
DRAWING NUMBER: E1.12B



1 SECOND FLOOR LIGHTING PLAN - ZONE C
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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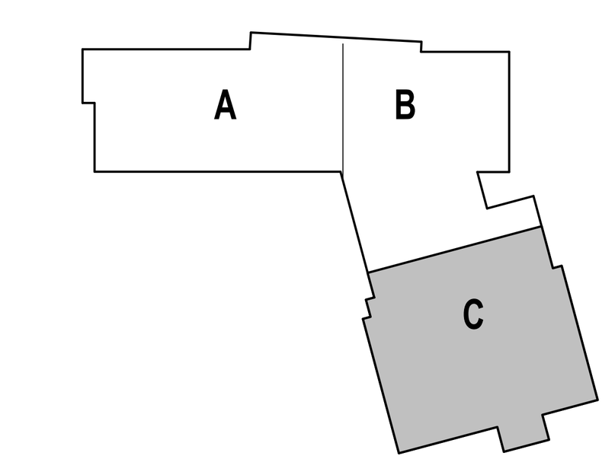
KEYNOTE LEGEND:

ADD-3	ADDENDUM 3	1/9/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

ELECTRICAL SECOND FLOOR LIGHTING PLAN - ZONE C

DRAWN BY: RBC/JAJ
REVIEWED BY: RCB
SCALE: AS NOTED
JOB NO.: 2202.02
DATE: OCTOBER 13, 2023
DRAWING NUMBER: E1.12C

1 THIRD FLOOR LIGHTING PLAN - ZONE A
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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KEYNOTE LEGEND:

ADD-3	ADDENDUM 3	1/9/2024

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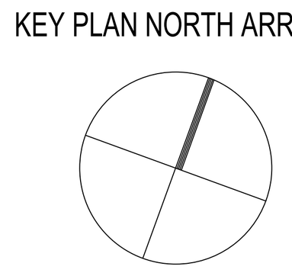
KEY PLAN NORTH ARROW



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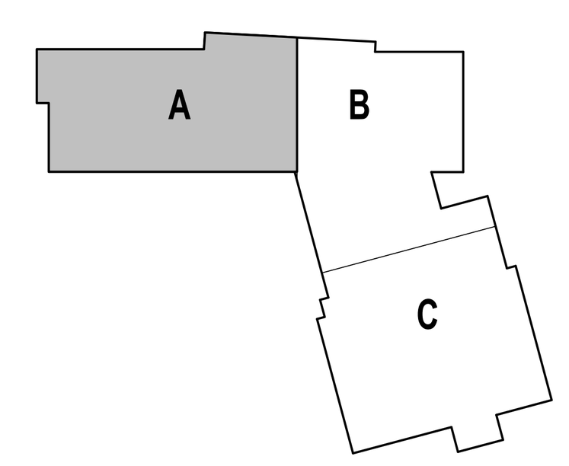
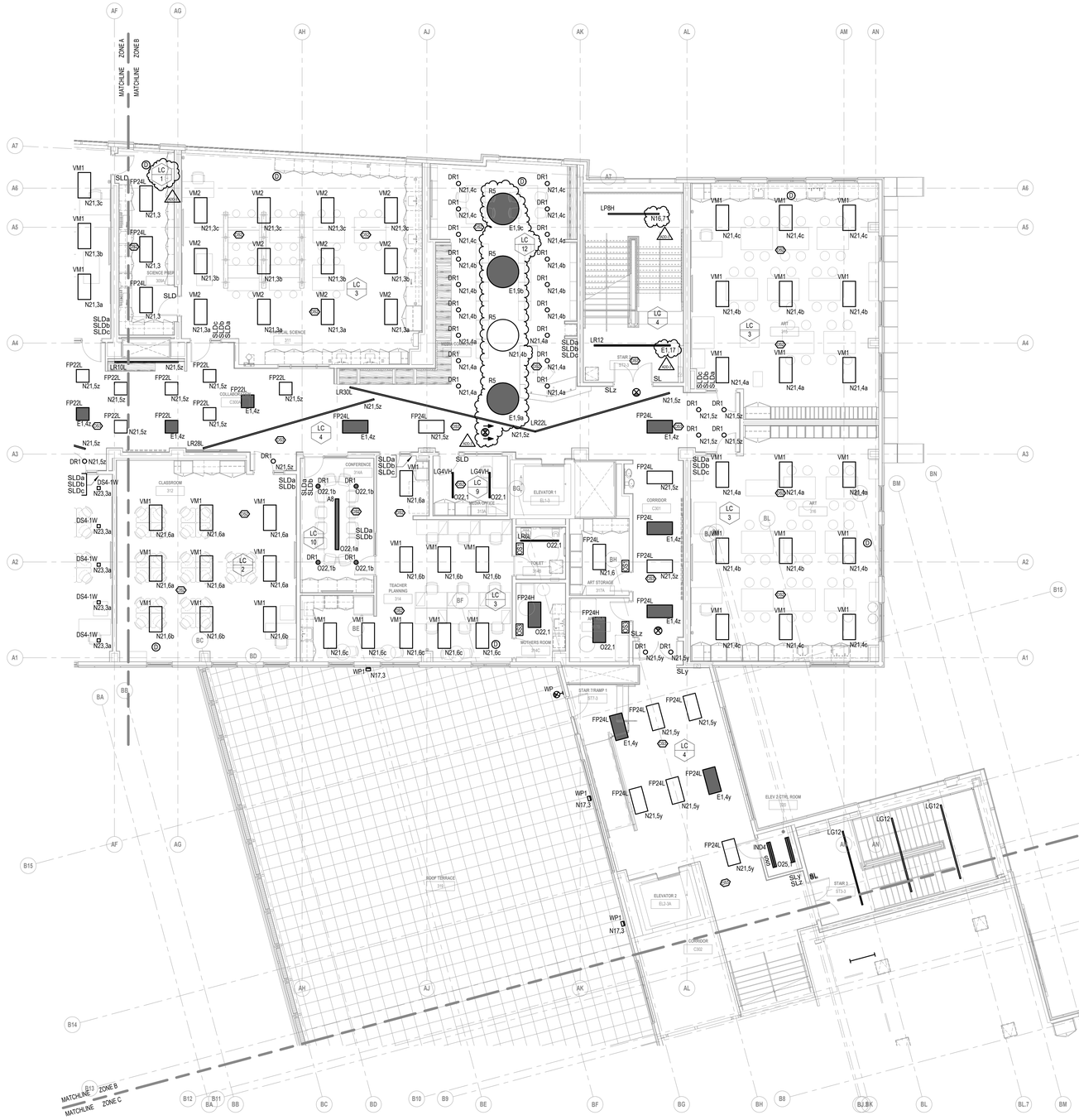


DRAWING NAME:

ELECTRICAL THIRD FLOOR LIGHTING PLAN - ZONE A

DRAWN BY: RBC/JAJ
REVIEWED BY: RCB
SCALE: AS NOTED
JOB NO.: 2202.02
DATE: OCTOBER 13, 2023
DRAWING NUMBER: E1.13A



1 THIRD FLOOR LIGHTING PLAN - ZONE B
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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KEYNOTE LEGEND:

ADD-3 ADDENDUM 3 1/9/2024

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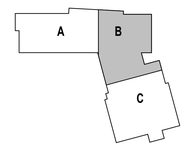
KEY PLAN NORTH ARROW

KEYPLAN

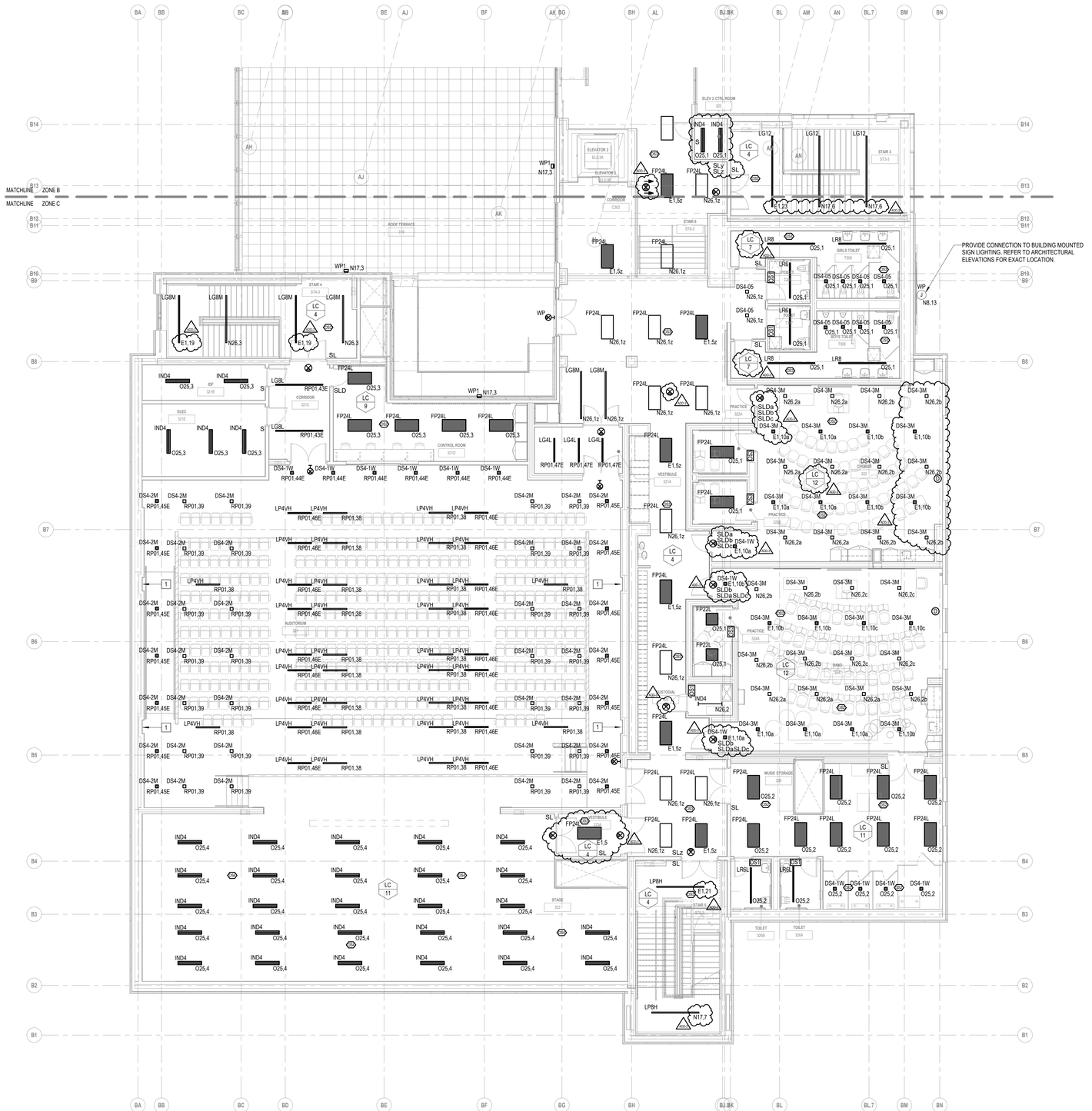


DRAWING NAME:

ELECTRICAL THIRD FLOOR LIGHTING PLAN - ZONE B

DRAWN BY:	RBC/AJ
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: E1.13B



1 THIRD FLOOR LIGHTING PLAN - ZONE C
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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KEYNOTE LEGEND:

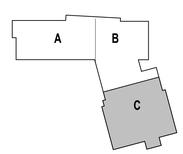
1 (2) TYPE LRAM LIGHTING FIXTURES INSTALLED VERTICALLY IN WALL. REFER TO ARCHITECTURAL DETAILS FOR PLACEMENT. CIRCUIT RP01,40

ADD-3	ADDENDUM 3	1/9/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

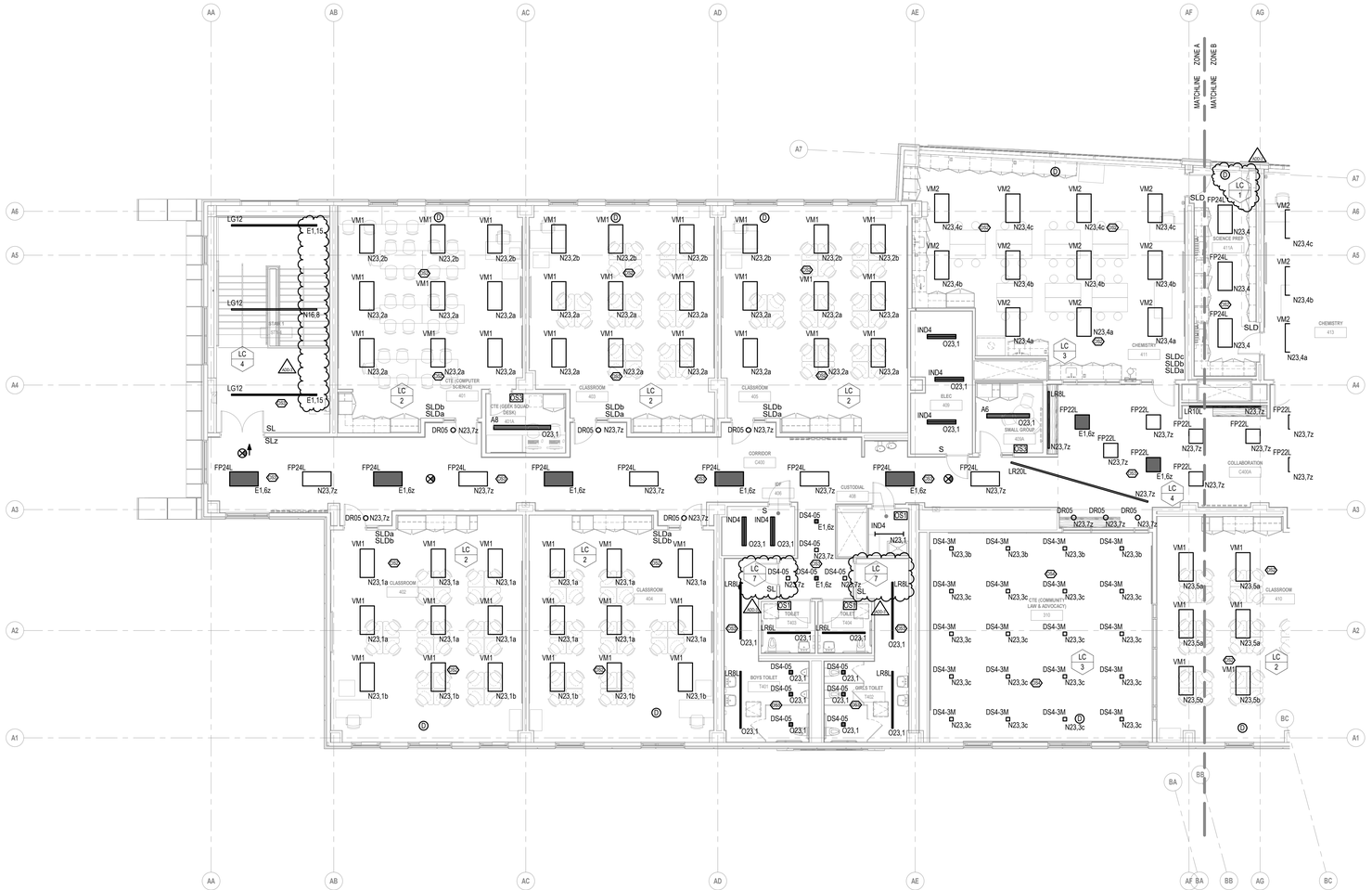
KEYPLAN



DRAWING NAME:

ELECTRICAL THIRD FLOOR LIGHTING PLAN - ZONE C

DRAWN BY:	RBC/JAJ
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023
DRAWING NUMBER:	E1.13C



1 FOURTH FLOOR LIGHTING PLAN - ZONE A
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
O16	OKP1B	OPTIONAL STANDBY
O17	OMDF	OPTIONAL STANDBY

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KEYNOTE LEGEND:

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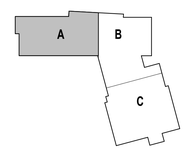
KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

ELECTRICAL FOURTH FLOOR LIGHTING PLAN - ZONE A

DRAWN BY:	RBC/JAJ
REVIEWED BY:	RCB
SCALE:	AS NOTED
JOB NO.:	2202.02
DATE:	OCTOBER 13, 2023

DRAWING NUMBER: E1.14A

1 FOURTH FLOOR LIGHTING PLAN - ZONE B
1/8" = 1'-0"

277Y/480V PANEL KEY SCHEDULE

KEY	PANEL	BRANCH
E1	EL2-L	EMERGENCY
N16	LP1A-L	NORMAL
N17	LP2C-L	NORMAL
N18	LP2C-SL	NORMAL
N19	LP2C-M	NORMAL
N20	LP2A-L	NORMAL
N21	LP3A-L	NORMAL
N23	LP4A-L	NORMAL
N24	LP4A-M	NORMAL
N25	LP3C-M	NORMAL
N26	LP3C-L	NORMAL
O18	OL1A-L	OPTIONAL STANDBY
O19	OL2C-M	OPTIONAL STANDBY
O20	OL2C-L	OPTIONAL STANDBY
O21	OL2A-L	OPTIONAL STANDBY
O22	OL3A-L	OPTIONAL STANDBY
O23	OL4A-L	OPTIONAL STANDBY
O25	OL3C-L	OPTIONAL STANDBY

208Y/120V PANEL KEY SCHEDULE

KEY	PANEL NAME	BRANCH
E2	EP2-R	EMERGENCY
C1	CP1A	NORMAL
C2	CP1C	NORMAL
C4	CP2A	NORMAL
C5	CP2C	NORMAL
C6	CP3A	NORMAL
C7	CP3C	NORMAL
C8	CP4A	NORMAL
N1	PP1A-R	NORMAL
N2	PP1A-M	NORMAL
N3	PP1C-M	NORMAL
N4	PP1C-R	NORMAL
N5	PP2A-M	NORMAL
N6	PP2A-R	NORMAL
N7	PP2C-M	NORMAL
N8	PP2C-R	NORMAL
N10	PP3A-R	NORMAL
N11	PP3C-M	NORMAL
N12	PP3C-R	NORMAL
N13	PP4A-M	NORMAL
N14	PP4A-R	NORMAL
N15	KP1B	NORMAL
N27	PP1A-RBT	NORMAL
O1	OP1A-R	OPTIONAL STANDBY
O2	OP1A-M	OPTIONAL STANDBY
O3	OP1C-M	OPTIONAL STANDBY
O4	OP1C-R	OPTIONAL STANDBY
O6	OP2A-R	OPTIONAL STANDBY
O7	OP2C-M	OPTIONAL STANDBY
O8	OP2C-R	OPTIONAL STANDBY
O10	OP3A-R	OPTIONAL STANDBY
O11	OP3C-L	OPTIONAL STANDBY
O12	OP3C-M	OPTIONAL STANDBY
O13	OP3C-R	OPTIONAL STANDBY
O15	OP4A-R	OPTIONAL STANDBY
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KEYNOTE LEGEND:

ADD-3 ADDENDUM 3 1/9/2024

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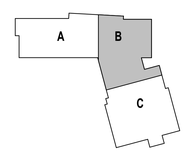
KEY PLAN NORTH ARROW

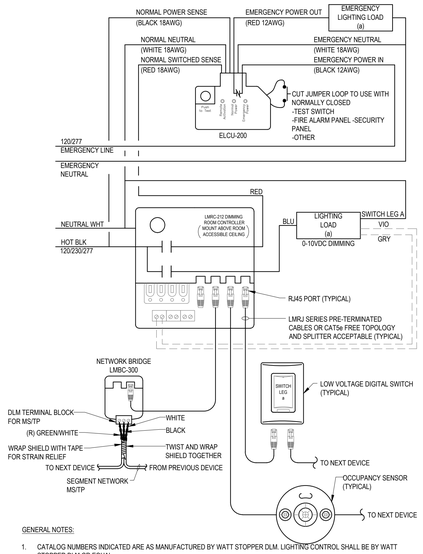
KEYPLAN



DRAWING NAME:

ELECTRICAL FOURTH FLOOR LIGHTING PLAN - ZONE B

DRAWN BY: RBC/JAJ
REVIEWED BY: RCB
SCALE: AS NOTED
JOB NO.: 2202.02
DATE: OCTOBER 13, 2023
DRAWING NUMBER: E1.14B



GENERAL NOTES:

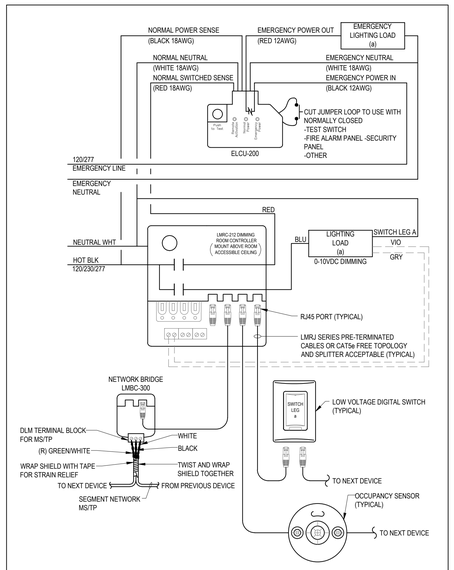
1. CATALOG NUMBERS INDICATED ARE AS MANUFACTURED BY WATT STOPPER DLM. LIGHTING CONTROL SHALL BE BY WATT STOPPER DLM OR EQUAL.
2. PROVIDE ALL EQUIPMENT, CABLING, ETC. AS INDICATED ON THIS DETAIL. REFER TO LIGHTING PLANS FOR LOCATIONS OF OCCUPANCY SENSORS, PHOTOSENSORS, LOW VOLTAGE DIGITAL WALL SWITCHES, AND LOW VOLTAGE DIGITAL DIMMING WALL SWITCHES.
3. CATEGORY 5e CABLING SHALL BE PROVIDED BY WATT STOPPER OR EQUAL.
4. REFER TO FLOOR PLANS FOR EXACT QUANTITY OF SENSORS AND SWITCHES REQUIRED FOR EACH SPACE.

SEQUENCE OF OPERATION:

1. WHEN OCCUPANTS ENTER THE AREA NORMAL AND EMERGENCY LIGHTING FIXTURES IN THE AREA WILL AUTOMATICALLY TURN ON TO 100% LUMEN OUTPUT OF THE LIGHTING FIXTURES, VIA OCCUPANCY SENSORS.
2. IF THE OCCUPANTS LEAVE THE AREA, AFTER 15 MINUTES ALL LIGHTING FIXTURES WILL AUTOMATICALLY DIM TO 20% LUMEN OUTPUT OF THE LIGHTING FIXTURES, VIA OCCUPANCY SWITCHES.
3. LIGHTING FIXTURES IN THIS DETAIL ARE TIME SWITCH CONTROLLED. IF THE LIGHTING CONTROL SYSTEM IS OUTSIDE OF ITS PROGRAMMED SCHEDULE, LIGHTING FIXTURES CAN BE OVERRIDDEN FOR FOR NOT MORE THAN TWO HOURS.
4. THE OCCUPANTS CAN MANUALLY SHUTOFF LIGHTING FIXTURES IN THE AREA, VIA LOW VOLTAGE DIGITAL SWITCHES.
5. IF NORMAL ELECTRIC UTILITY CO. POWER IS LOST, LIGHTING FIXTURES WHICH ARE DESIGNATED AS BEING ON EMERGENCY POWER WILL TURN ON TO 100% LUMEN OUTPUT OF THE LIGHTING FIXTURES AS POWERED BY THE EMERGENCY GENERATOR.
6. SWITCHES SHALL BE MASKED SO THEY CANNOT BE OPERATED BETWEEN TIME SCHEDULE AS DETERMINED BY THE OWNER, COORDINATE WITH OWNER.

LC 4

1 LIGHTING CONTROL DETAIL — SCALE: N.T.S.



GENERAL NOTES:

1. CATALOG NUMBERS INDICATED ARE AS MANUFACTURED BY WATT STOPPER DLM. LIGHTING CONTROL SHALL BE BY WATT STOPPER DLM OR EQUAL.
2. PROVIDE ALL EQUIPMENT, CABLING, ETC. AS INDICATED ON THIS DETAIL. REFER TO LIGHTING PLANS FOR LOCATIONS OF OCCUPANCY SENSORS, PHOTOSENSORS, LOW VOLTAGE DIGITAL WALL SWITCHES, AND LOW VOLTAGE DIGITAL DIMMING WALL SWITCHES.
3. CATEGORY 5e CABLING SHALL BE PROVIDED BY WATT STOPPER OR EQUAL.
4. REFER TO FLOOR PLANS FOR EXACT QUANTITY OF SENSORS AND SWITCHES REQUIRED FOR EACH SPACE.

SEQUENCE OF OPERATION:

1. WHEN OCCUPANTS ENTER THE ROOM LIGHTING FIXTURES IN THE ROOM NEED TO BE MANUALLY TURNED ON VIA LOW VOLTAGE DIGITAL DIMMING SWITCHES.
2. LIGHTING FIXTURES IN ROOM CAN BE DIMMED VIA LOW VOLTAGE DIGITAL DIMMING SWITCHES.
3. IF THE OCCUPANTS LEAVE THE ROOM, AFTER 15 MINUTES ALL LIGHTING FIXTURES WILL SHUTOFF VIA OCCUPANCY SENSORS.
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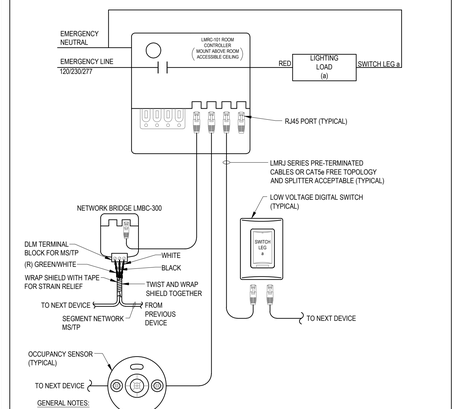
5. IF NORMAL ELECTRIC UTILITY CO. POWER IS LOST, LIGHTING FIXTURES WHICH ARE DESIGNATED AS BEING ON EMERGENCY POWER WILL TURN ON TO 100% LUMEN OUTPUT OF THE LIGHTING FIXTURES AS POWERED BY THE EMERGENCY GENERATOR.

LC 5

2 LIGHTING CONTROL DETAIL — SCALE: N.T.S.



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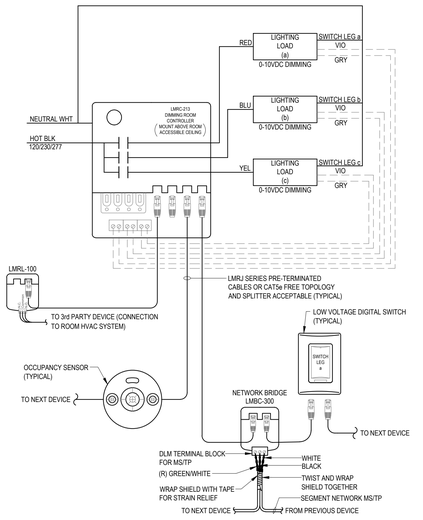
LC 7

3 LIGHTING CONTROL DETAIL — SCALE: N.T.S.

ADD 1



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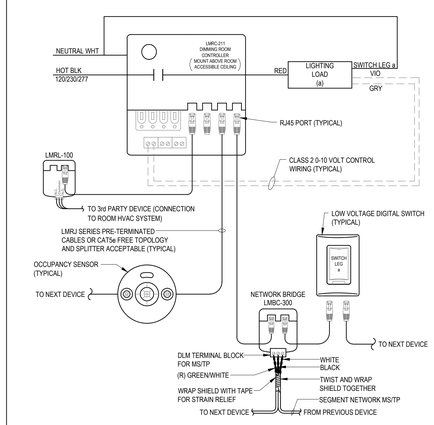
3. IF THE OCCUPANTS LEAVE THE ROOM, AFTER 15 MINUTES ALL LIGHTING FIXTURES WILL SHUTOFF VIA OCCUPANCY SENSORS.

LC 8

4 LIGHTING CONTROL DETAIL — SCALE: N.T.S.



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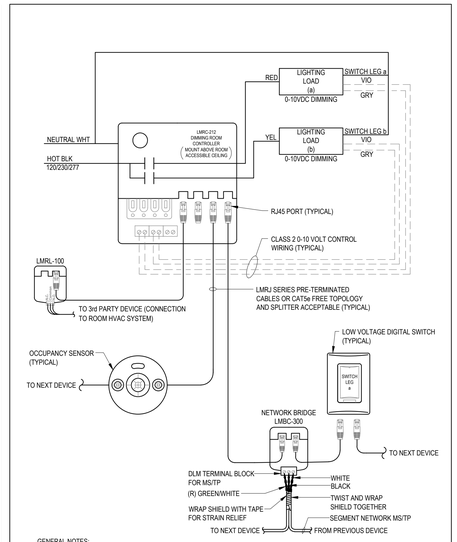
LC 9

5 LIGHTING CONTROL DETAIL — SCALE: N.T.S.



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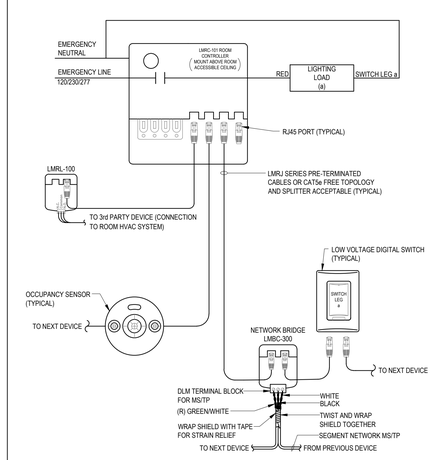
3. IF THE OCCUPANTS LEAVE THE ROOM, AFTER 15 MINUTES ALL LIGHTING FIXTURES WILL SHUTOFF VIA OCCUPANCY SENSORS.

LC 10

6 LIGHTING CONTROL DETAIL — SCALE: N.T.S.



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LC 11

7 LIGHTING CONTROL DETAIL — SCALE: N.T.S.

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CENTRAL FALLS HIGH SCHOOL
10 HIGGINSON AVE, CENTRAL FALLS, RI

KEYNOTE LEGEND:

ADD-3 ADDENDUM 3 1/9/2024

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:
ELECTRICAL DETAILS

DRAWN BY: RBC
REVIEWED BY: RCB
SCALE: NONE
JOB NO.: 2202.00
DATE: OCTOBER 13, 2023
DRAWING NUMBER: E6.03

TABLE OF CONTENTS

VOLUME 1 *(DIVISIONS 00 THROUGH 09)*

End - Table of Contents

Section 01 23 00

ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section consists of:

1. Submission procedures for scheduled Alternates.
2. Documentation of changes to Contract Sum and Contract Time.

B. The description of Alternates herein below and through the Specifications are intended to set the intent and to describe the major work only. Such descriptions are not to be taken as limiting the work required under any of the alternates, and all work required to carry out the intent of each of the accepted Alternates shall be done without cost additional to that agreed upon as the alternate price. Review all Construction Documents to determine full scope and description of each alternate.

1.2 REQUIREMENTS

A. Submit Alternates with full description of the proposed alternate and the affect on adjacent or related components.

B. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternates will be identified in the Owner-Contractor Agreement.

C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.3 SELECTION AND AWARD OF ALTERNATES

A. Indicate variation of Bid Price for Alternates described below and list where provided for Bid Form or any supplement to it, which requests a difference in Contract Price by adding to or deducting from the base bid price.

B. The lowest responsible and eligible bid will be determined on the basis of the base bid, adjusted by such alternate or alternates as may be included in the award of the Contract in the sole discretion of the Awarding Authority.

1.4 SCHEDULE OF ALTERNATES

A. ALTERNATE 1 - Theatrical Equipment:

1. Base Bid: Include Audio Visual infrastructure ONLY for Theatrical Equipment in the Auditorium/Stage, Chorus Room 322 and Band Room 324.
2. Alternate number 1: Provide and install all Theatrical equipment for the Auditorium/Stage, Chorus Room 322 and Band Room 324.

B. ALTERNATE 2 – Outdoor Furniture:

1. Base Bid: Provide and install outdoor furniture at sidewalks near the athletic fields and at the main entry along Higginson Avenue. Provide and install receptacles and bike racks.
2. Alternate number 2: Provide and install additional outdoor furniture near Stair 1, plaza at the top of the exterior stepped seating by the vestibule into Student Commons and at the Roof Terrace.

C. ALTERNATE 3 – Outdoor Classroom:

1. Base Bid: Provide and install plantings located at the Stormwater Management Area in the median of the bus/service drive loop.
2. Alternate number 3: Provide and install all scope of work identified as part of the Outdoor Classroom within the median of the bus/service drive loop, including outdoor classroom and outdoor furniture.

D. ALTERNATE 4 – Resilient Tile Flooring:

1. Base bid: Provide and install Vinyl Composition Tile (VCT) under Section 09 65 19.
2. Alternate number 4: Provide and install Luxury Vinyl Tile Flooring (LVT) under Section 09 65 19.

E. ALTERNATE 5 - Freight Farm Unit:

1. Base bid: Provide and install concrete pad and utilities for inclusion of a future portable Freight Farm unit.
2. Alternate number 5: Provide and install the Freight Farm unit.

F. ALTERNATE 6 – Throwing Events:

1. Base bid: The throwing event area shall be graded and restored with loam and seed. This shall include compliance with capping requirements set for in the Remedial Action Work Plan (RAWP).
2. Alternate number 6: Furnish and install track throwing events as follows: Javelin - field layout and synthetic track surface runway. Shot Put - throw ring, stone dust field, and toe board. Dual Pad Discus/Hammer - field layout, throw ring, cage, and pad. Additional bituminous concrete walkway to meet and match from basketball courts to Discus/Hammer cage.

G. ALTERNATE 7 – Classroom Lighting:

1. Base Bid: Provide and install direct/indirect 2x4 light fixtures in the following classrooms: 101, 102, 103, 104, 105, 109, 110, 111, 113, 201, 202, 203, 204, 205, 209, 210,211, 212, 301, 302, 303, 304, 305, 309, 311, 312, 315, 316, 401, 402, 403, 404, 405, 410, 411, 412, 413, and 414.
2. Alternate number 7: Provide and install linear pendant indirect fixtures in the following classrooms: 101, 102, 103, 104, 105, 109, 110, 111, 113, 201, 202,

203, 204, 205, 209, 210,211, 212, 301, 302, 303, 304, 305, 309, 311, 312, 315, 316, 401, 402, 403, 404, 405, 410, 411, 412, 413, and 414.

H. ALTERNATE 8 – Classroom Doc Cameras:

1. Base Bid: No document cameras to be provided
2. Alternate number 8: Provide and install document cameras in the following classrooms: 101, 102, 103, 104, 105, 109, 110, 111, 113, 201, 202, 203, 204, 205, 209, 210, 211, 212, 301, 302, 303, 304, 305, 309, 310, 311, 312, 315, 316, 322, 324, 401, 402, 403, 404, 405, 410, 411, 412, 413, 414, and 415.

I. ALTERNATE 9 – Sports Lighting **[ADD #3]**

1. Base Bid: Remove three of the existing six sports lighters and replace with new including 1500MZ lamps at two existing poles nearest the new basketball courts (total six 1500MZ lamps).
2. Alternate number 9: Remove three of the existing six sports lighters and replace with new including 1500MZ lamps at ~~four~~ **two** existing poles (total ~~twelve~~ **six** 1500MZ lamps). Remove ~~five~~ **four** of the existing ~~ten~~ **eight** sports lighters and replace with new including 1500MZ lamps at two existing poles (total ~~ten~~ **eight** 1500MZ lamps). **Remove five of the existing ten sports lighters and replace with new including 1500MZ lamps at two existing poles (total ten 1500MZ lamps.)**

J. ALTERNATE 10 - Trees

1. Base bid: Provide and install all scope of work related to site preparation for all trees and plantings noted on the drawings.
2. Alternate number 10: Provide and install trees as noted on the drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

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Section 09 91 00
PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: This Section consists of painting work where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Painting work includes, but is not limited to the surface preparation and application of coated finishes, and subsequent touch-up, of interior and exterior items and surfaces as indicated on the Contract Drawings and as scheduled herein.

1. No attempt is made in this Section to list all surfaces, fixtures and equipment requiring painting on this project. It is the responsibility of the Subcontractor to determine for itself the scope and nature of the Work required for a complete installation from the information provided herein and in the Drawings.

B. Surfaces and Materials: In general, without limiting the generality thereof, the following surfaces, fixtures and equipment require a painted finish:

1. Gypsum board partition and wall surfaces, ceilings and soffits.
2. Metal doors and frames.
3. Wood doors, designated to receive field painted finish.
4. Interior handrails and guardrails.
5. Wood trim.
6. Roof top equipment.
7. Exposed to view structural steel.
8. Factory primed aluminum counter supports.
9. Exposed to view sprinkler piping.
10. Exposed to view electrical conduit and raceways.
11. Exterior galvanized handrails.
12. Elevator ladder, exposed to view lintels and other miscellaneous metal items furnished under Section 05 50 00 - METAL FABRICATIONS which are not factory finished.
13. Access panels and frames.
14. Grommets at Gymnasium Ceiling.

C. DO NOT PAINT the following surfaces and materials.

1. Concealed from view surfaces, except as indicated otherwise in the Contract Documents or as specified herein.
2. Chrome or nickel plating, stainless steel, bronze, brass.
3. Aluminum other than mill finished or factory primed.
4. Factory finished mechanical and electrical equipment, pumps, machinery and similar items which occur in mechanical, storage or equipment rooms or areas.
5. Factory finished materials, specialties, and accessories unless otherwise specified.

6. Tile, terrazzo, acoustical tile, resilient flooring, wood flooring, and other integrally finished floor, wall and ceiling finishes.
7. Prefinished millwork items.
8. Fire resistant testing and certification labels, code required labels, safety warning labels, performance rating plates, nomenclature plates, identification plates, and similar other labels.

1.2 RELATED REQUIREMENTS

A. Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL: Procedural and administrative requirements relating to recycling goals, waste management program and reporting.

B. Section 01 81 13 - SUSTAINABLE DESIGN REQUIREMENTS: Procedural and administrative requirements relating to required *Northeast CHPS Verified Program,* (NE-CHPS) Certification.

C. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Concrete partitions and walls.

D. Section 04 20 00 - UNIT MASONRY: Concrete masonry partitions.

E. Section 05 12 00 - STRUCTURAL STEEL FRAMING: Shop priming of structural steel framing.

F. Section 05 50 00 - METAL FABRICATIONS: Shop priming of designated miscellaneous metals.

G. Section 06 20 00 - FINISH CARPENTRY: Wood trim items, setting and filling of nails, sanding of wood trim.

H. Section 07 92 00 - JOINT SEALANTS: Requirements for sealant and backing materials.

I. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Shop priming of metal frames and steel doors.

J. Section 08 14 16 - FLUSH WOOD DOORS: Wood doors, both prefinished and unfinished.

K. Section 08 31 00 - ACCESS DOORS AND PANELS: Shop primed access panels, occurring in partitions and walls.

L. Section 09 29 00 - GYPSUM BOARD: Drywall partitions, ceilings and soffits, including joint treatment and sanding.

M. Document 09 91 13 - EXTERIOR PAINTING SCHEDULE: Painting schedule for exterior surfaces and materials:

N. Document 09 91 23 - INTERIOR PAINTING SCHEDULE:
   1. Painting schedule for interior surfaces and materials.
   2. Painting schedule for Mechanical and Electrical Equipment.

O. Section 09 96 00 - HIGH-PERFORMANCE COATINGS.

P. Section 10 40 00 - SAFETY SPECIALTIES: Shop priming of cabinet doors and frames; shop finishing of cabinet.

Q. Division 22 - PLUMBING: Prefinished items such as plumbing fixtures, sprinkler heads, convectors, anemostates and similar surfaces and materials.

R. Division 26 - ELECTRICAL: Prefinished items such as light fixtures, switch gear, electrical distribution cabinets and similar surfaces and materials.

S. Respective sections: Factory-finishing of food service, mechanical, plumbing, fire protection and electrical equipment.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
2. ASTM D2016 - Test Method for Moisture Content of Wood.
3. SSPC-Vis1 - Pictorial Surface Preparation Standards for Painting Steel Structures.
4. SSPC-SP2 - Steel Structures Painting Manual, Volume 2, Systems and Specifications.
5. All applicable federal, state and municipal codes, laws and regulations for flammability and smoke generation of interior finishes.

B. Definitions:

1. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials specified herein, whether used as prime, intermediate or finish coats.
2. Sheen: Specular gloss readings in accordance with ASTM D52.
    a. Flat: less than 5 (measured at 85 degrees).
    b. Eggshell: 5 – 20 (measured at 60 degrees).
    c. Satin: 15-35 (measured at 60 degrees).
    d. Low Luster: 25 – 35 (measured at 60 degrees).
    e. Semi-Gloss: 30 -65 (measured at 60 degrees).
    f. Gloss: 65 or more (measured at 60 degrees).
3. Gloss as defined for LEED VOC requirements. Specified specular gloss readings below are as tested in accordance with ASTM D52.
    a. Flat: less than 15 (measured at 85 degrees), less than 5 (measured at 60 degrees).
    b. Non-Flat: greater than 15 (measured at 85 degrees), greater than 5 (measured at 60 degrees).

C. Sustainability Requirement Reference: The following sustainability requirements are hereby made a part of this Section by reference thereto:

1. High Performance Schools Exchange, Northeast Energy Efficiency Partnerships NE-CHPS, (referred to herein as “NE-CHPS”).

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: The applicator of work specified herein is responsible to ensure that all paints, enamels, and coatings, proposed to be applied hereunder, are compatible with coatings used for shop-primed items and items which have been prime-coated under the work of other trades.
2. Immediately notify the Architect in writing of conditions which may require a change in the specifications of this Section before proceeding with the work. Failure to do so, in a timely fashion, so as not to interfere with the schedule of work of this Contract, shall be construed as acceptance of the coatings specified. Perform all corrective measures, at no cost to the Owner, for any defects in the work, resulting from the use of such materials.

B. Scheduling:

1. Sequence painting work to ensure primers and painting is not applied until building is enclosed, sufficient heat is provided, all dust-generating activities have terminated, wet work is dry and cured, and work overhead is completed.
    a. Painting work should be scheduled so as to minimize touch-ups. Interior painting is to be without flashmarks. Should flashmarks occur due to touch-ups, the Contractor shall be required to redo the entire surrounding wall surface.
    b. Concrete, masonry, plaster, tile and marble setting and polishing and other wet work shall be completed and dry before commencement of painting work.
    c. Finish flooring and ceiling work may be scheduled by Contractor to be completed after painting. In such cases, paint subcontractor is required to perform touch-ups as necessary following floor and ceiling installations, without additional cost to Owner.

C. Do not order materials until all required schedules have been properly submitted, reviewed by the Contractor and Approved by Architect.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.
    a. Include certification of data indicating Volatile Organic Compound (VOC) content of all paint materials.
2. Samples:
    a. Manufacturer's color selector for custom mixed colors for Architect's color scheduling.

b. Opaque coatings: Two 9 x 12 inch finished samples on hardboard of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.

c. Transparent finishes and stains: Two 9 x 12 inch finished samples on same species of solid wood and plywood to be furnished under Section 06 20 00 - FINISH CARPENTRY, of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.

B. Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS:

1. Color chips: After final approval of all colors and tints by the Architect, submit to the Owner, color chips of all coatings used, with manufacturer's name and mix designation of the coating for the purpose of future re-ordering of coatings. Color chips shall be at least six (6) square inches in size, for each color and tint.
2. Sustainable Design Submittals: As required by NE CHPS.

1.6 QUALITY ASSURANCE

A. Single source responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

B. Environmental Requirements for Volatile Chemicals: The volatile organic compound (VOC) content of all field-applied architectural paints, used on the interior walls and ceilings of this Project must meet the VOC limits defined in the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings or the South Coast Air Quality Management District (SCAQMD) Rule 1113, and effective February 5, 2016, refer to Section 09 91 00 – Painting for additional restrictions and requirements.

1. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:

		VOC Limit [g/L less water]
a.	Flat coatings	50
b.	Nonflat coatings	10
c.	Nonflat - High gloss coatings	150
d.	Aluminum roof coatings	400
e.	Basement specialty coatings	400
f.	Bituminous roof coatings	50
g.	Bituminous roof primers	350
h.	Bond breakers	350
i.	Concrete curing compounds	350
j.	Concrete/Masonry sealers	100
k.	Driveway sealers	50
l.	Dry-fog coatings	150
m.	Faux finishing coatings	350

n.	Fire resistive coatings	350
o.	Floor coatings	100
p.	Form-release compounds	250
q.	Graphic arts coatings (sign paints)	500
r.	High temperature coatings	420
s.	Industrial maintenance coatings	250
t.	Low solids coatings	120
u.	Magnesite cement coatings	450
v.	Mastic texture coatings	100
w.	Metallic pigmented coatings	500
x.	Multi-color coatings	250
y.	Pre-treatment wash primers	420
z.	Primers, sealers, and undercoaters	100
aa.	Reactive penetrating sealers	350
bb.	Recycled coatings	250
cc.	Roof coatings	50
dd.	Rust preventative coatings	250
ee.	Shellac - Clear	730
ff.	Shellac - Opaque	550
gg.	Specialty primers, sealers, and undercoaters	100
hh.	Stains	250
ii.	Stone consolidants	450
jj.	Swimming pool coatings	340
kk.	Traffic marking coatings	100
ll.	Tub and tile refinish coatings	420
mm.	Waterproofing membranes	250
nn.	Wood coatings	275
oo.	Wood preservatives	350

2. Emissions Testing: All interior paints must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method V1.2-2017, including statement of total VOCs after 14 days.
3. Do not use water based paints formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure), formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides. Water based paints shall be low VOC and shall have a flash point of 61 degrees C or greater.
4. Where it is necessary to use solvent-based paints, with less than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
5. The following shall be low VOC and not be formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure).
   a. High performance water based acrylic coatings.

b. Pigmented acrylic sealers.
c. Catalyzed epoxy coatings.
d. High performance silicone grafted epoxy coatings.

6. Restricted Components: Paints and coatings used on this Project shall not contain any of the following compounds. (Excluded from this restriction are residual quantities of naturally occurring elements and chlorinated organics which are found in chlorinated water supplies; contaminate levels shall be below that of the National Primary Drinking Water Standard):
   a. 1,2-dichlorobenzene
   b. Alkylphenol ethoxylates (APEs)
   c. Formaldehyde-donors
   d. Heavy metals, including lead, mercury, cadmium, hexavalent chromium and antimony in the elemental form or compounds
   e. Phthalates
   f. Triphenyl tins (TPT) and tributyl tins (TBT).

1.7 FIELD SAMPLES

A. Provide field samples under provisions of Section 01 45 00 - QUALITY CONTROL for purpose of verifying selected colors.

B. Paint on-site sample areas, minimum 40 square feet, illustrating selected color, and tint.

C. Locate samples where directed. The Contractor shall provide in the base Contract, a total amount of samples equal to one sample per room.

D. Accepted samples may not remain as part of the work.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site in sealed and labeled containers; container labeling shall include manufacturer's name, type of paint, color mix designation, expected coverage, surface preparation instructions, instructions for mixing and reducing, drying time, and clean-up recommendations.

B. Store materials, conforming with applicable codes and fire regulations, in designated spaces. Keep storage area secure when direct access is not required or when not performing work under this Section. Take precautionary measures to prevent fire hazards and spontaneous combustion, maintain a dry-chemical type fire extinguisher in all areas where materials of this Section are being stored or used.

C. Store paint materials in a well-ventilated area at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit.

D. Do not use the sanitary system for mixing or disposal of refuse material. Carry water to mixing rooms and dump waste material in a suitable refuse receptacle. Remove oily rags and waste each day.

1.9 PROJECT CONDITIONS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Apply paints and finishes above minimum temperature conditions in strict accordance with manufacturer's instructions.

1. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent unless required otherwise by manufacturer's instructions.

C. Provide sufficient lighting to maintain 80 foot-candles measured mid-height at substrate surface.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Paints and general finishes:
    a. Benjamin Moore & Company, Montvale, NJ.
    b. California Paints, Andover MA.
    c. PPG Paint, Pittsburgh PA.
    d. Pratt & Lambert Inc., (division of Sherwin Williams), Buffalo, NY.
    e. Sherwin Williams, Cleveland OH.
2. Green Screen Paint:
    a. Rosco Laboratories, Inc., Stamford CT.
    b. ProCyc, Inc., Clackamas, OR.
    c. Ticonderoga Ventures, Inc., (Chromakey.org) New York, NY.
3. Interior stains and clear finishes for wood
    a. Samuel Cabot, Inc., Cleveland OH.
    b. **PPG ~~Architectural Finishes~~ Paints Inc., ~~Olympic Home Care Products Division,~~ Pittsburgh PA**. **[ADD #3]**
4. Cold galvanizing touch-up paint:
    a. ZRC Worldwide Inc., Marshfield MA.
    b. Duncan Galvanizing, Everett, MA.
    c. Rustoleum Corp., Vernon Hills IL.
5. Anti-graffiti Coatings:
    a. ProSoCo, Kansas City, KS.
    b. Rainguard Products Company, Newport Beach, CA.
    c. The Euclid Chemical Company, Cleveland, OH.

2.2 MATERIALS

A. Coatings: Ready mixed, except for field catalyzed coatings with good flow and brushing properties; capable of drying or curing free of streaks or sags. Color pigments shall be processed to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating. Provide best quality grade, where manufacturer makes more than one grade of any material specified.

B. Liquid zinc coating, for touch-up of welds, scratches, and abrasions in galvanized steel: Low VOC organic zinc-rich coating containing 92% metallic zinc, by weight in the dried film (ASTM D520, Type III) and conforming to SSPC Paint 20, Type II, Level 1. Liquid zinc coating shall be recognized under the Component Program of Underwriter's Laboratories, Inc. as an equivalent to hot-dip galvanizing; conforming to MIL-P-21035B and SSPC Paint 29, Type II, Level I, for repair of hot-dip galvanizing and meeting the requirements for Zinc-Rich Paints.

1. VOC limit: not more than 250 g/L.
2. Specified manufacturer and product: ZRC Worldwide, Marshfield MA, product “ZRC-221”.

2.3 ACCESSORIES

A. Accessory materials: other materials not specifically indicated, but are required to achieve the finishes specified of commercial quality.

B. Cleaning Materials: Tri-Sodium Phosphate (TSP) substitute. Acceptable products include the following, or approved equal:

1. Savogran, Norwood MA, products “TSP-PF”, or “Liquid TSP Substitute”.
2. Custom Building Products, Seal Beach, CA., product “Custom T.S.P. Substitute”.
3. DAP Inc., Baltimore MD., product “T.S.P. Substitute Heavy Duty Cleaner”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Notify Contractor of any condition that may potentially affect proper application of coatings.

B. Measure moisture content of surfaces, do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Gypsum board and joint treatment: 12 percent.
2. Masonry or concrete: 12 percent.
3. Interior wood: 15 percent.
4. Exterior wood: 18 percent.

C. Beginning Work of this Section means acceptance of substrate surfaces and site conditions.

3.2 PREPARATION

A. Furnish and lay suitable drop cloths in all areas where coating work is being done to protect floors and all other surfaces from damage during the work. Protect adjoining surfaces with painters mask tape.

B. Prior to preparing surfaces or finishing, remove all finish hardware for painting doors and frames, except hinges and locks on exterior door; remove electrical plates, light fixture trim and fittings. Re-install hardware and other removed items after painted surfaces are thoroughly dry.

C. Mix coatings thoroughly, unless otherwise directed by the manufacturer of the specific coating used, to ensure uniformity of color and mass. Strain previously opened coatings to remove skins, lumps, and other foreign matter prior to painting.

D. Thin or reduce materials only as recommended by the specific material manufacturer, and only with the approval of the Architect.

E. Impervious surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to thoroughly dry.

F. Brick, existing interior walls and partitions scheduled to receive paint:
   1. Remove existing paint.
   2. Remove all loose scale and mortar, dirt, salt or alkali powder and any other surface contaminate, using a detergent expressly formulated for cleaning of concrete and masonry.
   3. Remove oil and grease with a solution of tri-sodium phosphate.
   4. Thoroughly rinse the cleaned surfaces with clear water, and allow the surfaces to completely dry, allow a minimum of 24 hours before commencing application of coatings.

G. Concrete and unit masonry surfaces scheduled to receive paint finish:
   1. Remove all loose scale and mortar, dirt, salt or alkali powder and other surface contaminates, using a detergent expressly formulated for cleaning of concrete and masonry.
   2. Remove oil and grease with a solution of tri-sodium phosphate.
   3. Remove stains caused by weathering corroding metals with a solution of sodium metasilicate after thoroughly wetting with water.
   4. Thoroughly rinse the cleaned surfaces with clear water, and allow the surfaces to completely dry, allow a minimum of 4 hours before commencing application of coatings.

H. Uncoated steel and iron surfaces:
   1. Remove grease, scale, dirt, rust, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or sandblasting where heavy coatings of scale are evident.
   2. Wash steel with solvent, apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned.
   3. Spot prime after repairs with metal primer product of the finish coating manufacturer.

I. Shop primed steel surfaces:

1. Remove rust, blistered and defective shop prime paint, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or commercial paint remover. Feather edges to make touch-up patches inconspicuous.
2. Remove all grease or dirt with mineral spirits.
3. Spot prime bare metal with metal primer product of the finish coating manufacturer. Seal top and bottom edges of metals doors with primer.

J. Previously painted steel surfaces:

1. Remove rust, blistered and defective paint, down to bright metal by wire brushing, scraping, or sanding. Feather edges to make touch-up patches inconspicuous as possible
2. Remove grease, dirt and all foreign materials.
3. Spot prime bare metal with metal primer product of the finish coating manufacturer.

K. Previously painted surfaces to receive wall covering:

1. Sand with 320 grit waterproof paper until surfaces are uniformly abraded.

L. New galvanized surfaces to receive field apply paint:

1. Prepare surfaces in accordance with SSPC-SP16 to achieve a surface profile of 0.5 to 1.5 mils.

M. Aluminum surfaces scheduled for paint finish:

1. Remove surface contamination by steam or high pressure water.
2. Remove oxidation with acid etch and solvent washing.
3. Apply etching primer immediately following cleaning.

N. New interior wood items scheduled to receive paint (opaque) finish.

1. Smooth minor defects and remove all foreign matter by sanding, and if necessary, steel wool.
2. Wash sap spots and knots with mineral spirits. When dry, touch up knots, pitch streaks, and sappy sections with commercial stain sealer.
3. Fill up nail holes and cracks with wood putty or plastic wood after primer of first coat of finish is dry, and sand smooth.

O. New exterior wood scheduled to receive paint finish.

1. Smooth minor defects by sanding and/or by the use of steel wool. Remove all foreign matter with commercial paint remover and fine sandpaper.
2. Treat wood with a dip or heavy flood coat of Water Repellant Wood Preservative, allow to dry. Touch up knots, pitch streaks, and sappy sections with commercial stain sealer.
3. Fill up nail holes and cracks with wood putty or plastic wood after primer of first coat of finish is dry, and sand smooth.

P. New cellular PVC exterior trim to receive paint finish:

1. Exterior PVC trim: If recommended by manufacturer, lightly sand surfaces and remove all sanding dust and foreign materials. Fill minor dents and defects with sealant Type P1 as specified in Section 07 92 00 - JOINT SEALANTS.

Q. Gypsum board surfaces: Fill minor defects with latex based spackle. Spot-seal all compound surfaces and repair areas in gypsum board, with specified first coat material before application of the first coat.

3.3 APPLICATION

A. Apply all materials in strict accordance with the approved manufacturer's printed instruction, and in accordance with the best trade practices. Each coat shall be reviewed and approved by the Architect before succeeding coats are applied.

B. Do not apply successive coating until the preceding coat is thoroughly dry, and in no case in less than 24 hours after the preceding coat.

C. Number of coats is indicated under Painting Schedules. Number of coats is indicated as a minimum number to be applied over scheduled substrates. An additional coat or coats may be required for proper color coverage of substrate as determined by the Architect, at no additional cost to the Owner. Examples of these conditions include, but are not limited to:

1. Dark colored substrates may require an additional primer or intermediate coat to stabilize color, if final applied top-coat color is light.
2. Pre-finished or pre-primed products may require an additional field applied coat to stabilize the shop/factory applied base color prior to application of top-coat finishes.
3. Dark color top coat finishes may require additional finish coat over white or light colored substrates to obtain correct color density.

D. Apply each coat to a uniform finish; Apply primer and first coat of slightly lighter in color tint than the scheduled color of the final coat.

E. Sand lightly between coats to achieve required finish and remove sanding dust prior to applying succeeding coat.

F. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

G. Prime back surfaces of all interior and exterior woodwork scheduled for painted finish with primer.

H. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.4 APPLICATION – CONCRETE MASONRY

A. Apply block filler to concrete masonry partitions at maximum rate allowed by coating manufacturer. Apply by airless spray followed by back rolling to force material into voids. Use a squeegee to remove excess material prior to initial set, and provide a smooth surface texture. After initial set, touch-up and fill apparent voids and holidays with fresh material.

3.5 CLEANING

A. Upon completion of the work in each area, remove all coating splatters from glass, prefinished surfaces, bright metals, and from other surfaces that have not been painted or finished hereunder. Do not use abrasive paper or abrasive cleaner on any prefinished surface or bright metal. Remove all materials and debris; leave work area in a clean condition.

3.6 PROTECTION AND TOUCH-UP

A. During painting work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Properly clean, repair or replace any work so damaged and soiled.

B. Protect all painted and finished surfaces against damage until the date of final acceptance of the work. The Architect will conduct a final review of all work performed hereunder. Re-coat or touch-up, all scratches and other blemishes on surfaces, and as directed by the Architect, any areas found which do not comply with the requirements of this Section, and bear all costs therefore.

C. Any re-coating or touch-up work, required after the work of this Section has been reviewed and accepted by the Architect, will be paid for by the Contractor.

3.7 PAINTING SCHEDULE

A. Colors: The Architect will furnish a schedule of colors for each area and surface. Tinting and matching shall be to the satisfaction of the Architect. No limit is placed on the number of colors that may be required, or the number of colors in any one room, area, or surface. Premium paints of deep-hued, bright, pigment intensive, accent and primary colors may be scheduled for up to 25 percent of all interior and exterior surfaces without additional cost to the Owner.

B. Colors of priming coats (and body coats where specified) shall be lighter in tint than those of finish coat.

C. Colorants: Pure, non-fading pigments, mildew-proof, ultra-violet resistant, finely ground in approved medium; and be limeproof, when used in coatings to be applied on masonry, concrete, plaster, and gypsum board surfaces.

D. Paint schedule for exterior surfaces and materials: Refer to Document 09 91 13.

E. Paint schedule for interior surfaces and materials: Refer to Document 09 91 23.

F. Paint schedule for labeling and identifying fire resistive and rated designations : Refer to Document 09 91 23.

G. Painting schedule for mechanical and electrical equipment: Refer to Document 09 91 23.

End of Section

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Document 09 91 13

EXTERIOR PAINTING SCHEDULE

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled “APPLICATION” in specification Section 09 91 00 - PAINTING, regarding coverage.

1.2 PAINTING SCHEDULE FOR EXTERIOR SURFACES AND MATERIALS

A. Exterior METAL, galvanized (including structural steel canopies), excluding exterior handrails:

1. Touch-up galvanized coating with cold galvanizing paint.
2. One coat of epoxy primer (dry film coat 3.0 to 4.0 mils)
    a. Moore: “Corotech Polyamide Epoxy Coating”, V400 series.
    b. PPG **Paints** : **Amerlock 600 High Build Semi-Gloss Epoxy Coating, AK600-3 Series. Applied Dry Film Thickness: 5.0 mils min.** ~~“Amerlock 400 @ 4.0-6.0 mils DFT~~.
    c. Sherwin-Williams: “Macroproxy 646 Fast Cure” @ 3.0-5.0 mils DFT.
3. Two coats of gloss finish epoxy coating (dry film coat 1.5 to 2.0 mils).
    a. Moore: “Corotech Aliphatic Acrylic Urethane**”** V500 series.
    b. PPG **Paints**: **Pitthane Ultra Gloss Urethane Enamel, 95-812/95-819 Series. Applied Dry Film Thickness: 2.0 mils min.** ~~“Pitt-Thane Ultra Urethane Enamel”, 95-812 Series~~.
    c. Sherwin-Williams: "Hi-Solids Polyurethane-Low VOC", B65 Series/B60 V 30 @ 3.5 mils DFT.

B. Anti-Graffiti coating over exterior concrete and masonry at indicated/scheduled locations:

1. Two coats of anti-graffiti coating
    a. ProSoCo, Kansas City, KS. product “Blok Guard & Graffiti Control WB15”. (Basis of Design).

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Document 09 91 23

INTERIOR PAINTING SCHEDULE

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled “APPLICATION” in specification Section 09 91 00 - PAINTING, regarding coverage.

1.2 MANUFACTURER’S DESIGNATIONS

A. Manufacturer’s designations used in Schedule are defined as follows:

1. “California”: California Paints, Andover MA.
2. “Moore”: Benjamin Moore & Company, Montvale, NJ.
3. “PPG”: PPG Paints / PPG Industries, Inc., Pittsburgh PA.
4. “Sherwin Williams”: Sherwin Williams, Cleveland OH.
5. “Tnemec”: Tnemec Company, Inc., Kansas City, MO.

1.3 PAINTING SCHEDULE FOR INTERIOR SURFACES AND MATERIALS

A. Interior CONCRETE floors, (where schedule to be painted):

1. Two coats latex floor paint:
   a. California: “Allflor Epoxy Fortified Floor Enamel”, Nº. 530xx.
   b. Moore: “Moore's Latex Floor & Patio Enamel”, Nº. 122
   c. PPG: “Urethane Modified 100% Acrylic Latex Floor Porch & Deck Stain Latex”, 3-510 Series.
   d. Sherwin-Williams: “High Performance Floor Enamel”, A32 Series.

B. Interior CONCRETE MASONRY walls and partitions:

1. One coat block filler:
   a. California: “Mason-Cote 100% Acrylic Latex Block Filler”, Nº. 3751.
   b. Moore: “Ultra Spec Masonry Acrylic Sealer 608
   ~~c.~~ **PPG Paints: Speedhide Interior/Exterior Acrylic Masonry Block Filler, 6-15XI. Applied Dry Film Thickness: 8.0 mils min.** ~~PPG: “Speedhide Interior Masonry Latex Block Filler”, 6-7 Series.~~
   ~~d.~~**c.** Sherwin-Williams: "PrepRite Int. Ext Block Filler”, B25-W25 Series.
2. Two coats semi-gloss paint:
   a. California: “Fres-Coat Unite100% Acrylic Latex Semi-Gloss”, Nº. 563.

b. Moore: “Ultra Spec 500 Semi Gloss N539.

c. **PPG Paints: Speedhide Zero Interior Zero VOC Semi-Gloss Latex, 6-5510 Series. Applied Dry Film Thickness: 1.5 mils min.**~~PPG: “Speedhide”, 6-500 Series~~.

d. Sherwin-Williams: “ProMar 200 Latex Semi-Gloss”.

C. Interior GYPSUM BOARD (drywall) partitions:

1. One coat latex primer.

a. California: “Prime Touch Primer Sealer” Nºs. 545.

b. Moore: “Ultra Spec 500 Primer N534.

c. **PPG Paints: Speedhide Zero Interior Zero VOC Latex Primer, 6-4900XI. Applied Dry Film Thickness: 1.2 mils min.**~~PPG: “Speedhide Interior Quick Drying Latex Sealer”, 6-2 Series~~.

d. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.

2. Two coats latex eggshell paint:

a. California: “CalPro2000 Series Acrylic Eggshell”, Nº. 557.

b. Moore: “Ultra Spec 500 Low Sheen Eggshell N537.

c. **PPG Paints: Speedhide Zero Interior Zero VOC Eggshell Latex, 6-5310 Series. Applied Dry Film Thickness: 1.5 mils min.**~~PPG: “Speedhide Latex Eggshell Enamel”, 6-411 Series~~.

d. Sherwin-Williams: " ProMar 200 Zero VOC Interior Latex Eg-Shel”, B20-2600 Series.

D. Interior GYPSUM BOARD (drywall) partitions (Green Screen Walls):

1. One coat latex primer.

a. California: “Prime Touch Primer Sealer” Nºs. 545.

b. Moore: “Ultra Spec 500 Primer N534.

c. **PPG Paints: Speedhide Zero Interior Zero VOC Latex Primer, 6-4900XI. Applied Dry Film Thickness: 1.2 mils min.**~~PPG: “Speedhide Interior Quick Drying Latex Sealer”, 6-2 Series~~.

d. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.

2. Two coats vinyl acrylic, ‘green screen’ paint, flat sheen:

a. Rosco: “Video Paint, Chroma Key Green”, number 5711.

b. Pro Cyc, Inc.: “Virtual Green, Chroma Key Paint - Fluorescent - Flat”.

c. Ticonderoga Ventures, Inc., (Chromakey.org) New York, NY.

E. Interior GYPSUM BOARD (drywall) partitions, and ceilings, at toilet rooms, janitor’s closets, food preparation and dishwashing areas for VOC compliant epoxy finish:

1. One coat of sealer,
    a. California: “Prime Choice ASAP Primer”, Nº. 50300.
    b. Moore: “Ultra Spec 500 Primer N534.
    c. **PPG Paints: Speedhide Zero Interior Zero VOC Latex Primer, 6-4900XI. Applied Dry Film Thickness: 1.2 mils min.**~~PPG: “Speedhide Interior Quick Drying Latex Sealer”, 6-2 Series~~.
    d. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.
    e. Tnemec: PVA 51-792 Sealer.
2. Two coats of semi-gloss Water Based Acrylic-Epoxy Coatings (3 mils DFT each coat).
    a. California: No equivalent.
    b. Moore: “Corotech Water Based (WB) Epoxy, V450 series.
    c. **PPG Paints: Aquapon WB EP Two-Component Waterborne Semi-Gloss Epoxy Coating, 98E-1/98E-100 Series. Applied Dry Film Thickness: 2.0 mils min.**~~PPG: “Pitt-Glaze Water Based Acrylic Epoxy Enamels”, 16 Series.~~
    d. Sherwin-Williams: "Pro industrial Water Based (WB) Epoxy" B73 Series.
    e. Tnemec: “Tneme-Tufcoat”, Nº. 112.

F. Interior GYPSUM BOARD (drywall) ceilings and underside of soffits:
1. One coat latex primer.
    a. California: “Prime Touch Primer Sealer”, Nºs. 545.
    b. Moore: “Ultra Spec 500 Primer N534.
    c. **PPG Paints: Speedhide Zero Interior Zero VOC Latex Primer, 6-4900XI. Applied Dry Film Thickness: 1.2 mils min.**~~PPG: “Speedhide Interior Quick Drying Latex Sealer”, 6-2 Series~~.
    d. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.
2. Two coats latex flat paint:
    a. California: “CalPro2000 Series Acrylic Flat”, Nº. 556.
    b. Moore: “Ultra Spec 500 Flat N536.
    c. PPG: “Speedhide Latex Interior Flat Wall Paint”, 6-70 Series
    d. Sherwin-Williams: “ProMar 200 Int. Latex Flat Wall Paint Series”.

G. Interior MDF, new, unfinished, to receive painted (opaque) finish:
1. One coat acrylic primer-sealer (undercoater):
    a. California: “Wipe-Out 100% Acrylic Latex Stain Block”, Nº 52500.

b. Moore: “Fresh Start High-Hiding All Purpose Primer, Nº 046.

c. PPG: “Seal Grip Interior/Exterior Universal Primer/Sealer”, 17-921 series.

d. Sherwin-Williams: "PrepRite ProBlock Primer/Sealer", B51 W620 Series.

2. Two coats acrylic semi-gloss enamel:

a. California: “Fres-Coat Unite Semi-Gloss”, Nº. 563.

b. Moore: “Ultra Spec 500 Latex Semi Gloss N539.

c. **PPG Paints: Speedhide Zero Interior Zero VOC Semi-Gloss Latex, 6-5510 Series. Applied Dry Film Thickness: 1.5 mils min.**~~PPG: “Speedhide Interior Semi-Gloss”, 6-500 Series~~.

d. Sherwin-Williams: “ProMar 200 Zero VOC Semi-Gloss”, B31-2600 Series.

H. Interior METAL, FERROUS, to receive semi-gloss finish: (includes galvanized metal doors and frames):

1. One coat of rust prohibitive primer for unfinished metal surfaces, and touch up bare metal at shop primed, existing and previously coated surfaces:

a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.

b. Moore: “Acrylic Metal Primer”, Nº. P04.

c. **PPG Paints: Pitt-Tech Plus Interior/Exterior Acrylic DTM Primer/Finish, 4020PF. Applied Dry Film Thickness: 2.2 mils min.**~~PPG: “Pitt-Tech DTM Primer/Finish 100% Acrylic”, 90-709/712 Series~~

d. Sherwin-Williams: "DTM Acrylic Primer Finish", B66 W1 Series.

2. Two coats acrylic semi-gloss enamel:

a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.

b. Moore: “Ultra Spec 500 DTM Acrylic Semi-Gloss”, Nº. HP29.

c. PPG: “Pitt-Tech Plus High Performance, Semi -Gloss DTM Industrial Enamel”, 90-1210 Series.

d. Sherwin-Williams: “Sher-Cryl HPA Semi-Gloss”, B66 Series.

I. Interior METAL, RAILINGS, (handrails and guardrails) to receive aliphatic acrylic polyurethane finish:

1. First coat, epoxy undercoat:

a. International: “Interseal 670 HS” at 5.0 mils DFT.

b. Tnemec: “69 Color High-Build Epoxoline II” at 3.0 mils DFT.

c. Moore: “Corotech Polyamind Coating”, V400 series.

d. **PPG Paints: Amerlock 600 High Build Semi-Gloss Epoxy Coating, AK600-3 Series. Applied Dry Film Thickness: 5.0 mils min.**~~PPG: “PPG All Weather DTR” 97 Series @ 5 mils DFT, 18 Month Recoat~~

e. Sherwin-Williams: “Recoatable Epoxy Primer” @4.0-6.0 mils DFT.

2. Second coat, high gloss aliphatic acrylic polyurethane coating:

a. International: “Interthane 990” at 4.0 mils DFT.

b. Tnemec: “74 Endura Shield” at 4.0 mils DFT.

c. Moore: “Corotech Aliphatic Acrylic Urethane”, V500 series.

d. **PPG Paints: Pitthane Ultra Gloss Urethane Enamel, 95-812/95-819 Series. Applied Dry Film Thickness: 2.0 mils min.**~~PPG: “Pitt-Thane Ultra” 95-800 Series @ 4 mils DFT~~.

e. Sherwin-Williams: “Acrolon 218 HS Acrylic Polyurethane” @ 3.0-6.0 mils DFT.

J. Interior metal, galvanized, (includes exposed ductwork):

1. Touch-up with metal primer.

a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.

b. Moore: “Acrylic Metal Primer”, Nº. P04.

c. **PPG Paints: Pitt-Tech Plus Interior/Exterior Acrylic DTM Primer/Finish, 4020PF. Applied Dry Film Thickness: 2.2 mils min.**~~PPG: “Pitt-Tech DTM Primer/Finish 100% Acrylic”, 90-709/712 Series~~.

d. Sherwin-Williams: "DTM Acrylic Primer Finish" B66 W1 Series.

2. Two coats acrylic semi-gloss enamel:

a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.

b. Moore: “Ultra Spec 500 DTM Acrylic Semi-Gloss”, Nº. HP29.

c. **PPG Paints: Pitt-Tech Plus EP Interior/Exterior Acrylic Semi-Gloss DTM Industrial Enamel, 90-1610 Series. Applied Dry Film Thickness: 2.0 mils min.**~~PPG: “Pitt-Tech Plus High Performance, Semi -Gloss DTM Industrial Enamel”, 90-1210 Series~~.

d. Sherwin-Williams: “Sher-Cryl HPA Semi-Gloss”, B66 Series.

K. Interior exposed METAL, PIPING: Same as specified for ferrous metal.

1.4 PAINTING SCHEDULE FOR MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black enamel.

B. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

C. Plywood backboards for electrical panels and other equipment. Paint both front and back surfaces and all edges of plywood backboards before backboards are installed.

1. One coat latex primer-sealer (undercoater):
    a. Moore: “Ultra Spec 500 Latex Primer N534.
    b. **PPG: “Seal Grip Interior/Exterior Universal Primer/Sealer”, 17-921XI series.**~~PPG: “Pure Performance Interior Latex Primer”.~~
    c. Sherwin-Williams: "Harmony Interior Latex Primer” B11W900.
2. Two coats latex semi-gloss paint:
    a. Moore: “Ultra Spec 500 Semi Gloss N539.
    b. **PPG Paints: Speedhide Zero Interior Zero VOC Semi-Gloss Latex, 6-5510 Series. Applied Dry Film Thickness: 1.5 mils min.**~~PPG: “Pure Performance Interior Semi-gloss”, 9-500 Series~~.
    c. Sherwin-Williams: "Harmony Interior Latex Semi-gloss" B10 Series.

D. Interior water piping system ‘non-potable water’, and ‘potable water’), Non-insulated, insulated and wrapped piping to receive field painted semi-gloss finish, including all concealed locations for recycled water.

1. General Comply with *International Plumbing Code,* 2018 Edition, as published by the International Code Council, Inc. (I.C.C.), as revised by *RHODE ISLAND PLUMBING CODE*, Regulation RISBC-3, and specification requirements of Division 22 – PLUMBING.
2. Paint types:
    a. At non insulated conditions: Same as specified for ferrous metal.
    b. At insulated conditions: Apply one prime coat and two finish coats of a paint recommended by the approved paint manufacturer for application on the exposed wrapping material.
3. Colors and patterns:
    a. Potable water: (including hot water, cold water and return piping) Paint 3 inch wide bands of ‘Green’ at intervals of not more than 10 feet and at all points where piping penetrate through walls, floors and roofs.
        1) Includes cold water piping, hot water piping and hot water return piping.
    b. Non-potable water: Paint 3 inch wide bands of ‘Purple” at intervals of not more than 10 feet and at all points where piping penetrate through walls, floors and roofs.

E. Prime and paint insulated and exposed cold pipes, conduit, electrical boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are located in storage, mechanical or equipment spaces or those items which are factory prefinished.

F. Exposed to view un-insulated hot pipes within finished painted areas: Two coats heat-resistant enamel conforming to Federal Specification TT-E-496, Type I, applied when surfaces are less than 140 degrees Fahrenheit.

G. In compliance with *International Building Code*, 2018 edition, as published by the International Code Council, Inc. (I.C.C.), as revised by *RHODE ISLAND BUILDING CODE*, Regulation RISBC-1, effective February 1, 2022, and as additionally specified herein, provide identification for all fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions and any other wall or partition which is required to have protected openings or penetrations.

1. Application:

   a. Apply to outside of fire rated shafts, and to both sides of partitions at intervals not to exceed 30'-0" for entire length of partition or wall, or once on any partition 30'-0 feet or less in length.

   b. Locate identification in all accessible concealed floor, floor-ceiling and attic spaces. Locate identification within 12 to 18 inches above finished ceilings.

   c. Apply stenciled lettering by spray or brush, or provide permanent signage. Identification shall be waterproof, fade-proof and non-combustible. Signage shall be mechanically fastened or permanently adhered to partition.

   d. Stencil character height: 1 inch minimum.

   e. Color: Easily identifiable color, contrasting with background, acceptable to Owner.

2. Apply stenciled lettering to the following types of partitions using wording specified:

   a. Applied identification for 4 hour fire rated partitions shall read: "4 HOUR FIRE WALL – PROTECT ALL OPENINGS"

   b. Applied identification for 3 hour fire rated partitions shall read: "3 HOUR FIRE WALL - PROTECT ALL OPENINGS".

   c. Applied identification for 2 hour fire rated partitions shall read: "2 HOUR FIRE WALL - PROTECT ALL OPENINGS".

   d. Applied identification for 1 hour fire rated partitions shall read: "1 HOUR FIRE WALL - PROTECT ALL OPENINGS".

   e. Applied identification for Smoke barriers shall read: "1 HOUR SMOKE BARRIER - PROTECT ALL OPENINGS".

   f. Applied identification for Smoke partitions shall read: "SMOKE BARRIER PARTITION - PROTECT ALL OPENINGS".

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Section 09 96 00

HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Prepare surfaces to receive special coatings.

B. Field application of special coatings and subsequent touch-up, of interior and exterior items and surfaces.

1.2 RELATED REQUIREMENTS

A. Section 01 60 00 - PRODUCT REQUIREMENTS: Listing of VOC requirements for adhesives, cleaning/maintenance materials, paints, coatings, and sealants.

B. Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL: Procedural and administrative requirements relating to recycling goals, waste management program and reporting.

C. Section 01 81 13 - SUSTAINABLE DESIGN REQUIREMENTS: Procedural and administrative requirements relating to required *Northeast CHPS Verified Program,* (NE-CHPS) Certification.

D. Section 09 91 00 - PAINTING: Conventional paint coatings.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. SSPC-Vis1 - Pictorial Surface Preparation Standards for Painting Steel Structures.
2. SSPC-SP2 - Steel Structures Painting Manual, Volume 2, Systems and Specifications.
3. All applicable federal, state and municipal codes, laws and regulations for flammability and smoke generation of interior finishes.

B. Sustainability Requirement Reference: The following sustainability requirements are hereby made a part of this Section by reference thereto:

1. High Performance Schools Exchange, Northeast Energy Efficiency Partnerships NE-CHPS, (referred to herein as “NE-CHPS”).

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS:

1. Color chips: After final approval of all colors and tints by the Architect, submit to the Owner, color chips of all coatings used, with manufacturer's name and mix designation of the coating for the purpose of future re-ordering of coatings. Color chips shall be at least six (6) square inches in size, for each color and tint.
2. Selection samples: Manufacturer's color selector for custom mixed colors for Architect's color scheduling.
3. Selection samples: Two 9 x 12 inch finished samples on hardboard of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.
4. Sustainable Design Submittals: As required by NE CHPS.

1.5 QUALIFICATIONS

A. Applicator: Company specializing in performance of the work of this Section with 3 years minimum documented experience and acceptable to coating manufacturer.

1.6 QUALITY ASSURANCE

A. Perform surface preparation work on primed or unfinished steel surfaces in accordance with SSPC Systems and Specifications as described herein. Maintain one copy of each document on site.

B. Single source responsibility: Provide primers and other undercoat materials produced by same manufacturer as finish coats. Use only thinners approved by coatings manufacturer, and use only within recommended limits.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site in sealed and labeled containers; container labeling shall include manufacturer's name, type of paint, color mix designation, expected coverage, surface preparation instructions, instructions for mixing and reducing, drying time, and clean-up recommendations.

B. Store materials, conforming with applicable codes and fire regulations, in designated spaces. Keep storage area secure when direct access is not required or when not performing work under this Section. Take precautionary measures to prevent fire hazards and spontaneous combustion, maintain a dry-chemical type

fire extinguisher in all areas where materials of this Section are being stored or used.

C. Store materials in a well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit.

D. Do not use the sanitary system for mixing or disposal of refuse material. Carry water to mixing rooms and dump waste material in a suitable refuse receptacle. Remove oily rags and waste each day.

1.8 PROJECT CONDITIONS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent unless required otherwise by manufacturer's instructions.

C. Apply coatings and primers within temperature and humidity range specified by coating manufacturer.

D. Provide sufficient lighting to maintain 80 foot-candles measured mid-height at substrate surface.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Coatings:

a. Courtaulds Coatings, Inc - International Paint and Porter Paint, Houston Texas.

b. Tnemec Company, Inc., Kansas City, MO.

c. PPG Industries, Inc., Pittsburgh PA.

2.2 ACCESSORIES

A. Accessory materials: Provide all accessory materials not specifically indicated, but are required to achieve the finishes specified, including linseed oil, shellac, turpentine, mineral spirits and other materials.

2.3 FINISHES

A. Refer to Schedule at end of this Section for surface finish schedule.

B. Colors: The Architect will furnish a schedule of colors for each area and surface. Tinting and matching shall be to the satisfaction of the Architect. No limit is placed on the number of colors that may be required, or the number of colors in any one room, area, or surface. Premium paints of deep-hued, bright, pigment intensive, accent and primary colors may be scheduled for up to 25% of all surfaces without additional cost to the Owner.

C. Colors of priming coats shall be lighter in tint or color than those of finish coats.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Notify Contractor of any condition that may potentially affect proper application of coatings.

B. Beginning Work of this Section means acceptance of existing substrate surfaces and site conditions.

3.2 PREPARATION - GENERAL

A. Furnish and lay suitable drop cloths in all areas where coating work is being done to protect floors and all other surfaces from damage during the work. Protect adjoining surfaces with painter’s mask tape.

B. Prior to preparing surfaces or finishing, remove all finish hardware for painting doors and frames, except hinges and locks on exterior door; remove electrical plates, light fixture trim and fittings. Re-install hardware and other removed items after painted surfaces are thoroughly dry.

C. Mix and prepare coatings in strict accordance with manufacturer’s written instructions. Thoroughly mix to ensure uniformity of color and mass, unless otherwise directed by the manufacturer of the specific coating used. Except for epoxy mixtures, strain previously opened materials to remove skins, coating lumps, and other foreign matter prior to painting. Dispose of epoxy materials which have begun to set.

D. Thin or reduce materials only as recommended by the specific material manufacturer, and only with the approval of the Architect.

E. Prepare substrate surfaces in accordance with SSPC (Steel Structures Paint Council) “Steel Structures Painting Manual, Volume 2”, to the preparation methods and specifications as specified herein for each coating type.

3.3 APPLICATION - GENERAL

A. Apply all materials in strict accordance with the approved manufacturer's printed instruction, and in accordance with the best trade practices. Each coat shall be reviewed and approved by the Architect before succeeding coats are applied.

B. Do not apply successive coating until the preceding coat is thoroughly dry, except as otherwise specified, and in no case in less than minimum period of time recommended by manufacturer.

C. Apply each coat to a uniform finish; Apply primer and first coat of slightly lighter in color tint than the scheduled color of the final coat.

3.4 CLEANING

A. Upon completion of the work in each area, remove all coating splatters from glass, prefinished surfaces, bright metals, and from other surfaces that have not been painted or finished hereunder. Do not use abrasive paper or abrasive cleaner on any prefinished surface or bright metal. Remove all materials and debris; leave work area in a clean condition.

3.5 PROTECTION AND TOUCH-UP

A. During application of coatings, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Properly clean, repair or replace any work so damaged and soiled.

B. Protect all painted and finished surfaces against damage until the date of final acceptance of the work. The Architect will conduct a final review of all work performed. Re-coat or touch-up, all scratches and other blemishes on surfaces, and as directed by the Architect, any areas found which do not comply with the requirements of this Section, and bear all costs therefor.

C. Any re-coating or touch-up work, required after the work of this Section has been reviewed and accepted by the Architect, will be paid for by the Contractor.

3.6 SCHEDULE - INTERIOR SURFACES

A. Coating System SC-1:

1. Rust inhibitive “single coat” spray applied acrylic finish system (flat finish), custom colored:
    a. Application: Metal decking, joists and overhead steel (exposed to view), underside of exposed formed concrete decking, exposed sprinkler piping, conduits, ducts and similar items.
    b. Substrate preparation: Remove grease, scale, dirt, rust, and other contaminants.
    c. Single coat (touch up, apply two coats to underside concrete surfaces):
        1) Tnemec series 115 - “Uni-Bond DF” at 3.0 to 4.0 mils DFT.
        2) PPG series 6-157 – “SuperTech WB, Interior Dry-Fog Flat Latex”, at 2.0 to 2.5 mils DFT
        3) Sherwin Williams product “Waterborne Acrylic Dry Fall”.
        4) Benjamin Moore series M54 - “Sweep-Up Spray Latex Flat”

B. Coating System SC-2:

1. Application: Concrete flooring surfaces scheduled to receive special coatings.
2. Substrate preparation: Shotblast floor surface to create uniform 20 mil profile. Thoroughly clean and rinse surfaces; allow to completely dry. Allow a minimum of 4 hours before commencing application of coatings.
3. First coat (primer):
   a. **PPG: "PPG Floor Coating", 3-510 Series.**~~PPG product, PP1069 – "Acrylic Floor Enamel".~~
   b. Sherwin Williams product, "Porch and Floor Enamel".
   c. Benjamin Moore product, Series 122 "Latex Floor & Patio Enamel".
4. Second coat (finish coat):
   a. **PPG: "PPG Floor Coating", 3-510 Series.**~~PPG product, PP1069 – "Acrylic Floor Enamel".~~
   b. Sherwin Williams product, "Porch and Floor Enamel".
   c. Benjamin Moore product, Series 122 "Latex Floor & Patio Enamel".

C. Coating System SC-3

1. Application: Metal, Ferrous (new uncoated and shop primed, stair risers where indicated).
2. Substrate preparation: SSPC-SP3
3. First coat (primer), Zinc-rich primer (at surfaces previously primed, touch up bare steel):
   a. Courtaulds/International 26098 "Interlac 260, Gray" at 2.0 to 3.0 mils DFT.
   b. Tnemec product "37H-78- Primer, Gray", at 2.0 to 3.0 mils DFT.
   c. PPG Pitt-Guard Rapid Coat DTR Epoxy, Series 95-240 at 5.0-7.0 mils DFT
4. Second coat (intermediate coat):
   a. Courtaulds/International "Interseal 670" at 5.0 to 6.0 mils DFT.
   b. Tnemec "Series 66 Color High-Build Epoxoline II" at 4.0 to 6.0 mils DFT.
   c. PPG Aquapon High Build Polyamide Epoxy, Series 97-130 at 4.0-6.0 mils DFT
5. Third coat (finish coat):
   a. Courtaulds/International "Interthane 870" at 3.0 to 5.0 mils DFT.
   b. Tnemec "Series 73 Endura Shield" at 2.0 to 3.0 mils DFT.
   c. PPG Pitthane High Build Acrylic Aliphatic Urethane, Series 97-840 at 4.0-6.0 mils DFT

3.7 SCHEDULE - EXTERIOR SURFACES

A. Coating System SC-3

1. Application: Metal, Ferrous (new uncoated).
2. Substrate preparation: SSPC-SP6
3. First coat (primer):
   a. Courtaulds/International “Interzinc 52” at 2.0 to 3.0 mils DFT.
   b. Tnemec “90-97 Zinc Rich Primer” at 2.5 to 3.5 mils DFT.
   c. PPG Moisture Cure Zinc Rich Primer, Series UC65147 at 3.0-4.0 mils DFT.
4. Second coat (finish coat):
   a. Courtaulds/International “Interthane 870” at 3.0 to 4.0 mils DFT.
   b. Tnemec Series 74 “Endura Shield” at 3.0 to 5.0 mils DFT.
   c. PPG “Pitthane High Build Semi-Gloss Enamel 95-8800” at 4.0-6.0 mils DFT.

B. Coating System SC-4 – Aliphatic Acrylic Polyurethane

1. Application: Exterior galvanized metal handrails.
2. Substrate preparation: Mechanically abrade all surfaces.
3. Acid etch coat, if recommended by manufacturer:
   a. Courtaulds/International Polyvinyl Butyral Primer “Interprime Etch Primer” at 0.4 to 0.5 mils DFT or approved equal
4. First coat (intermediate coat):
   a. Courtaulds/International “Intergard 475” at 4.0 to 6.0 mils DFT.
   b. Tnemec Series 27 “F.C. Typoxy” at 4.0 to 6.0 mils DFT.
   c. PPG Pitt-Guard All Weather DTR, Series 97-948 at 5.0-7.0 mils DFT.
5. Second coat (finish coat):
   a. Courtaulds/International “Interthane 870” at 4.0 to 5.0 mils DFT.
   b. Tnemec Series 74 “Endura Shield” at 4.0 to 5.0 mils DFT.
   c. PPG Pitthane Ultra Acrylic Aliphatic Urethane, Series 95-800 at 2.0-3.0 mils DFT.

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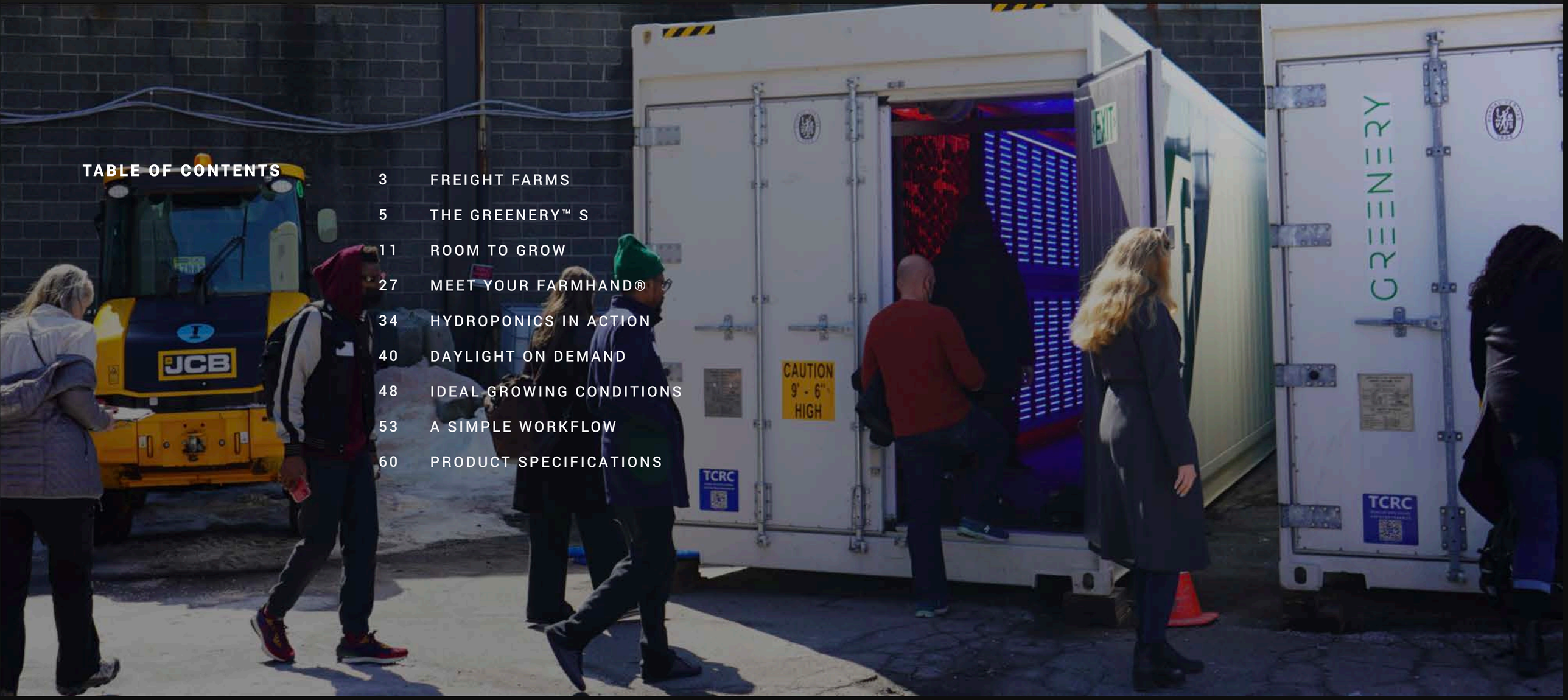
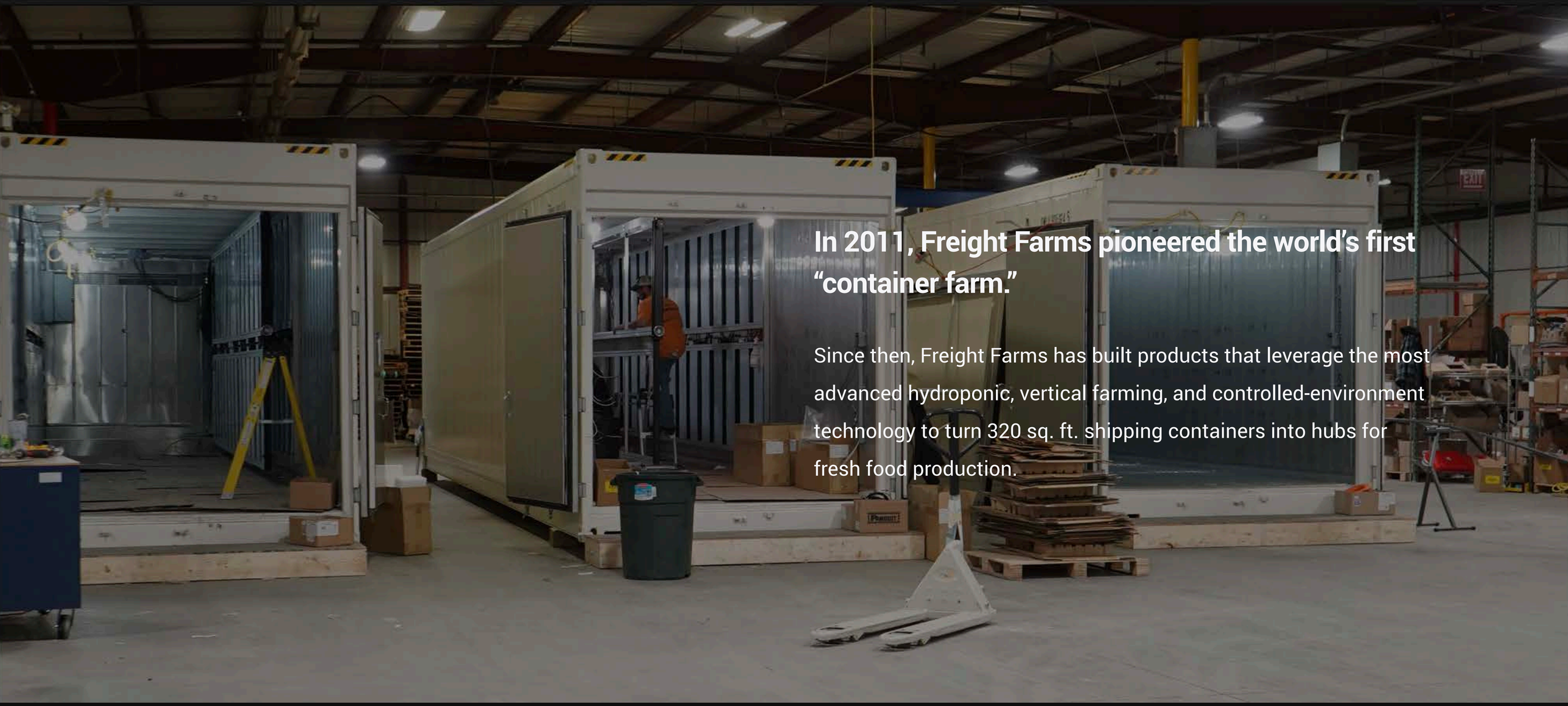
GREENERY S

2023 PRODUCT BOOKLET

FREIGHT FARMS

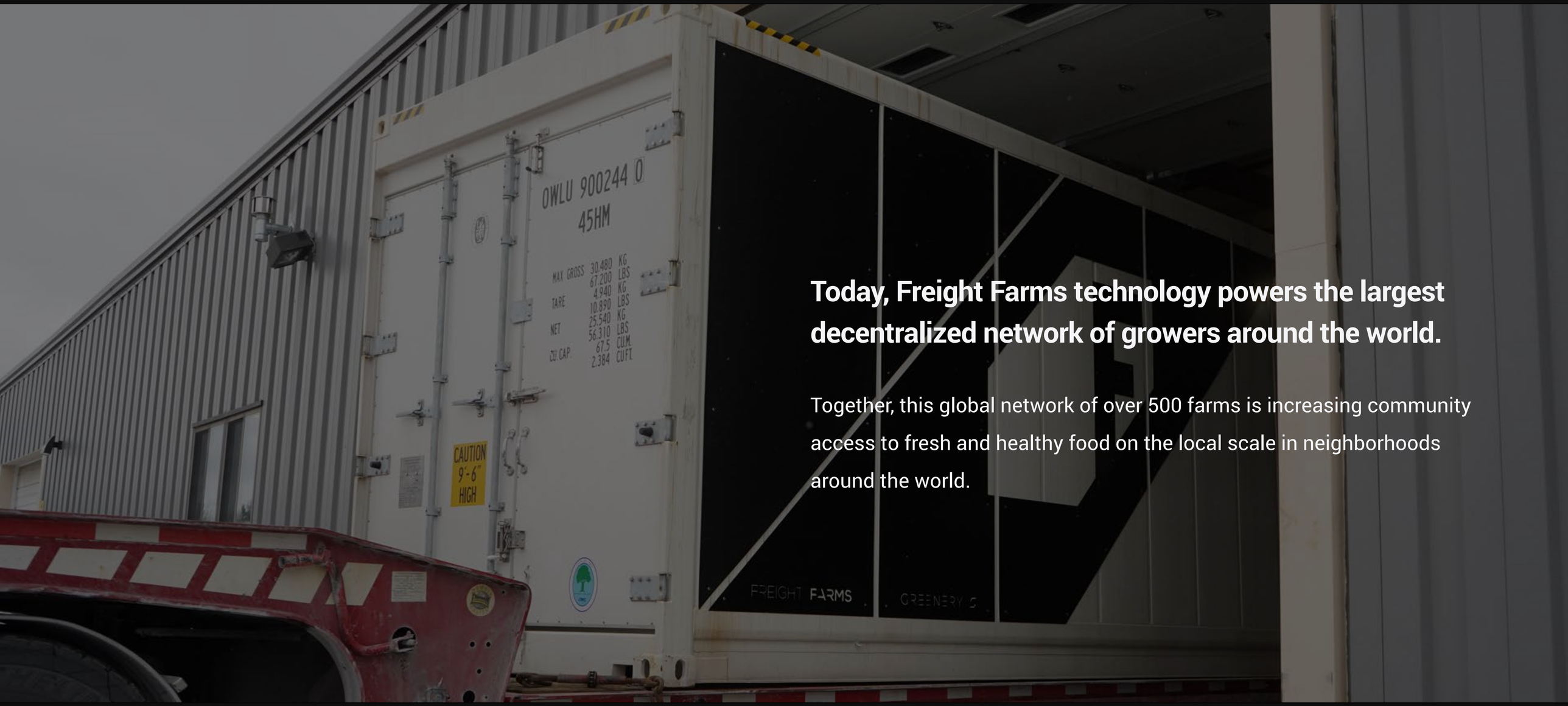
TABLE OF CONTENTS





In 2011, Freight Farms pioneered the world’s first “container farm.”

Since then, Freight Farms has built products that leverage the most advanced hydroponic, vertical farming, and controlled-environment technology to turn 320 sq. ft. shipping containers into hubs for fresh food production.

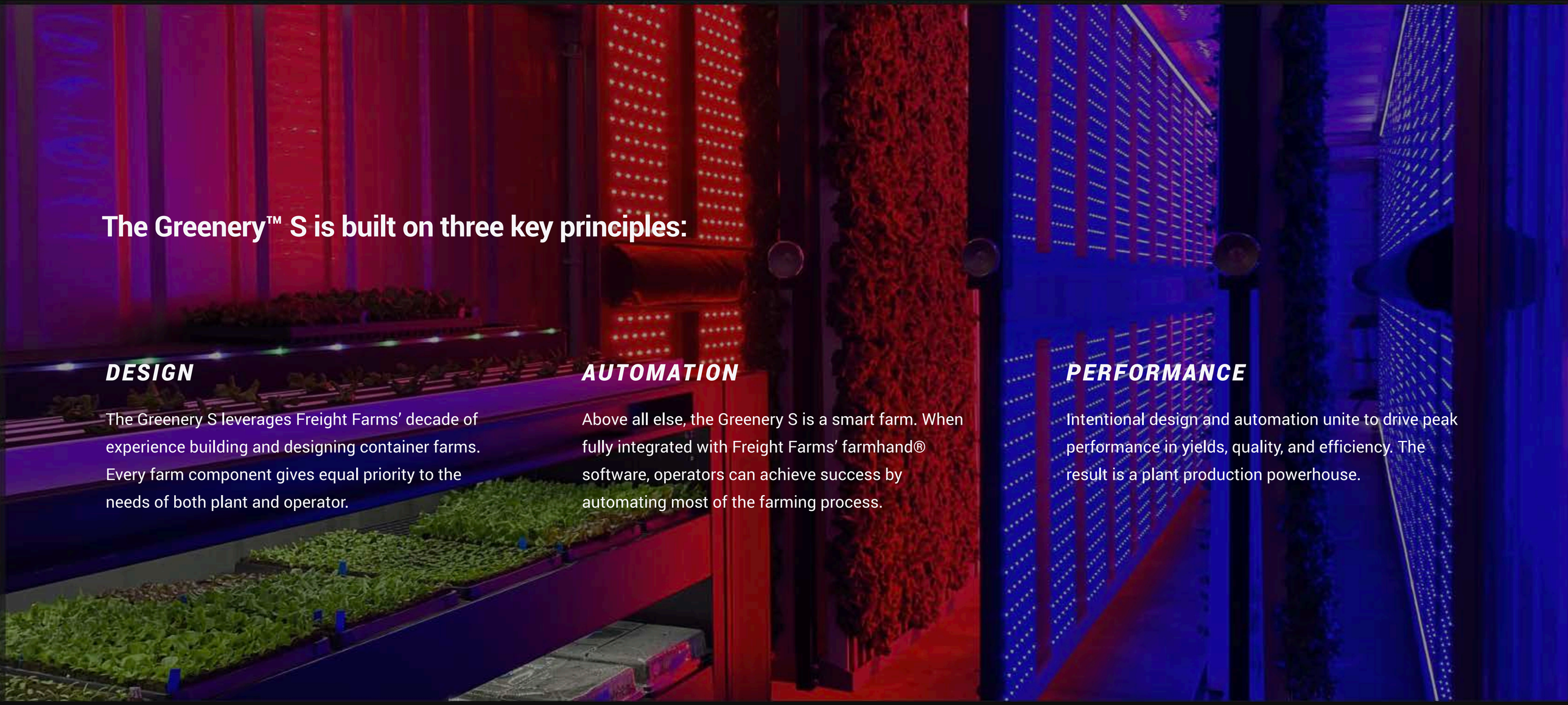


Today, Freight Farms technology powers the largest decentralized network of growers around the world.

Together, this global network of over 500 farms is increasing community access to fresh and healthy food on the local scale in neighborhoods around the world.

THE ULTIMATE GROWING PLATFORM

The Greenery™ S gives farmers unprecedented power, control, and ease-of-use to unlock the potential for local food production in their own communities.



The Greenery™ S is built on three key principles:

DESIGN

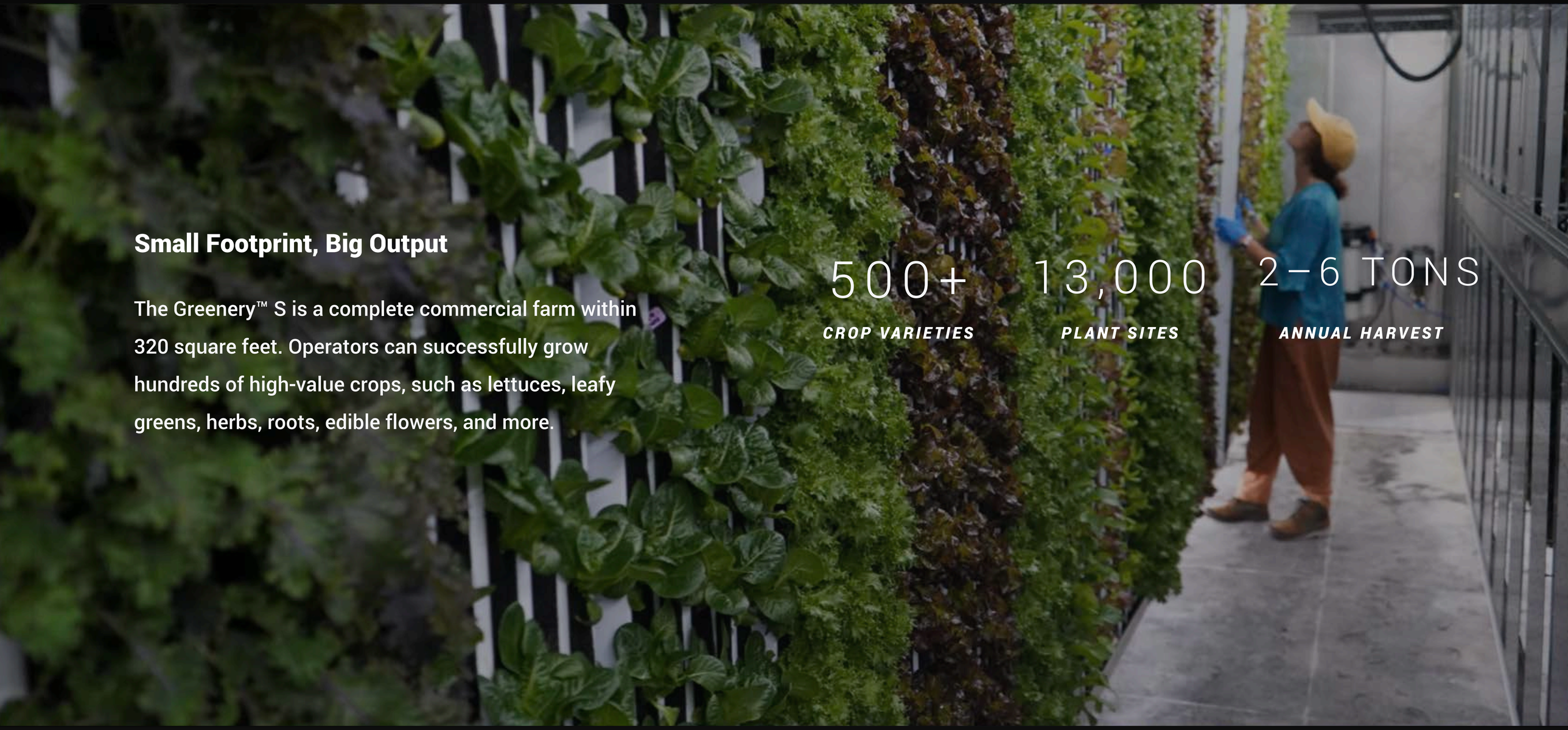
The Greenery S leverages Freight Farms' decade of experience building and designing container farms. Every farm component gives equal priority to the needs of both plant and operator.

AUTOMATION

Above all else, the Greenery S is a smart farm. When fully integrated with Freight Farms' farmhand® software, operators can achieve success by automating most of the farming process.

PERFORMANCE

Intentional design and automation unite to drive peak performance in yields, quality, and efficiency. The result is a plant production powerhouse.



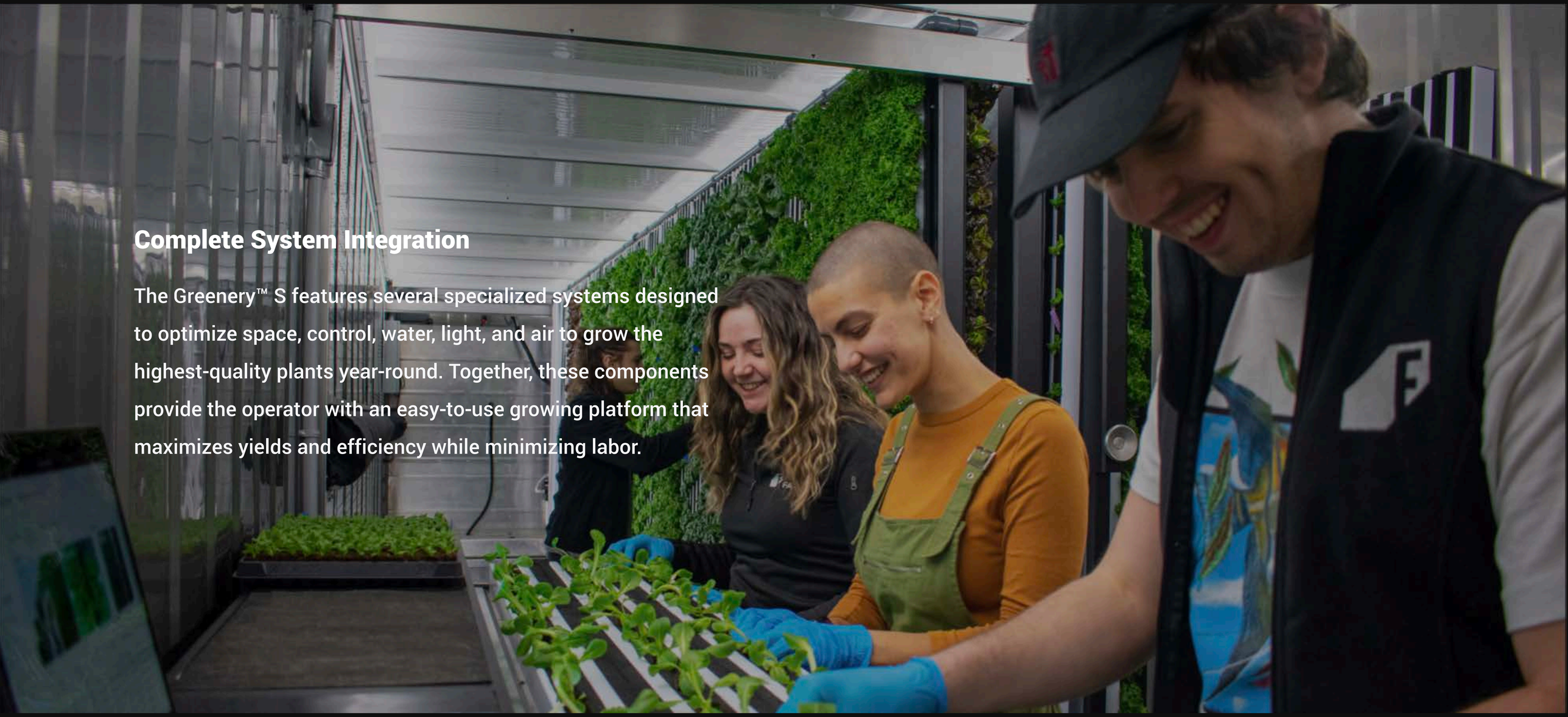
Small Footprint, Big Output

The Greenery™ S is a complete commercial farm within 320 square feet. Operators can successfully grow hundreds of high-value crops, such as lettuces, leafy greens, herbs, roots, edible flowers, and more.

500+
CROP VARIETIES

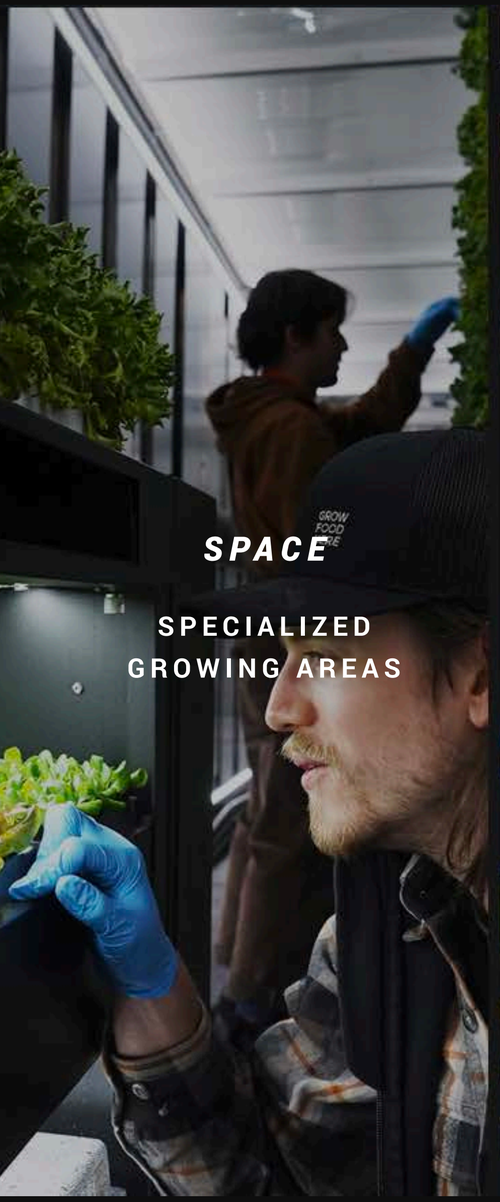
13,000
PLANT SITES

2–6 TONS
ANNUAL HARVEST



Complete System Integration

The Greenery™ S features several specialized systems designed to optimize space, control, water, light, and air to grow the highest-quality plants year-round. Together, these components provide the operator with an easy-to-use growing platform that maximizes yields and efficiency while minimizing labor.

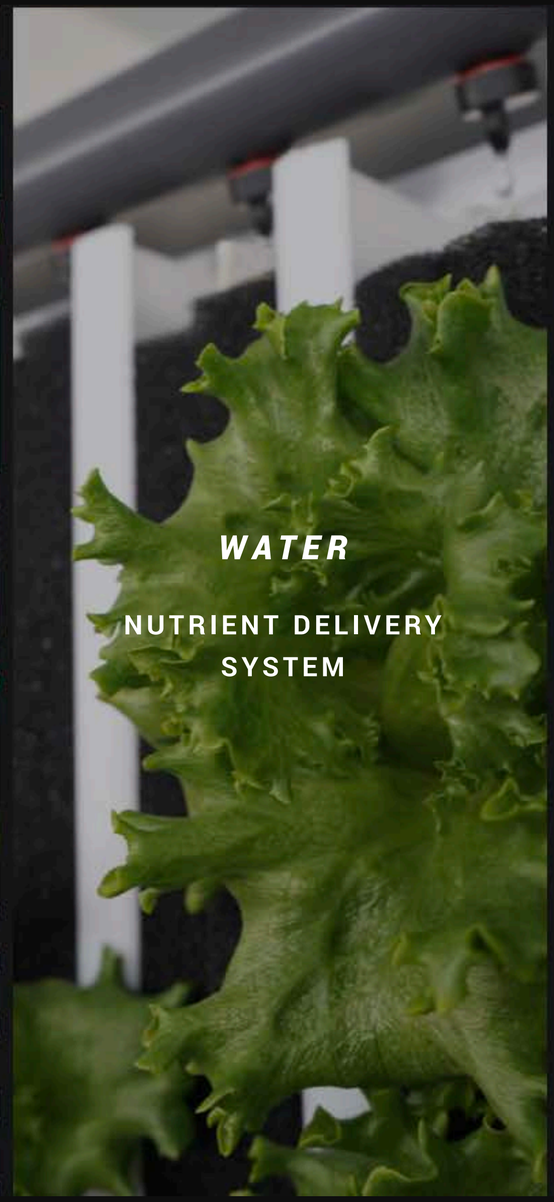


SPACE

SPECIALIZED
GROWING AREAS

CONTROL

INTEGRATED FARMHAND®
SOFTWARE



WATER

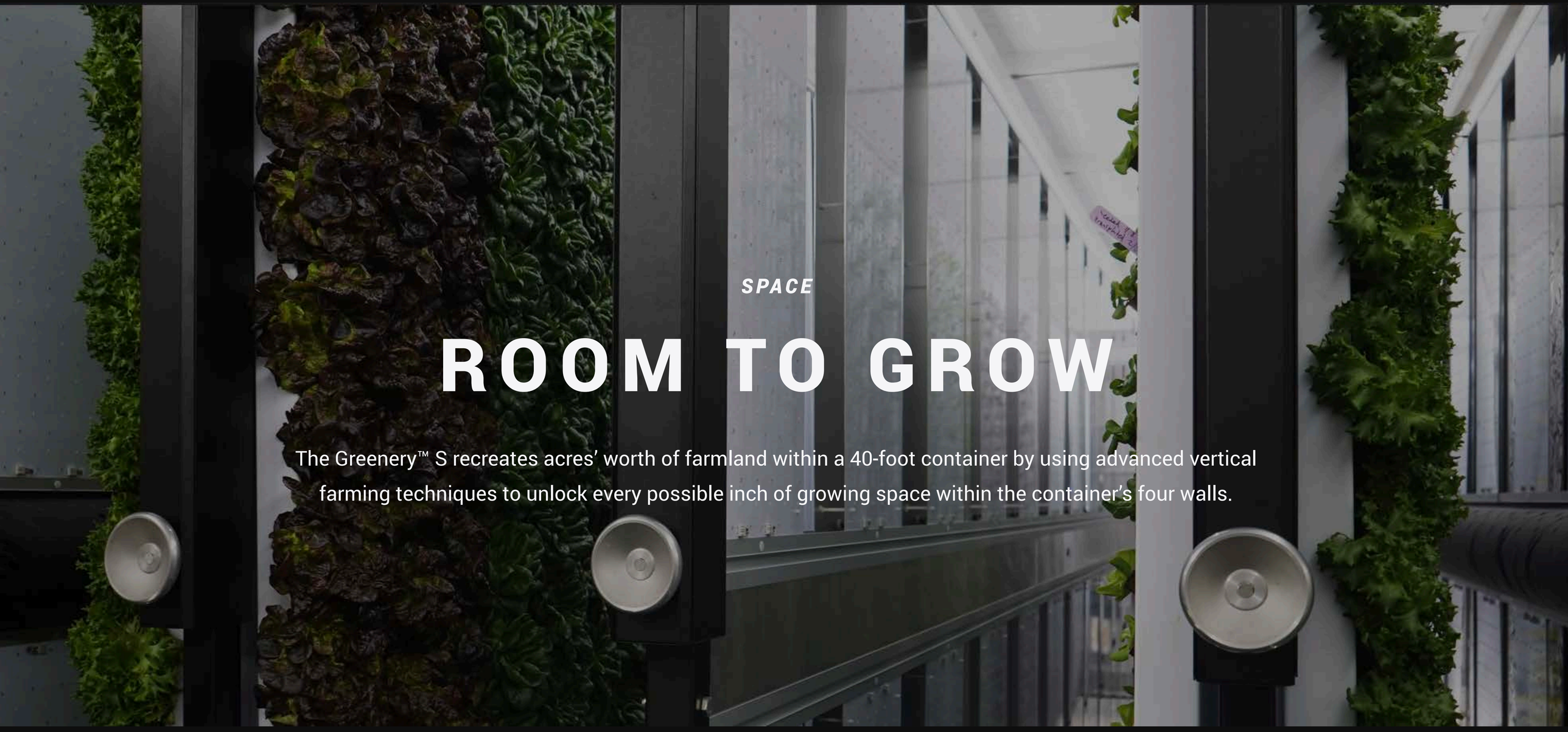
NUTRIENT DELIVERY
SYSTEM

LIGHT

DYNAMIC LIGHTING
SYSTEM

AIR

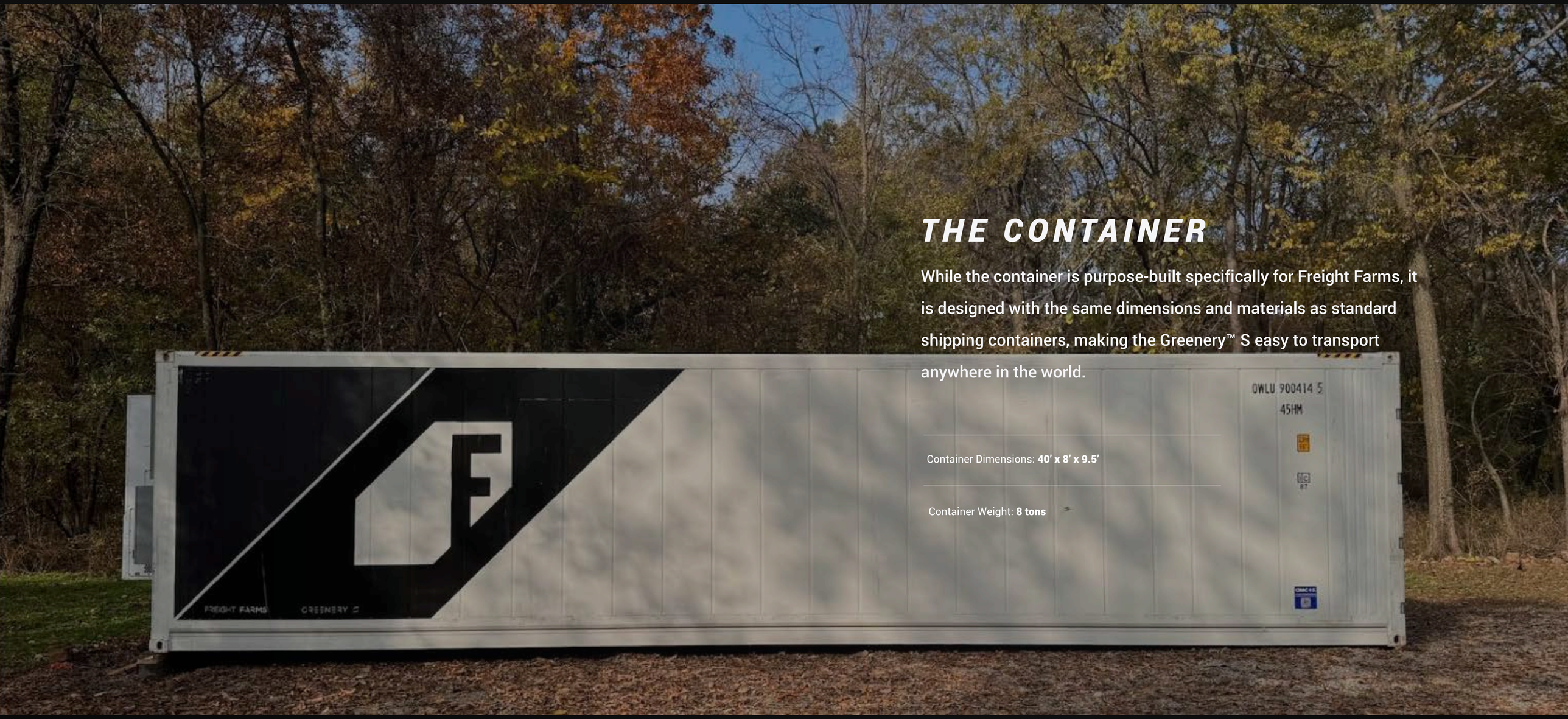
ADAPTIVE CLIMATE
SYSTEM



SPACE

ROOM TO GROW

The Greenery™ S recreates acres' worth of farmland within a 40-foot container by using advanced vertical farming techniques to unlock every possible inch of growing space within the container's four walls.



THE CONTAINER

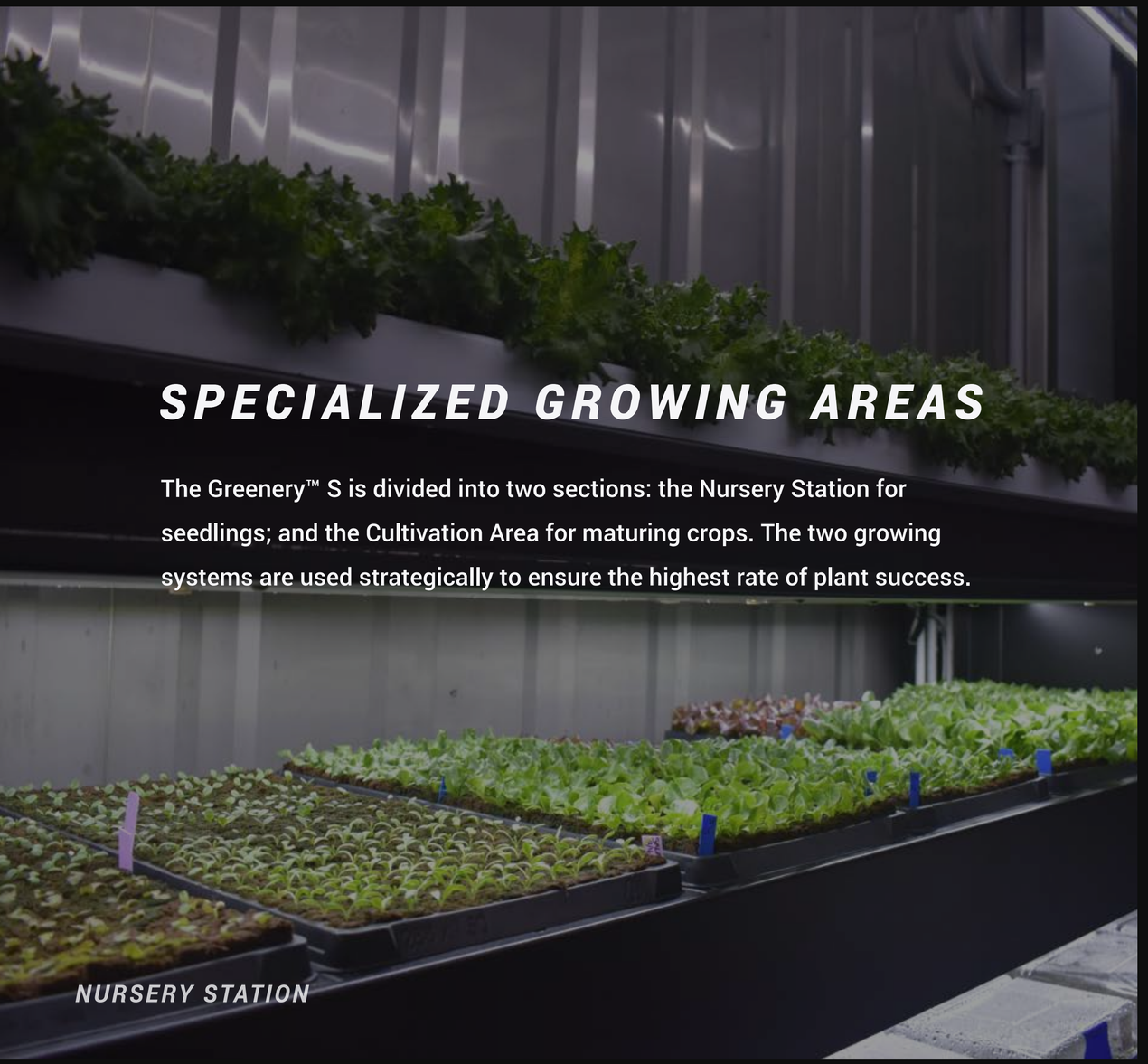
While the container is purpose-built specifically for Freight Farms, it is designed with the same dimensions and materials as standard shipping containers, making the Greenery™ S easy to transport anywhere in the world.

Container Dimensions: **40′ x 8′ x 9.5′**

Container Weight: **8 tons**

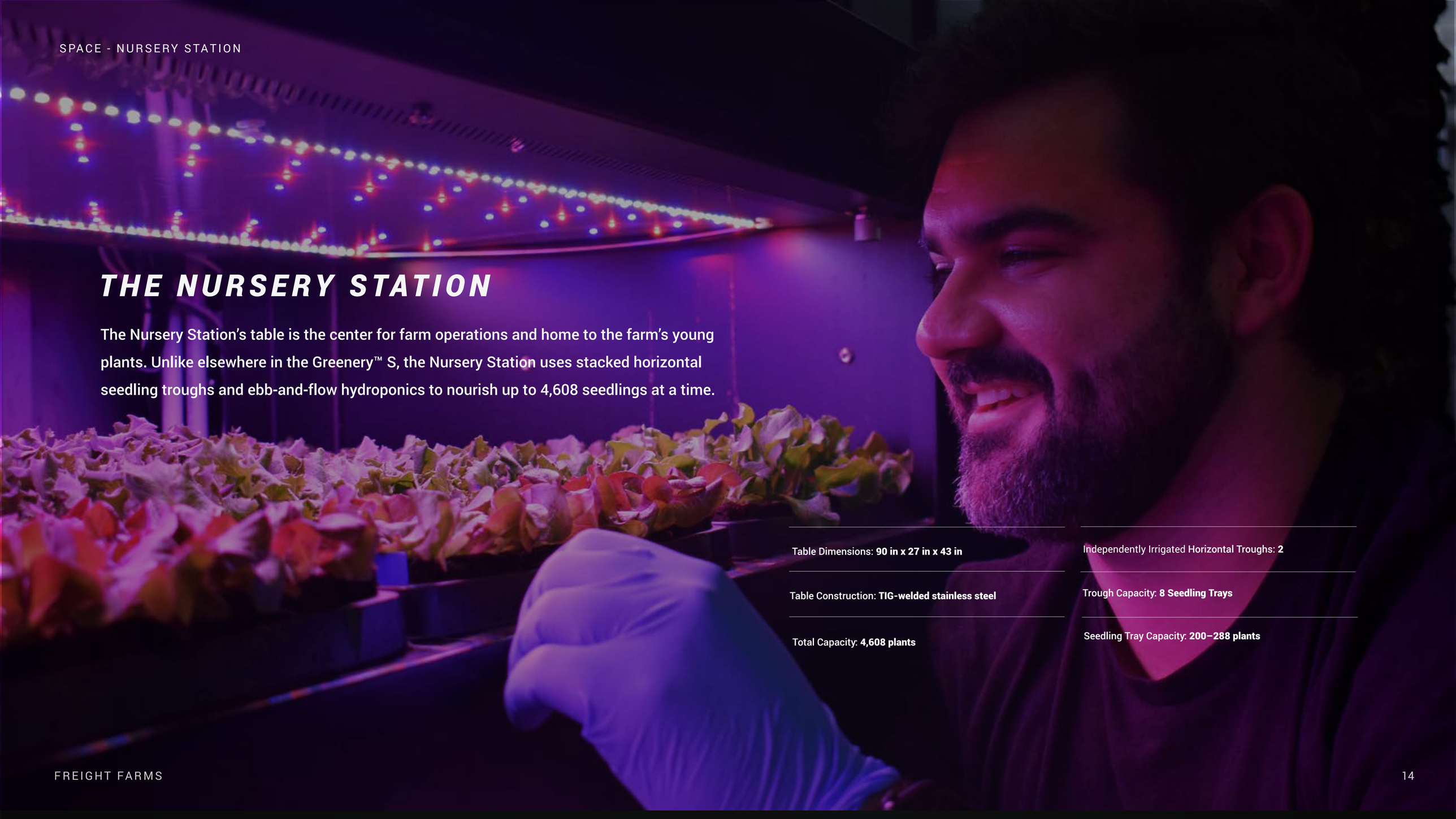
SPECIALIZED GROWING AREAS

The Greenery™ S is divided into two sections: the Nursery Station for seedlings; and the Cultivation Area for maturing crops. The two growing systems are used strategically to ensure the highest rate of plant success.



NURSERY STATION

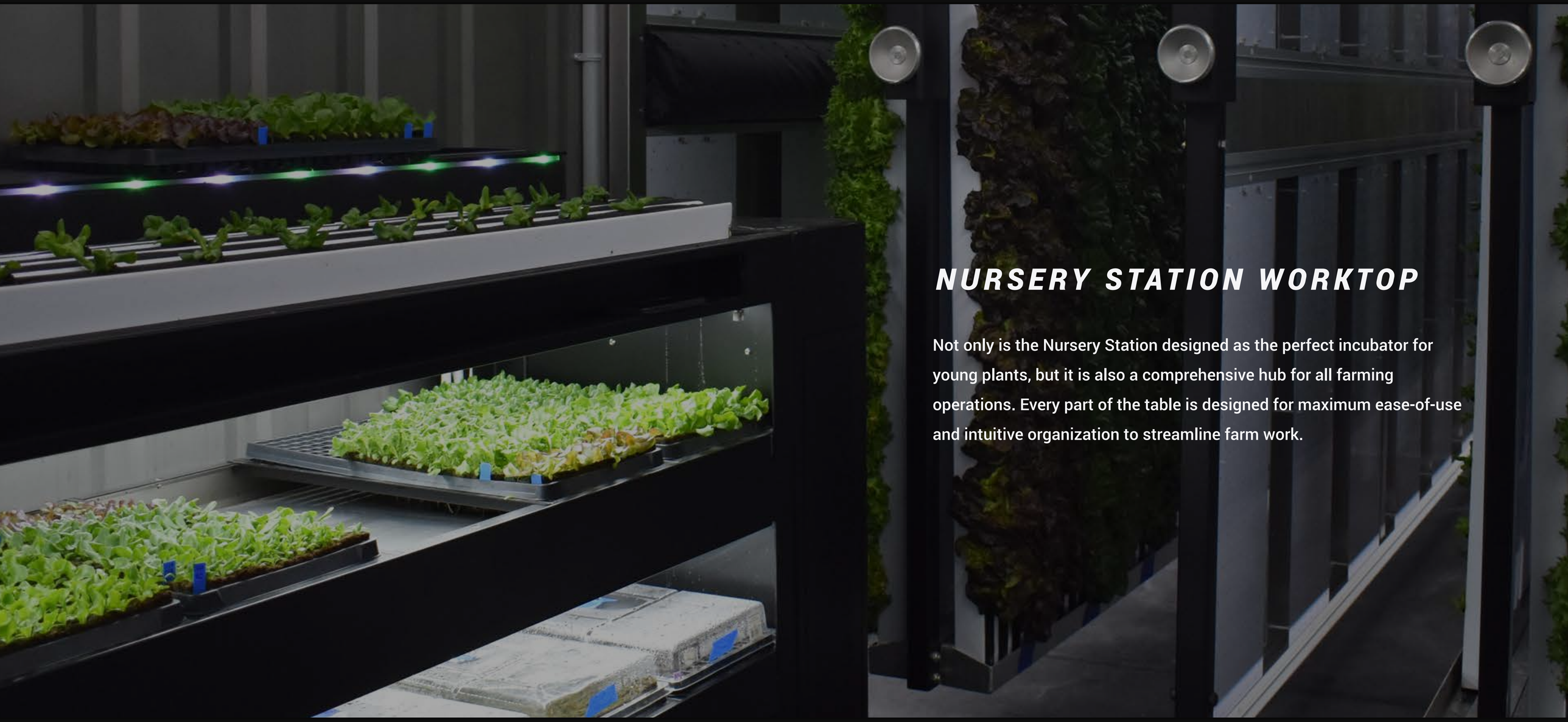
CULTIVATION AREA



THE NURSERY STATION

The Nursery Station's table is the center for farm operations and home to the farm's young plants. Unlike elsewhere in the Greenery™ S, the Nursery Station uses stacked horizontal seedling troughs and ebb-and-flow hydroponics to nourish up to 4,608 seedlings at a time.

- Table Dimensions: **90 in x 27 in x 43 in**
- Table Construction: **TIG-welded stainless steel**
- Total Capacity: **4,608 plants**
- Independently Irrigated Horizontal Troughs: **2**
- Trough Capacity: **8 Seedling Trays**
- Seedling Tray Capacity: **200–288 plants**



NURSERY STATION WORKTOP

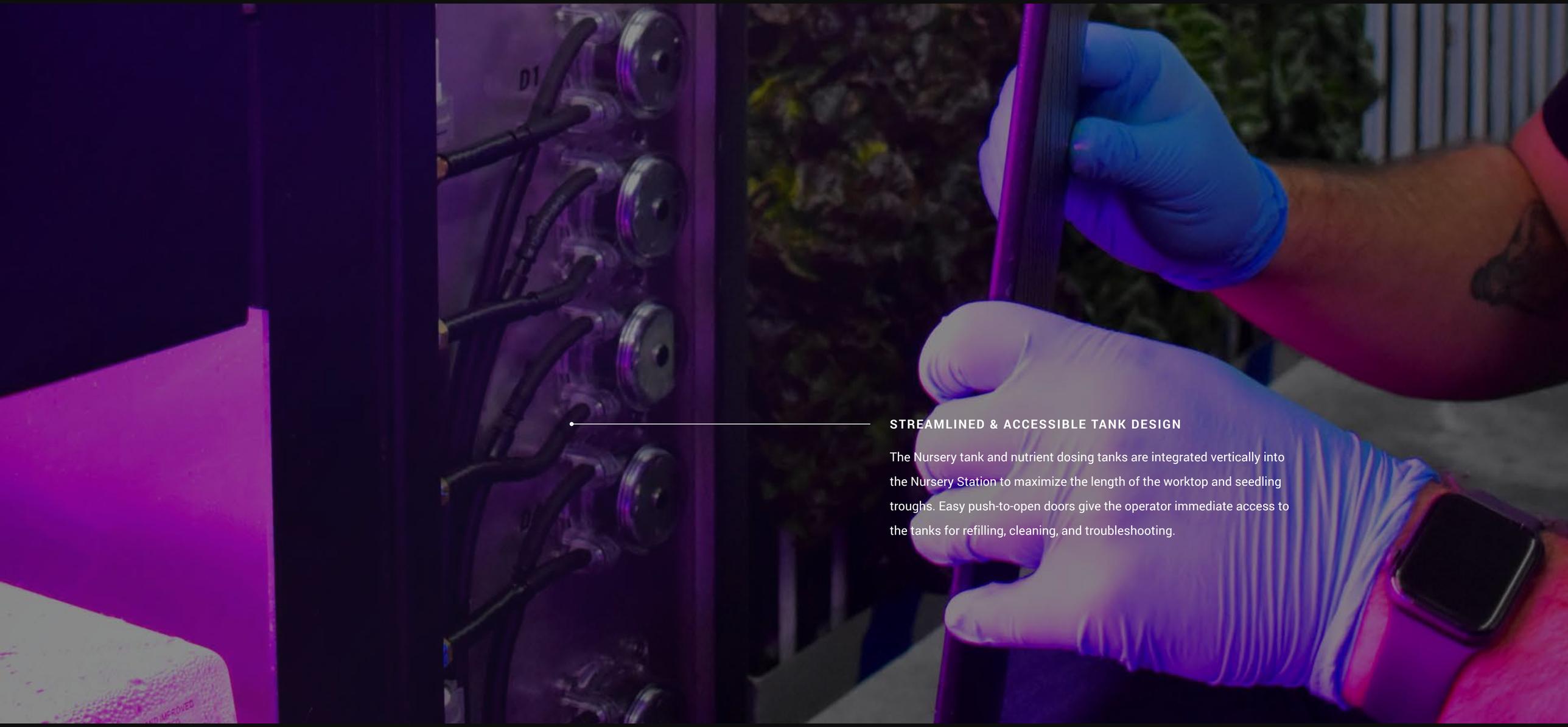
Not only is the Nursery Station designed as the perfect incubator for young plants, but it is also a comprehensive hub for all farming operations. Every part of the table is designed for maximum ease-of-use and intuitive organization to streamline farm work.

BUILT-IN SOUND SYSTEM

At the end of the day, farm work should be energizing and fun. Built-in speakers bring music, podcasts, and radio into the farm for the operator and plants to enjoy.

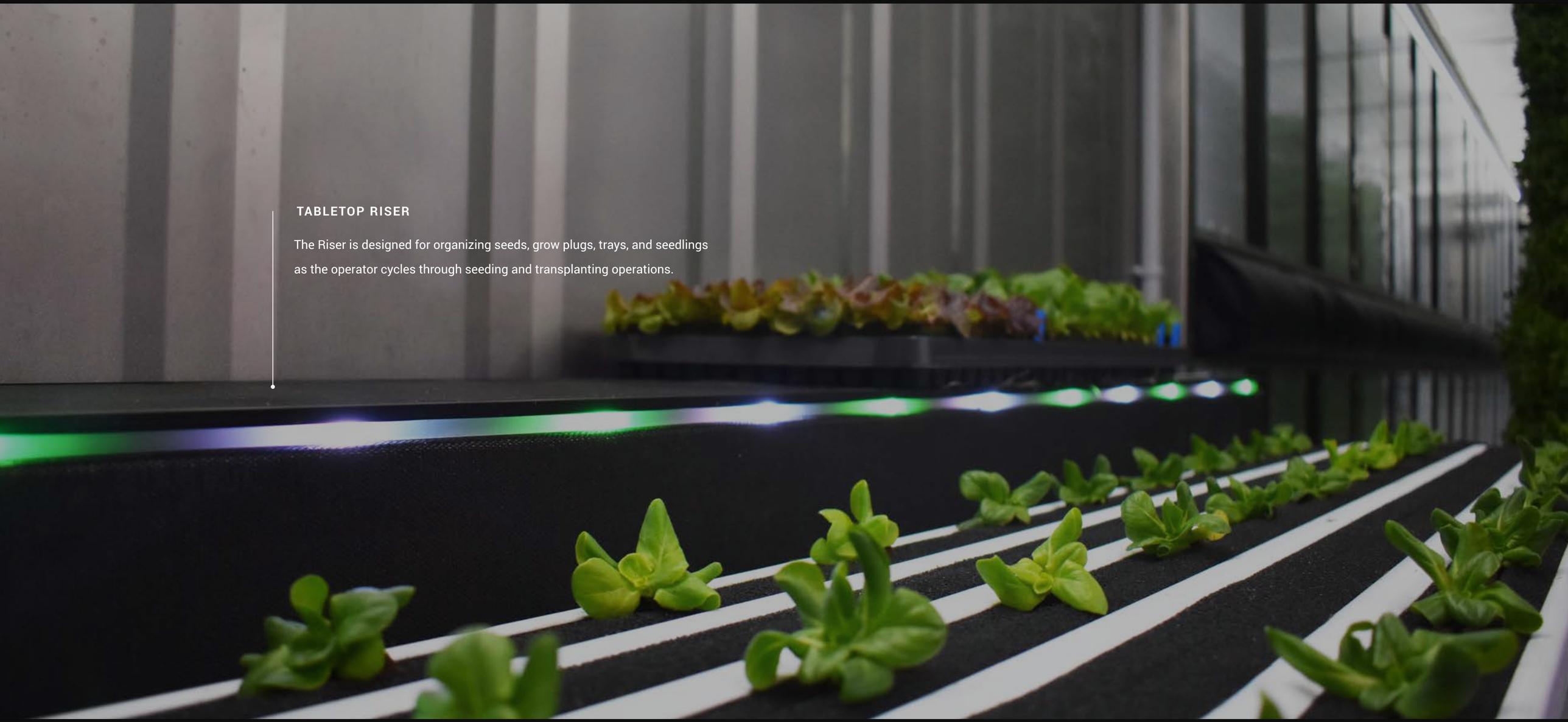
VERSATILE TOOLBELT

The Toolbelt runs along the length of the table at hip-height, making it the ideal space to keep personal belongings and farming essentials within reach without cluttering the worktable.



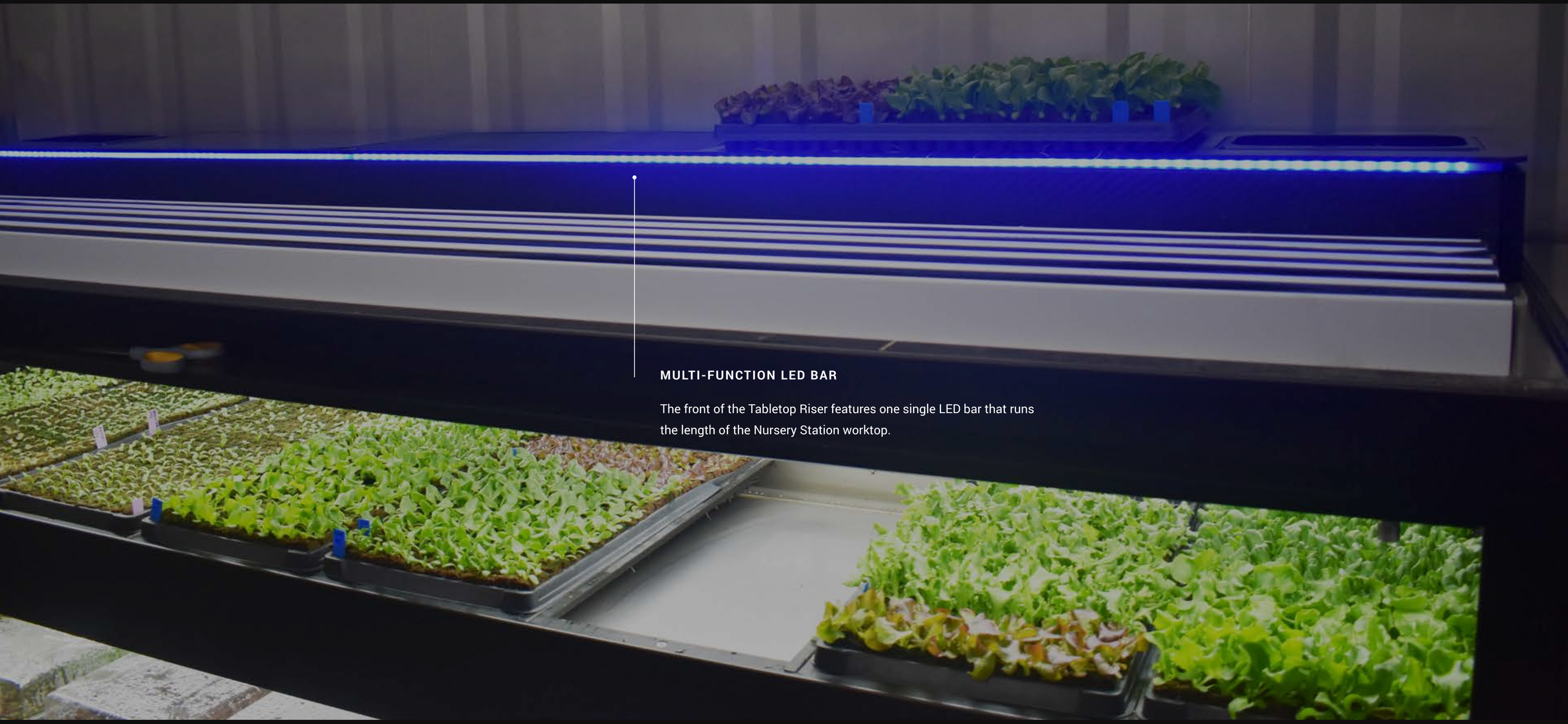
STREAMLINED & ACCESSIBLE TANK DESIGN

The Nursery tank and nutrient dosing tanks are integrated vertically into the Nursery Station to maximize the length of the worktop and seedling troughs. Easy push-to-open doors give the operator immediate access to the tanks for refilling, cleaning, and troubleshooting.



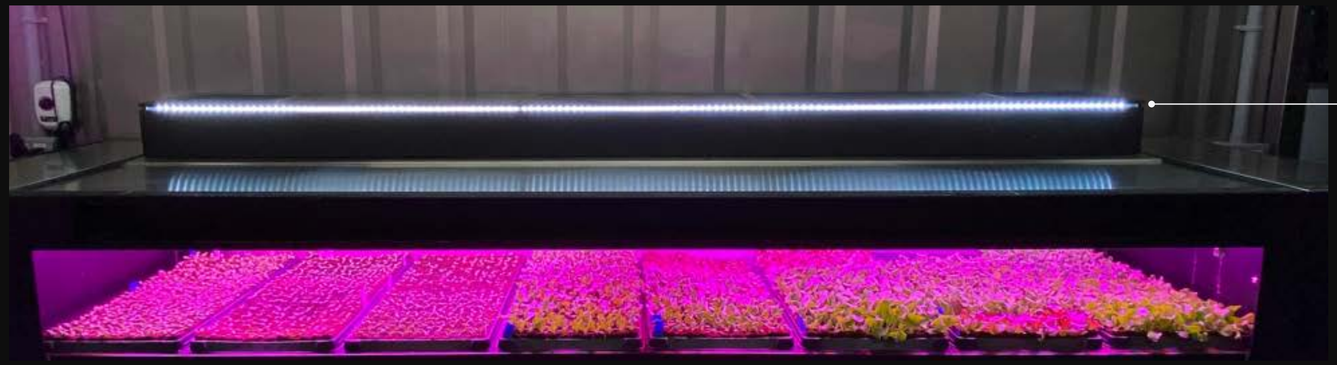
TABLETOP RISER

The Riser is designed for organizing seeds, grow plugs, trays, and seedlings as the operator cycles through seeding and transplanting operations.



MULTI-FUNCTION LED BAR

The front of the Tabletop Riser features one single LED bar that runs the length of the Nursery Station worktop.



The LED bar is there to serve three important needs:

1. PLANT SPACING GUIDE

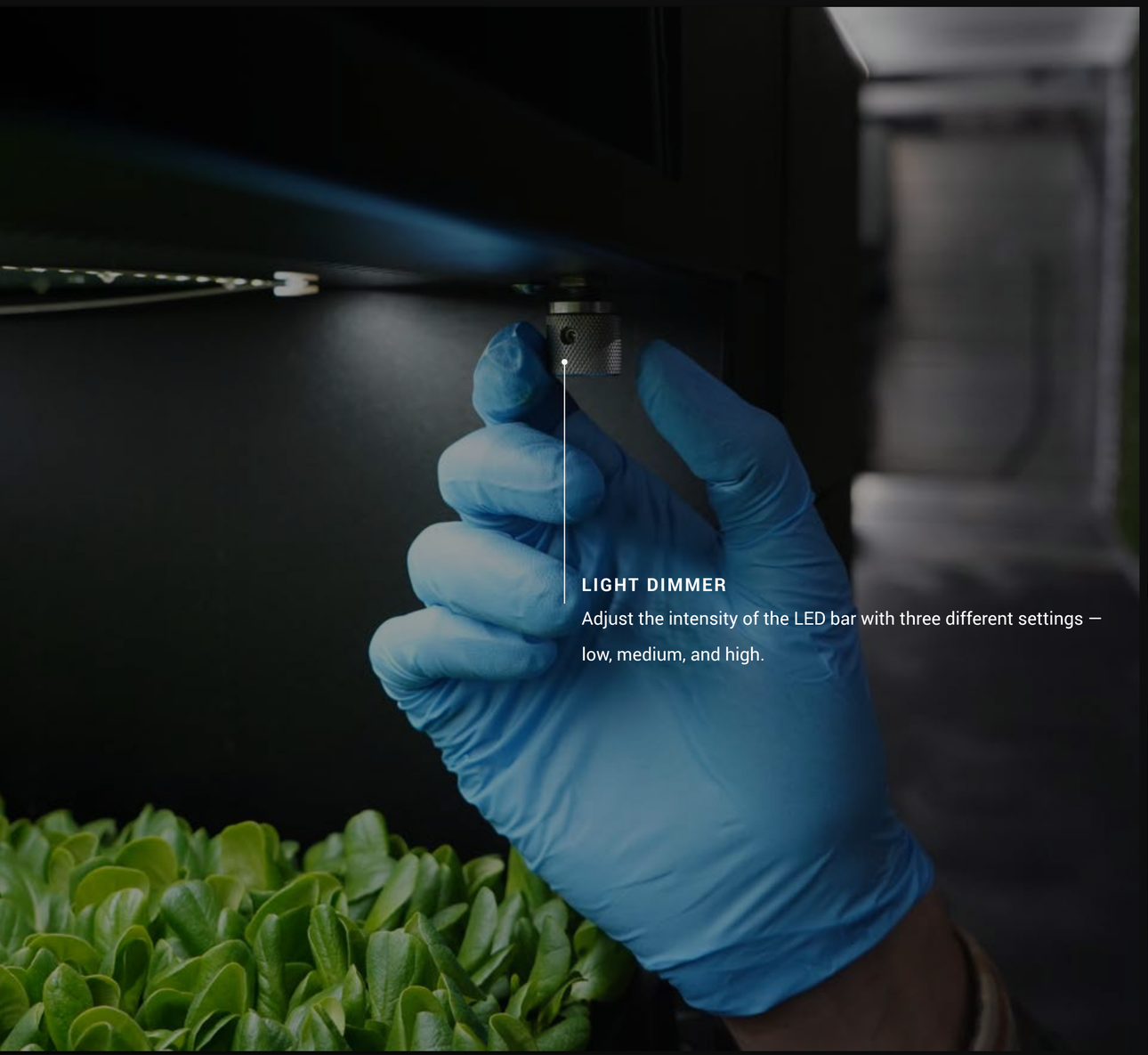
With 10 different spacing settings, the LED bar provides the operator with a visual display of where along the plant panel to transplant crops.

2. ILLUMINATION

When needed, the LED bar provides additional light for the worktable, perfect for intricate work like seeding. The brightness is adjustable using a light-dimming knob.

3. TIMER

The LED bar also functions as a visual timer display. Operators can choose from four timer settings, ranging from 2–15 minutes.

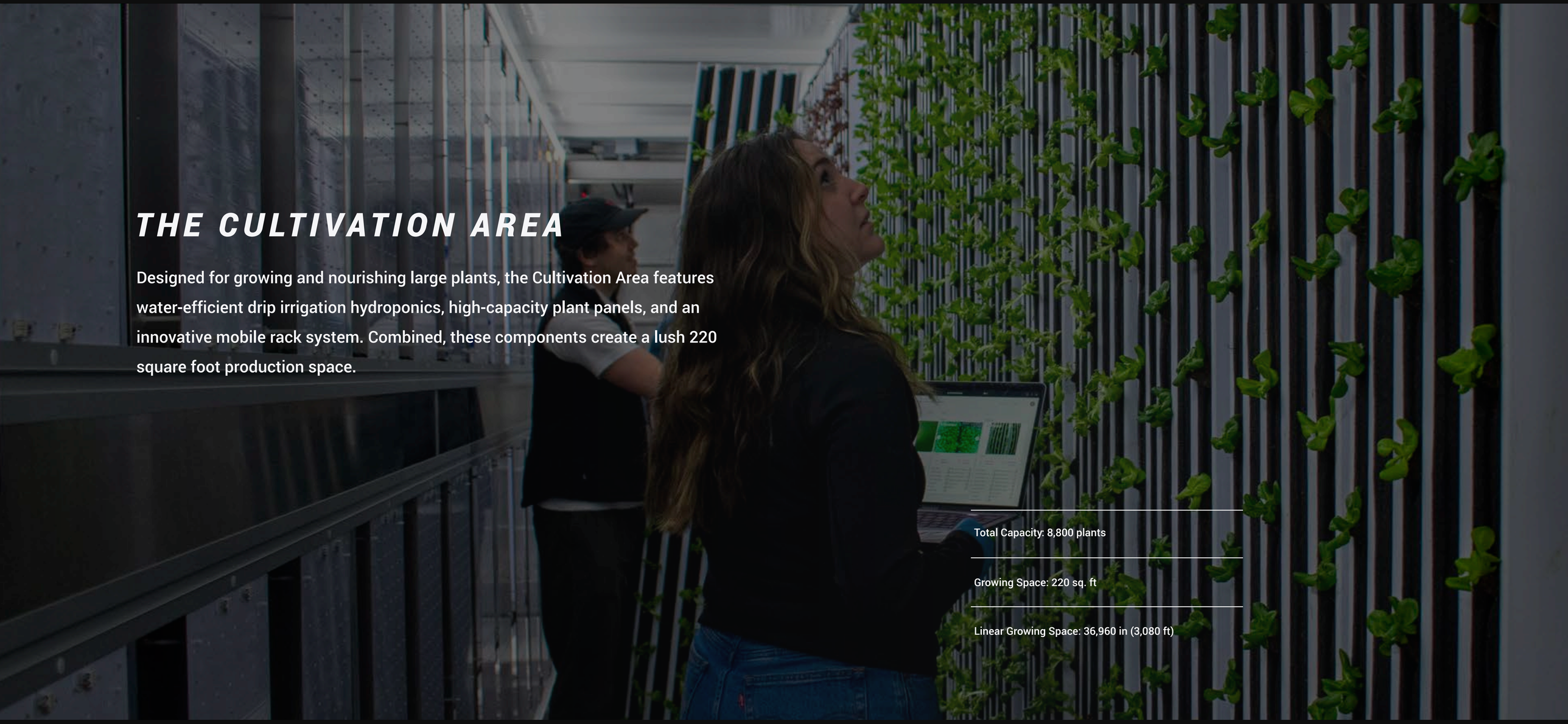


LIGHT DIMMER

Adjust the intensity of the LED bar with three different settings — low, medium, and high.

BUILT-IN CAMERAS

See the seedlings in real-time via the farmhand® app. A 140º bird's-eye view of the seedling canopy is provided by two cameras — one for each seedling trough — built directly into the table.



THE CULTIVATION AREA

Designed for growing and nourishing large plants, the Cultivation Area features water-efficient drip irrigation hydroponics, high-capacity plant panels, and an innovative mobile rack system. Combined, these components create a lush 220 square foot production space.

Total Capacity: 8,800 plants

Growing Space: 220 sq. ft

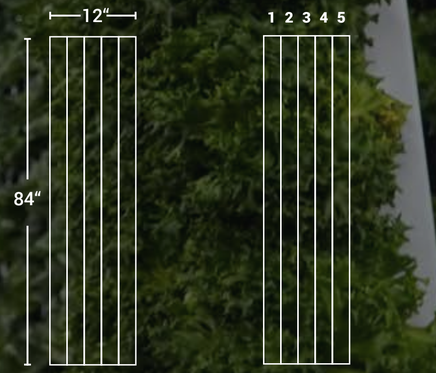
Linear Growing Space: 36,960 in (3,080 ft)

PLANT PANELS

The high-density five-channel plant panels of the Greenery™ S maximize all usable space to unlock new crop possibilities, farming styles, and yield potentials.

The lightweight and sturdy removable panels are shaped from food-safe, high-impact polystyrene. All five channels are paired with a reticulated foam growing medium and an anti-drip wicking strip, which gives plants a structure on which to grow while ensuring moisture remains at the roots.

PLANT PANEL PROFILE



Plant Panel
Dimensions

5 Channels Per Panel
Up to 100 plant sites

BUILT TO GROW

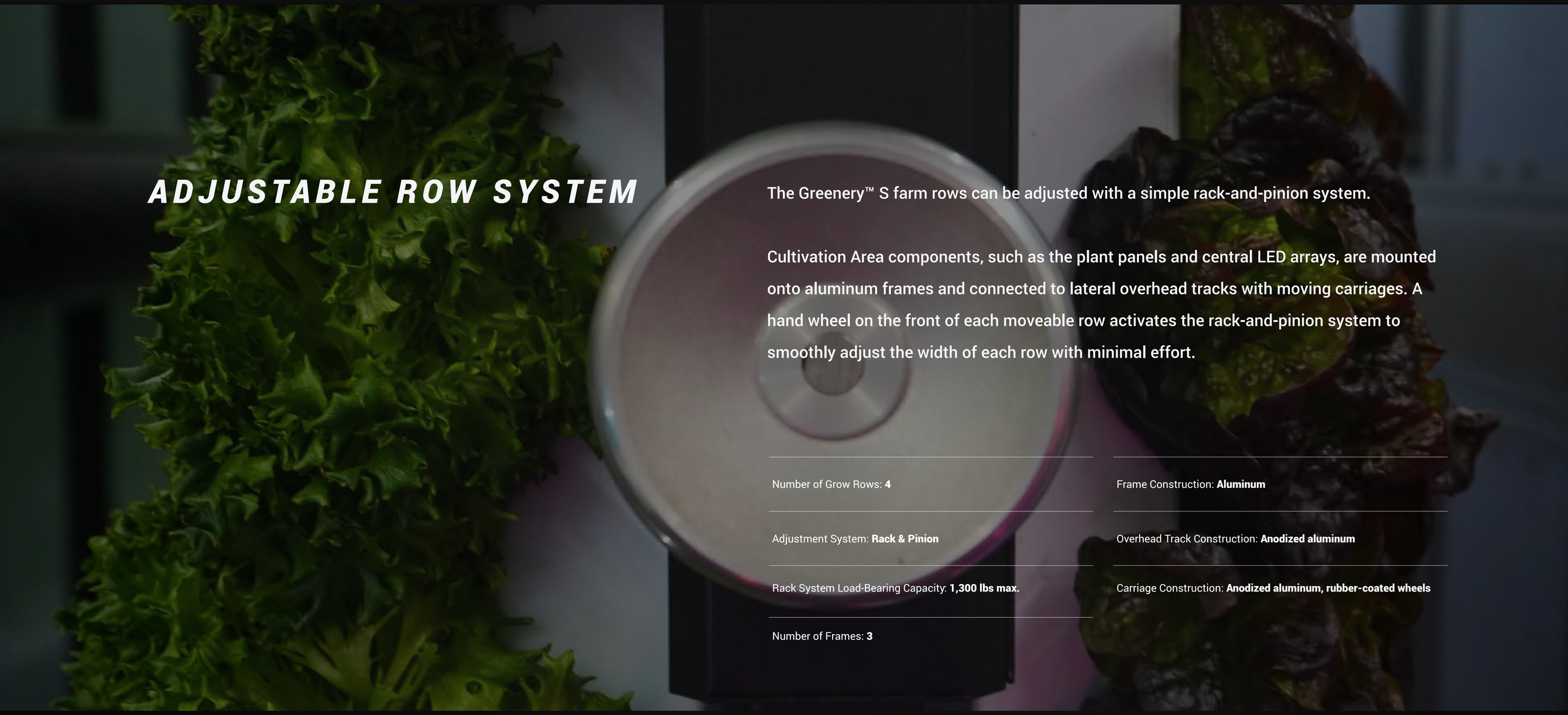
88 Plant Panels
Up to 8,800 plant sites

36,960 Inches
Total linear planting space

BUILT FROM

High-Impact Polystyrene
Food safe panel material

Inert Reticulated Foam
Food safe growing medium

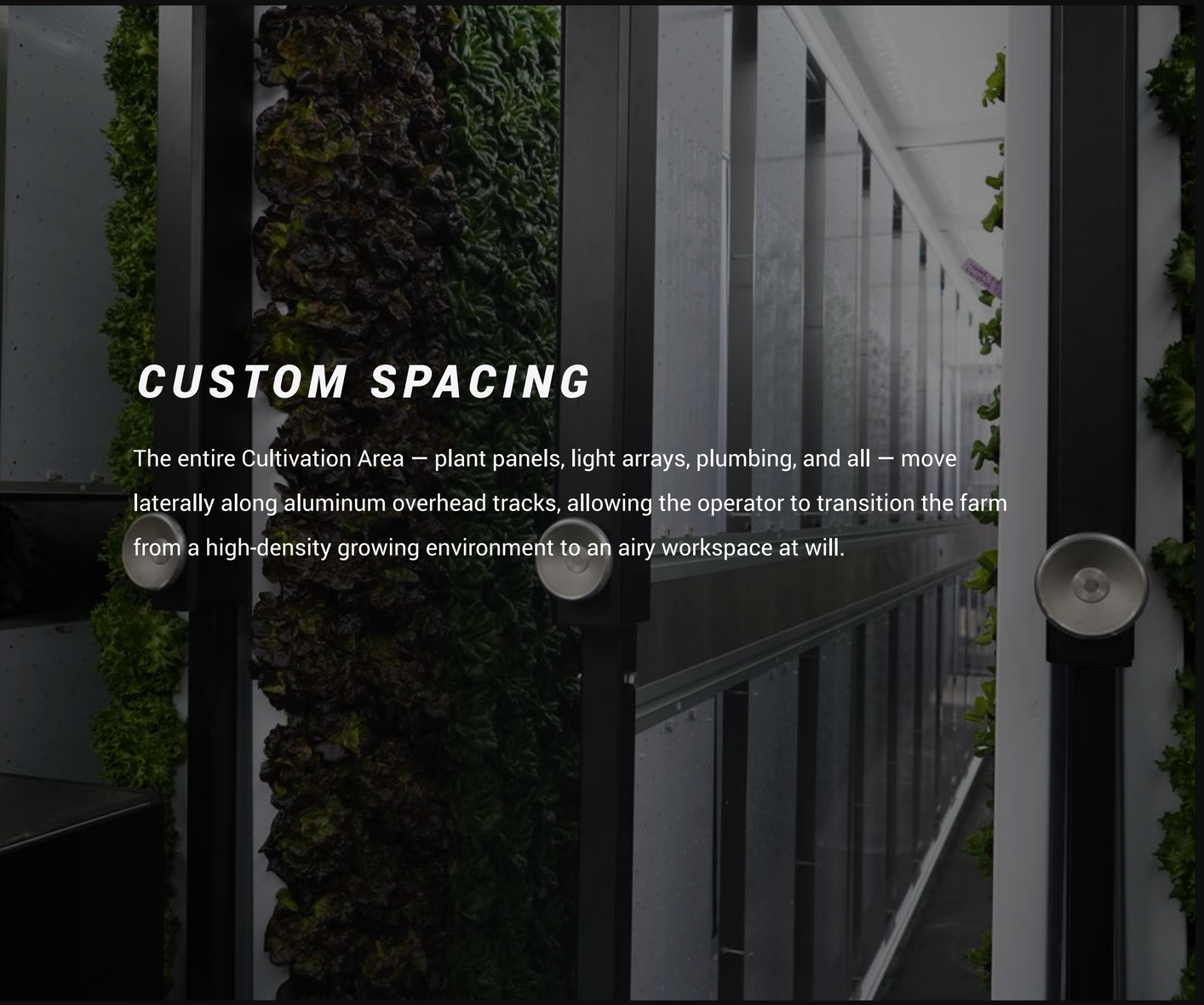


ADJUSTABLE ROW SYSTEM

The Greenery™ S farm rows can be adjusted with a simple rack-and-pinion system.

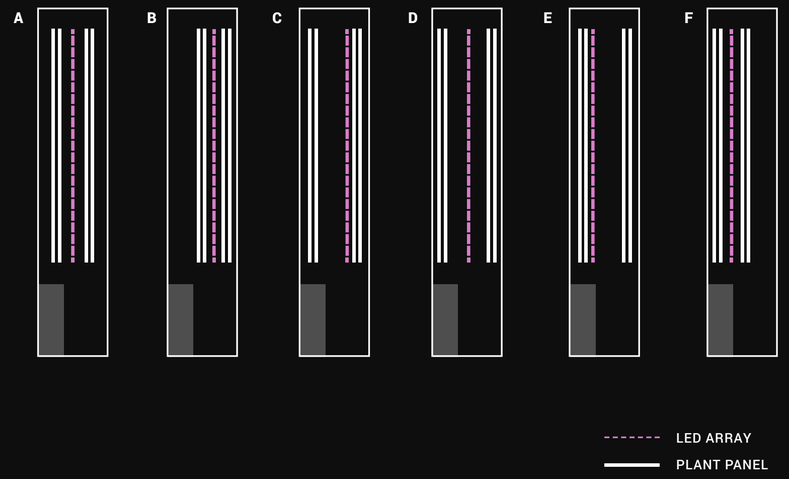
Cultivation Area components, such as the plant panels and central LED arrays, are mounted onto aluminum frames and connected to lateral overhead tracks with moving carriages. A hand wheel on the front of each moveable row activates the rack-and-pinion system to smoothly adjust the width of each row with minimal effort.

- Number of Grow Rows: **4**
- Adjustment System: **Rack & Pinion**
- Rack System Load-Bearing Capacity: **1,300 lbs max.**
- Number of Frames: **3**
- Frame Construction: **Aluminum**
- Overhead Track Construction: **Anodized aluminum**
- Carriage Construction: **Anodized aluminum, rubber-coated wheels**



CUSTOM SPACING

The entire Cultivation Area — plant panels, light arrays, plumbing, and all — move laterally along aluminum overhead tracks, allowing the operator to transition the farm from a high-density growing environment to an airy workspace at will.

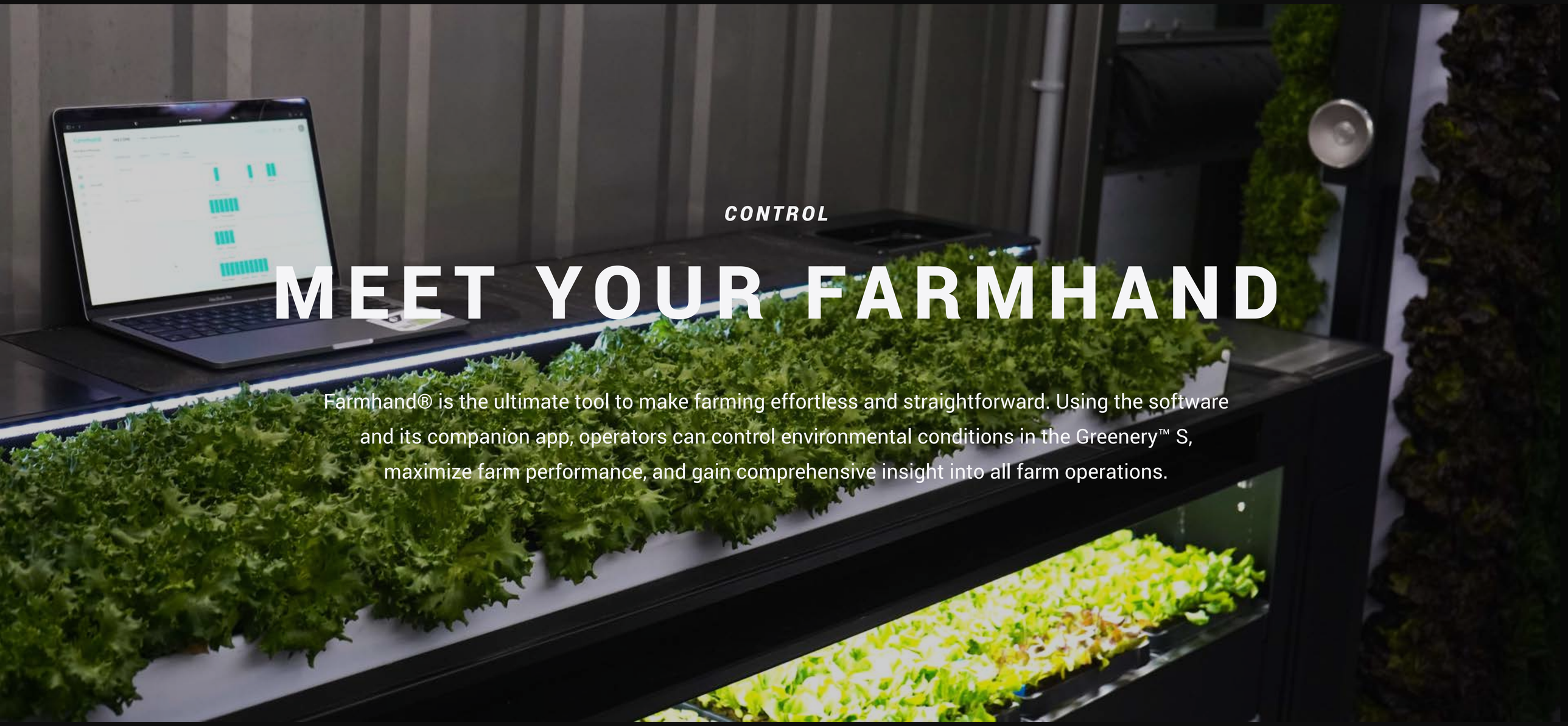


A. Standard Growing Position

For the majority of the time, the Greenery™ S racks remain in four evenly spaced rows, with plant panels and LED arrays separated by 18 inches. Visual guides help operators reposition back to this default spacing.

B.–F. Custom Growing Positions

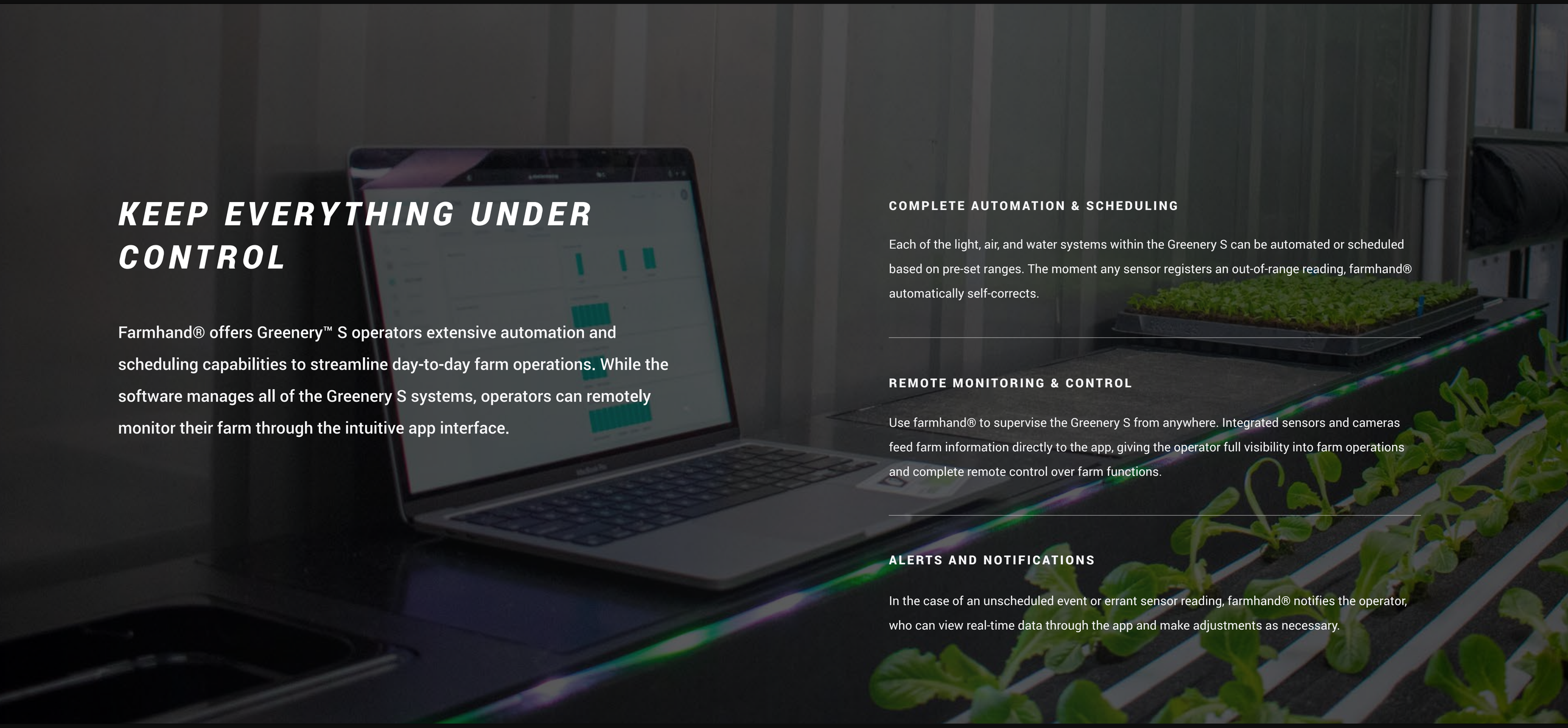
Row widths can be easily adjusted to allow for in-row harvesting, cleaning, and maintenance. Additionally, row widths can be shifted and fixed to meet the spacing needs of different plant varieties. For example, herbs grow small and close together, while vining crops need room to expand. The Greenery S is able to accommodate both simultaneously.



CONTROL

MEET YOUR FARMHAND

Farmhand® is the ultimate tool to make farming effortless and straightforward. Using the software and its companion app, operators can control environmental conditions in the Greenery™ S, maximize farm performance, and gain comprehensive insight into all farm operations.



KEEP EVERYTHING UNDER CONTROL

Farmhand® offers Greenery™ S operators extensive automation and scheduling capabilities to streamline day-to-day farm operations. While the software manages all of the Greenery S systems, operators can remotely monitor their farm through the intuitive app interface.

COMPLETE AUTOMATION & SCHEDULING

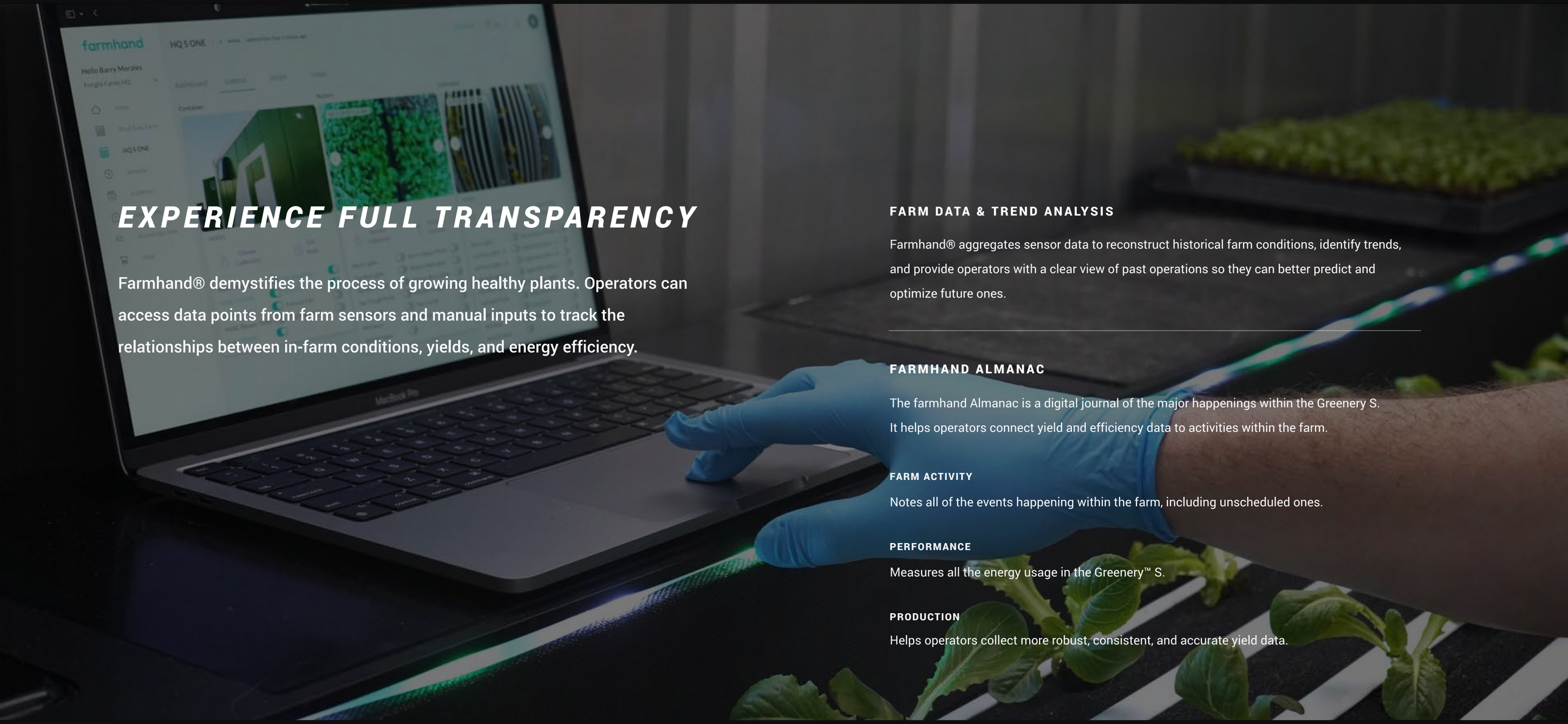
Each of the light, air, and water systems within the Greenery S can be automated or scheduled based on pre-set ranges. The moment any sensor registers an out-of-range reading, farmhand® automatically self-corrects.

REMOTE MONITORING & CONTROL

Use farmhand® to supervise the Greenery S from anywhere. Integrated sensors and cameras feed farm information directly to the app, giving the operator full visibility into farm operations and complete remote control over farm functions.

ALERTS AND NOTIFICATIONS

In the case of an unscheduled event or errant sensor reading, farmhand® notifies the operator, who can view real-time data through the app and make adjustments as necessary.



EXPERIENCE FULL TRANSPARENCY

Farmhand® demystifies the process of growing healthy plants. Operators can access data points from farm sensors and manual inputs to track the relationships between in-farm conditions, yields, and energy efficiency.

FARM DATA & TREND ANALYSIS

Farmhand® aggregates sensor data to reconstruct historical farm conditions, identify trends, and provide operators with a clear view of past operations so they can better predict and optimize future ones.

FARMHAND ALMANAC

The farmhand Almanac is a digital journal of the major happenings within the Greenery S. It helps operators connect yield and efficiency data to activities within the farm.

FARM ACTIVITY

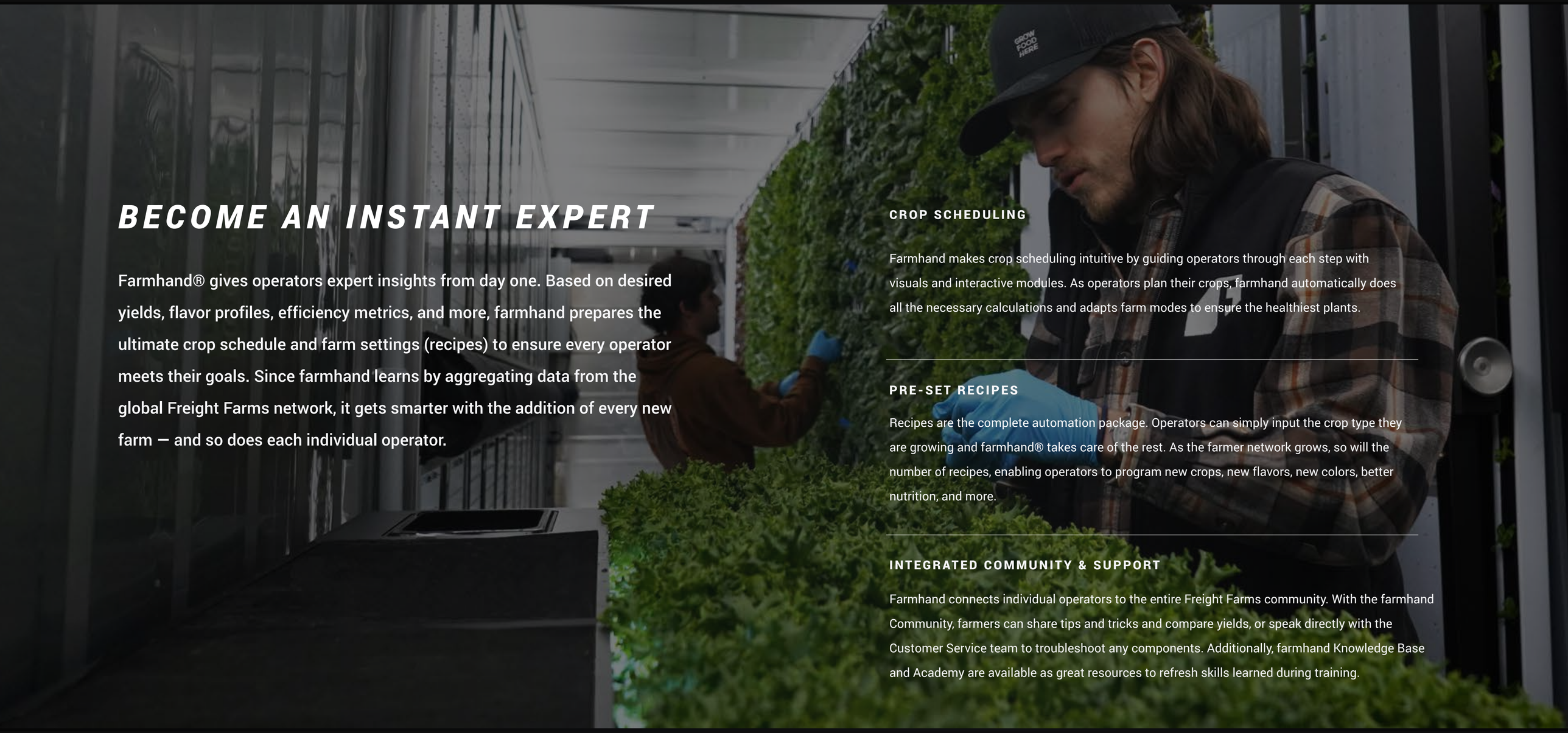
Notes all of the events happening within the farm, including unscheduled ones.

PERFORMANCE

Measures all the energy usage in the Greenery™ S.

PRODUCTION

Helps operators collect more robust, consistent, and accurate yield data.



BECOME AN INSTANT EXPERT

Farmhand® gives operators expert insights from day one. Based on desired yields, flavor profiles, efficiency metrics, and more, farmhand prepares the ultimate crop schedule and farm settings (recipes) to ensure every operator meets their goals. Since farmhand learns by aggregating data from the global Freight Farms network, it gets smarter with the addition of every new farm — and so does each individual operator.

CROP SCHEDULING

Farmhand makes crop scheduling intuitive by guiding operators through each step with visuals and interactive modules. As operators plan their crops, farmhand automatically does all the necessary calculations and adapts farm modes to ensure the healthiest plants.

PRE-SET RECIPES

Recipes are the complete automation package. Operators can simply input the crop type they are growing and farmhand® takes care of the rest. As the farmer network grows, so will the number of recipes, enabling operators to program new crops, new flavors, new colors, better nutrition, and more.

INTEGRATED COMMUNITY & SUPPORT

Farmhand connects individual operators to the entire Freight Farms community. With the farmhand Community, farmers can share tips and tricks and compare yields, or speak directly with the Customer Service team to troubleshoot any components. Additionally, farmhand Knowledge Base and Academy are available as great resources to refresh skills learned during training.

FARMHAND® CREATES EXCEPTIONAL CROPS

GROW SPECIALTY CROPS

Surprise customers with unique and out-of-season crops that are difficult to find year-round in the local marketplace.

RECREATE HISTORIC MOMENTS

Set climate, light, water, and nutrient conditions to re-construct a specific moment in time and recreate an exceptional harvest.

BOOST FLAVOR

Fine-tune the farm's indoor environment to boost plants' natural flavor characteristics and bring out stronger sweet, spicy, and herbaceous notes.

GET CONSISTENT PRODUCTION

Use farmhand® to untether crops from their typical growing season and guarantee consistent quality and quantity all year long.

WATER

HYDROPONICS IN ACTION

The Greenery™ S is a soil-less, hydroponic farm that uses water to deliver plants all the nutrients they need. The entire Greenery S hydroponic system is closed-loop, making the farm extremely water efficient: On average, the Greenery S uses only 5 gallons of water a day to support over 13,000 plants.

NUTRIENT DELIVERY SYSTEM

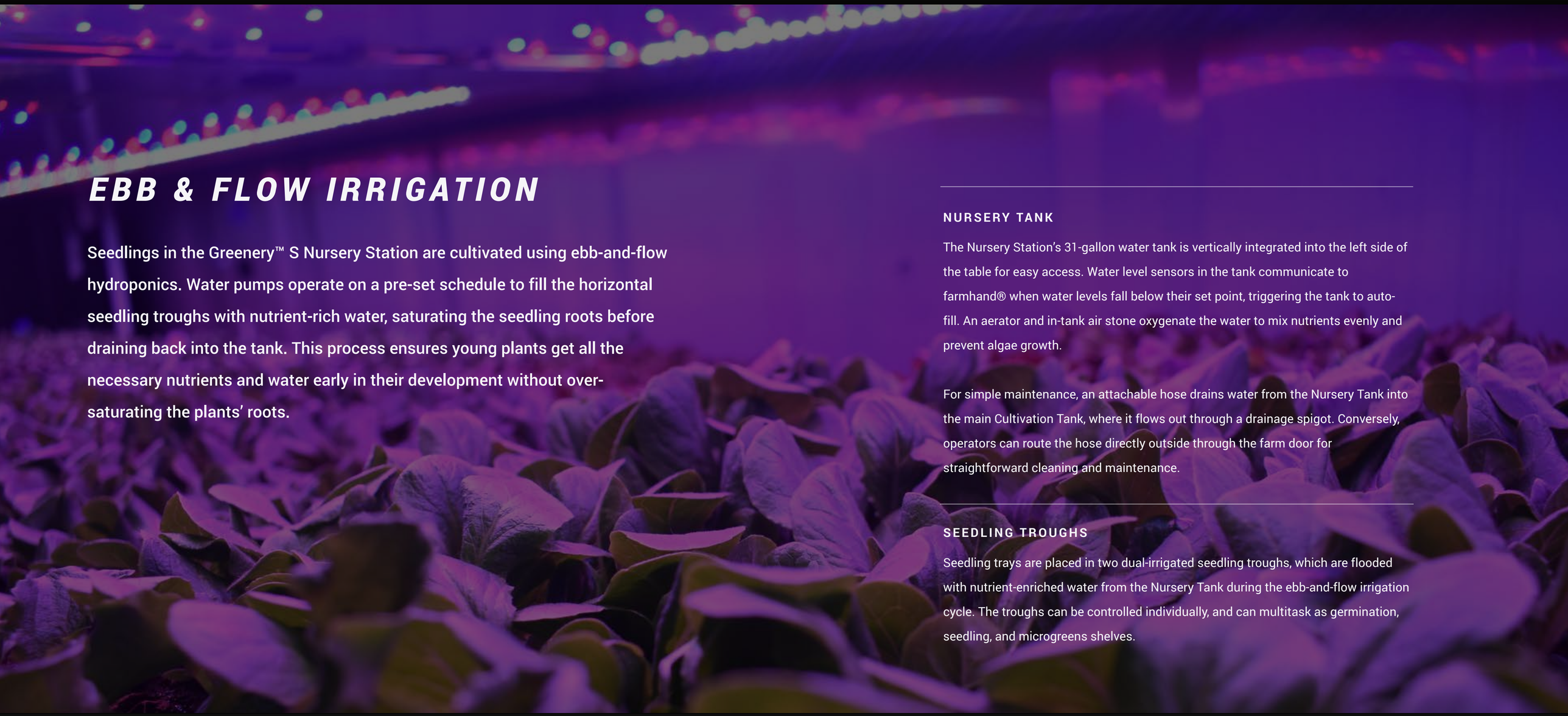
The Nutrient Delivery System for the Greenery™ S is located in the Dosing Cabinet on the righthand side of the Nursery Station. The Dosing Cabinet holds four 5-quart Nutrient Tanks and the Recirculation Panel with peristaltic pumps. Together, these components create the ideal nutrient and pH levels for the hydroponic systems in the Nursery Station and the Cultivation Area.

NUTRIENTS & PH

All four of the Nutrient Tanks serve a purpose. Two tanks hold complimentary nutrient solutions (A & B), one holds a solution for adjusting water pH, and the last one is empty and can be used for additional supplements at the user's discretion. Together, these solutions create optimal conditions for the plants, ensuring the correct levels of key nutrients.

RECIRCULATION PANEL & SENSORS

Sensors in the Dosing Cabinet constantly relay pH, EC (nutrient concentration), and temperature readings in the Nursery and Cultivation tanks to farmhand®. If any sensor readings deviate from the optimal set-point, the software activates peristaltic pumps in the Recirculation Panels, which dispense the nutrient or pH solution needed to rebalance levels.



EBB & FLOW IRRIGATION

Seedlings in the Greenery™ S Nursery Station are cultivated using ebb-and-flow hydroponics. Water pumps operate on a pre-set schedule to fill the horizontal seedling troughs with nutrient-rich water, saturating the seedling roots before draining back into the tank. This process ensures young plants get all the necessary nutrients and water early in their development without over-saturating the plants' roots.

NURSERY TANK

The Nursery Station's 31-gallon water tank is vertically integrated into the left side of the table for easy access. Water level sensors in the tank communicate to farmhand® when water levels fall below their set point, triggering the tank to auto-fill. An aerator and in-tank air stone oxygenate the water to mix nutrients evenly and prevent algae growth.

For simple maintenance, an attachable hose drains water from the Nursery Tank into the main Cultivation Tank, where it flows out through a drainage spigot. Conversely, operators can route the hose directly outside through the farm door for straightforward cleaning and maintenance.

SEEDLING TROUGHS

Seedling trays are placed in two dual-irrigated seedling troughs, which are flooded with nutrient-enriched water from the Nursery Tank during the ebb-and-flow irrigation cycle. The troughs can be controlled individually, and can multitask as germination, seedling, and microgreens shelves.

GRAVITY-ASSISTED DRIP IRRIGATION

Mature plants in the Cultivation Area receive water and nutrients via drip-irrigation hydroponics. The Greenery™ S combines the power of gravity with farmhand® to ensure that all plants are watered on the correct schedule while also maximizing the energy-efficiency of the farm's irrigation system.

CULTIVATION TANK

The 90-gallon tank supplies nutrient-rich water to the Cultivation Area's irrigation system. Farmhand® automatically monitors and manages the water's nutrient concentration and pH balance.

DRIP IRRIGATION SYSTEM

Pumps send nutrient-rich water from the Cultivation Tank to overhead plumbing at regular intervals based on a pre-set watering schedule. 440 pressure-regulating emitters control the water flow at a continuous drip, as water travels towards the ground at a rate of 2 gallons/hour.

PLANT PANEL

Reticulated foam nestled in the rigid plant channels holds crops in place as gravity pulls water down the cloth wicking strip at the back of the Plant Panel, giving the roots direct access to water.

GUTTERS

Recirculation gutters move with each row and drain unused water back into the Cultivation Tank, where pH and nutrients are rebalanced and the water is recycled.

NUTRIENT-RICH

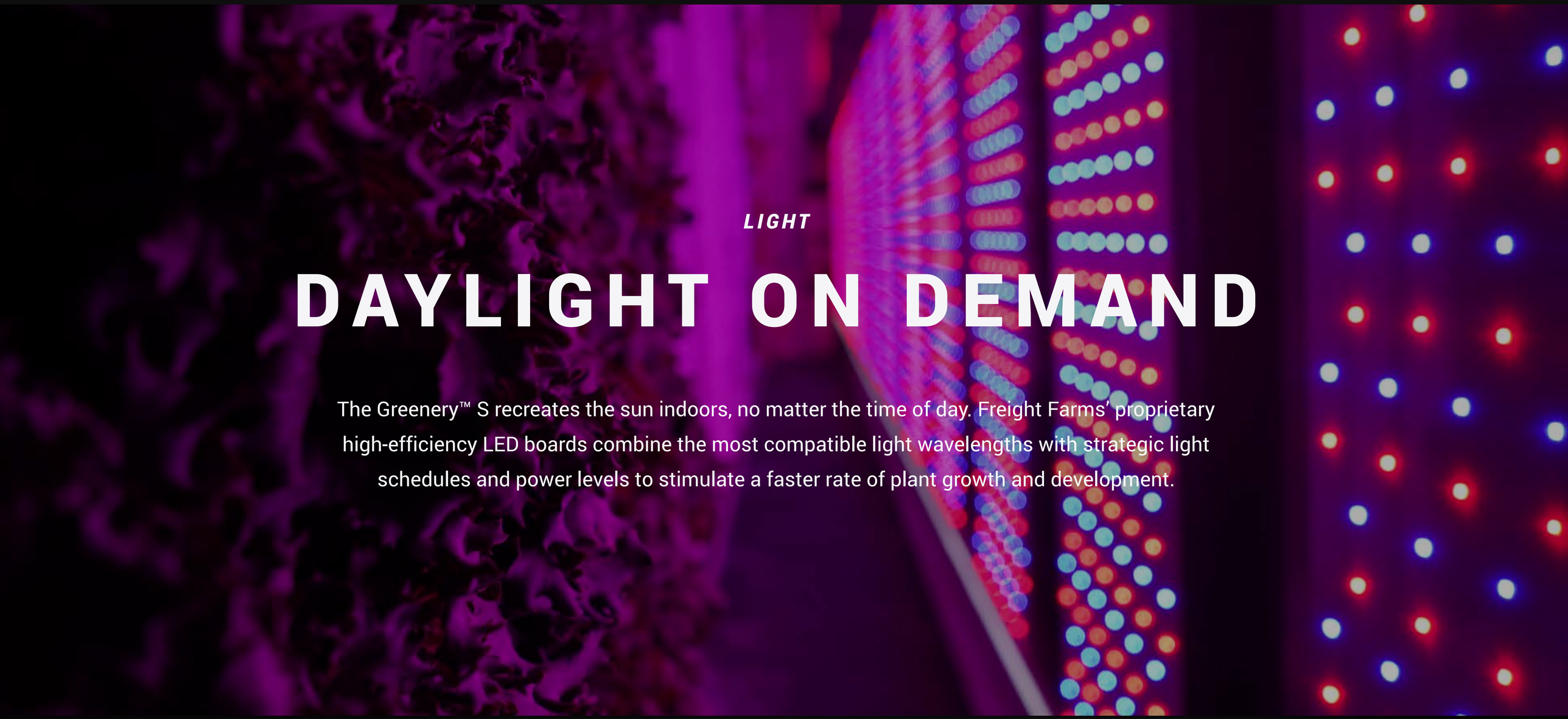
Careful sensing and dosing ensures all plants receive a full spectrum of balanced nutrients, including key macro- and micro-nutrients such as nitrogen, phosphorus, potassium, calcium, sulfur, magnesium, and more.

CRISP & FLAVORFUL

The Greenery™ S gives plants consistent access to water and nutrients until the very moment they are harvested. Since most Greenery S crops are consumed just hours after harvest, there is no time for nutrient degradation or wilting, resulting in superior quality greens.

LONG-LASTING

Greens harvested from the farm barely spend any time in transit, meaning that, if not consumed immediately, they are fresh enough to last a minimum of two weeks in refrigerator.



LIGHT

DAYLIGHT ON DEMAND

The Greenery™ S recreates the sun indoors, no matter the time of day. Freight Farms' proprietary high-efficiency LED boards combine the most compatible light wavelengths with strategic light schedules and power levels to stimulate a faster rate of plant growth and development.

DYNAMIC LIGHTING CONTROL

The Greenery™ S gives the operator full control over their LED power and efficiency, allowing each individual user to adjust farm operations to suit their priorities. In its default lighting mode, the custom-designed LEDs balance energy efficiency with power by optimizing the intensity of the array (measured in DLI).

WHAT IS DLI?

Daily Light Integral (DLI) is a measure of total light per day, taking into account the intensity of the light, or photosynthetic photon flux density (PPFD), and the duration of plants' exposure to that light intensity. The higher the integral, the greater the intensity and the longer the duration.

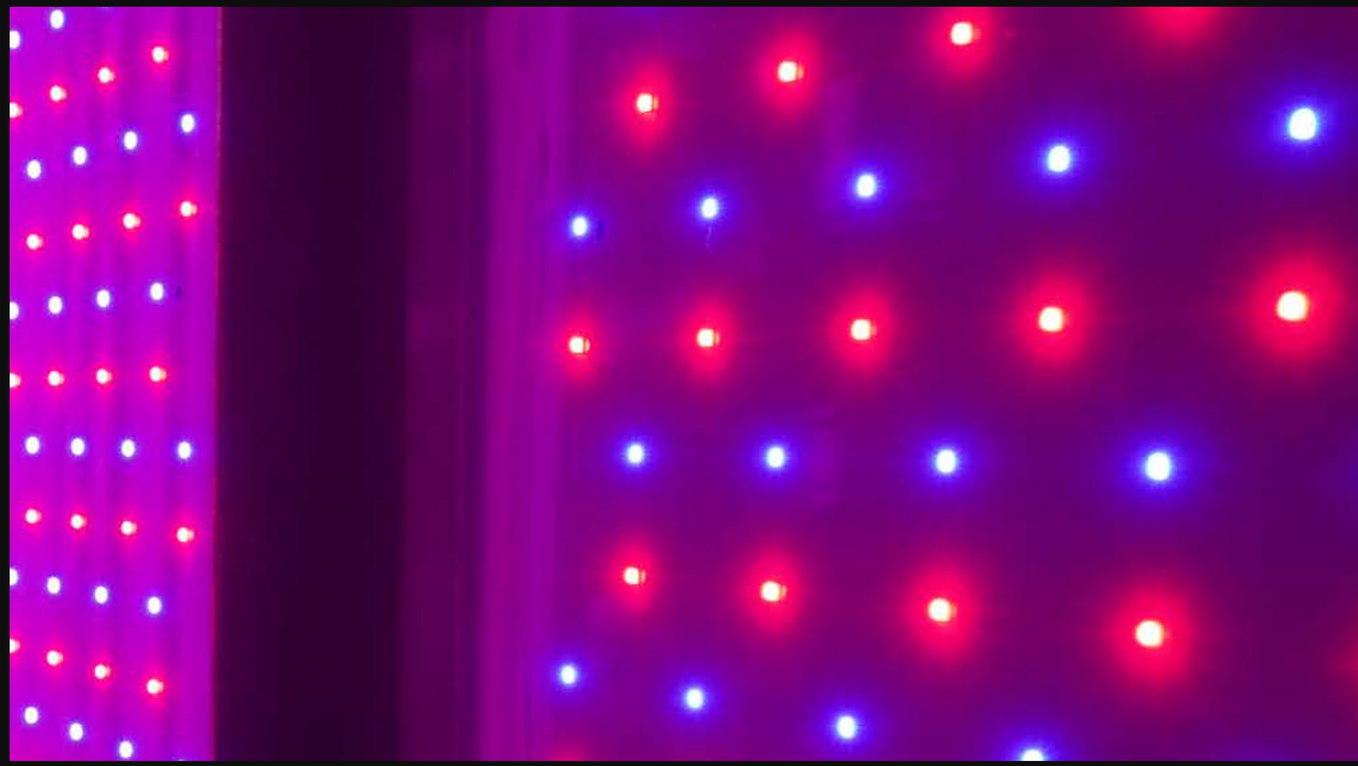
POWER MODES

Using farmhand®, operators can dim or brighten their lights according to their priorities. The Greenery S comes with three pre-set power modes:

Standard Mode This default setting ensures a balance of power and efficiency.	**12 DLI** Average PPFD at 16 in: 222 Peak PPFD at 16 in: 298 Light Hours: 15
Eco Mode Decrease energy consumption to save on electricity and prioritize efficiency.	**9 DLI** Average PPFD at 16 in: 208 Peak PPFD at 16 in: 298 Light Hours: 12
Performance Mode Maximize growth rate and yields with more intense lighting.	**18 DLI** Average PPFD at 16 in: 263 Peak PPFD at 16 in: 342 Light Hours: 19

COLOR BALANCE

The LED boards of the Greenery™ S emit only select wavelengths of red and blue light, colors that the plants are able to absorb most easily for photosynthesis. LED diodes of each color are balanced in ratios that complement different phases of plant development. While the default is a blended red and blue light, operators also have the option to isolate lighting colors to encourage the expression of specific plant characteristics.

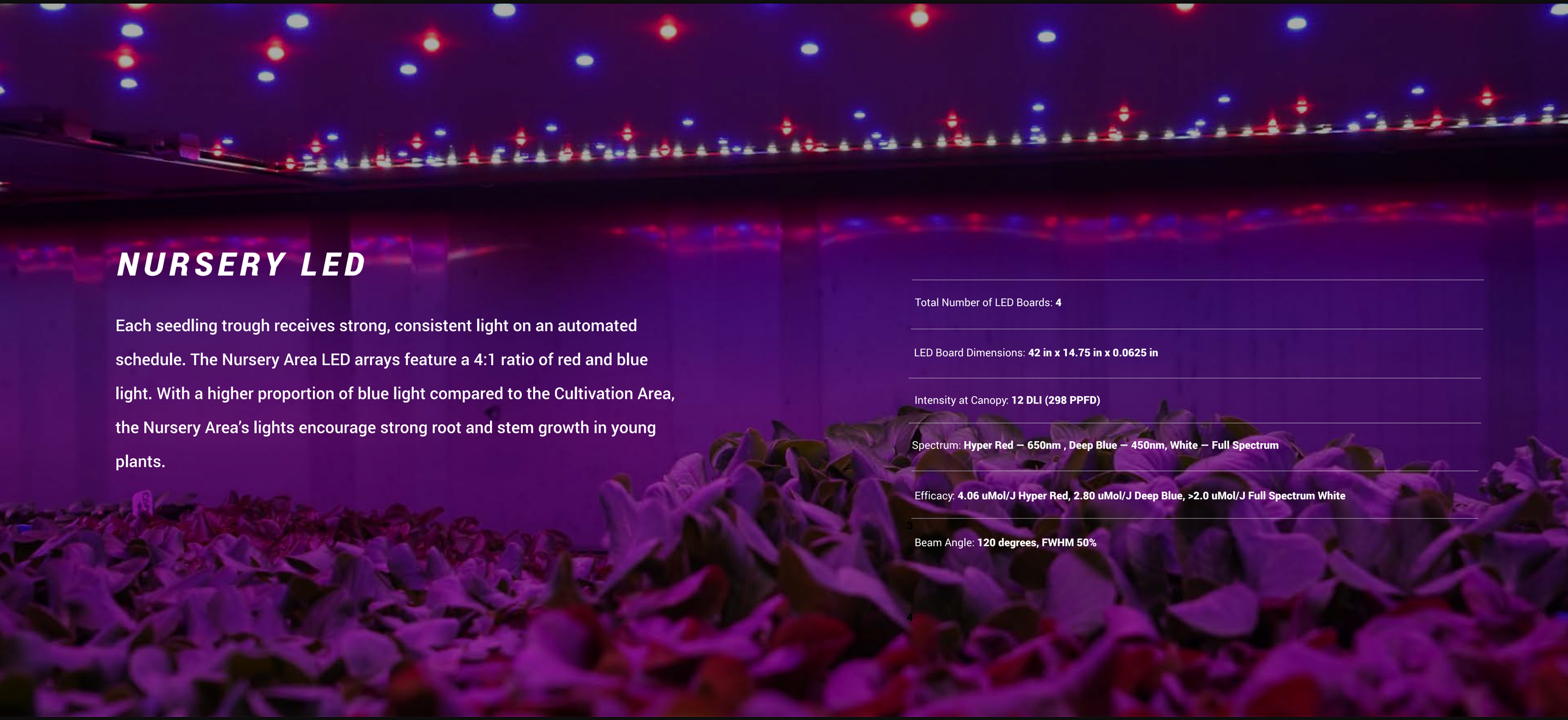


BENEFITS OF EACH LIGHT SPECTRUM

Red light (650 nm) is essential for stem and leaf growth. When plants sense more red light, they release a hormone that keeps chlorophyll from breaking down, yielding large, healthy plants.

Blue light (450 nm) helps develop thick stems and dark green foliage. Plants' blue light receptors trigger "apical dominance" — a plant characteristic where the main stem is larger than side stems — yielding shorter and bushier plants with complex stem structures. This is particularly important for seedlings to develop strong stems.

White LEDs ensure exposure to the full light spectrum. While red and blue light wavelengths are the most beneficial to plants, there are incremental benefits from green light wavelengths (550nm) as well. White LEDs in the overhead track, and seedling trough lighting arrays give operators the option to integrate the full spectrum of light into their growing operation.



NURSERY LED

Each seedling trough receives strong, consistent light on an automated schedule. The Nursery Area LED arrays feature a 4:1 ratio of red and blue light. With a higher proportion of blue light compared to the Cultivation Area, the Nursery Area's lights encourage strong root and stem growth in young plants.

Total Number of LED Boards: **4**

LED Board Dimensions: **42 in x 14.75 in x 0.0625 in**

Intensity at Canopy: **12 DLI (298 PPFD)**

Spectrum: **Hyper Red — 650nm , Deep Blue — 450nm, White — Full Spectrum**

Efficacy: **4.06 uMol/J Hyper Red, 2.80 uMol/J Deep Blue, >2.0 uMol/J Full Spectrum White**

Beam Angle: **120 degrees, FWHM 50%**

CULTIVATION LED

Directional arrays ensure the plants soak up as much photosynthetic energy as possible, allowing the operator to set up customized lighting zones that remain fully independent. The maturing plants in the Cultivation Area receive a 5:1 ratio of red to blue light. The higher proportion of red light drives greater leaf development.

Total Number of LED Boards: **112**

LED Board Dimensions: **38.5 in x 13.78 in x 0.0625 in**

Intensity at Canopy: **9–18 DLI (208–342 PPFD)**

Spectrum: **Hyper Red — 650nm, Deep Blue — 450nm**

Efficacy: **4.06 uMol/J Hyper Red, 2.80 uMol/J Deep Blue**

Beam Angle: **120 degrees, FWHM 50%**

FAST GROWTH RATE

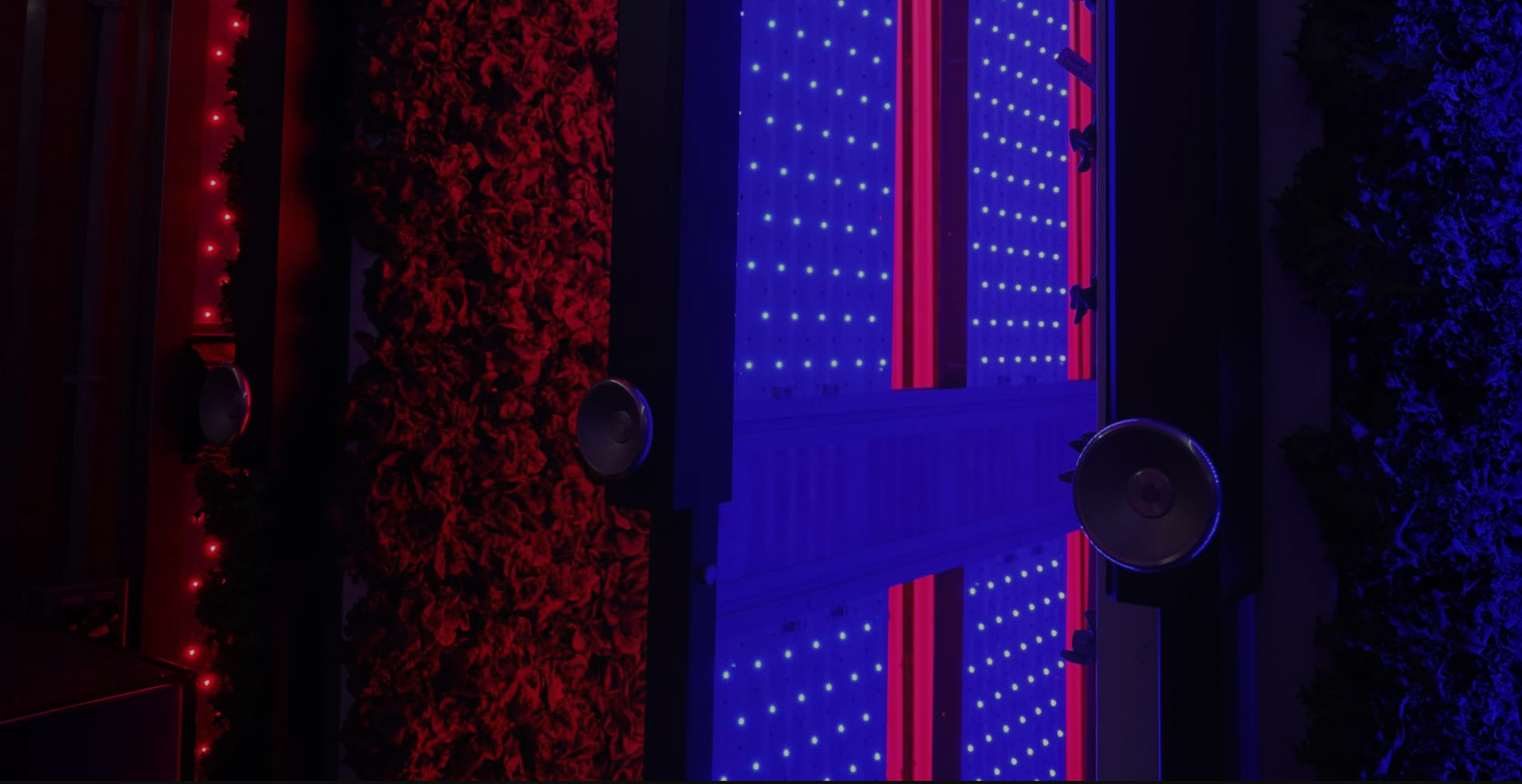
LEDs in Performance Mode make it possible to harvest plants just weeks after seeding by creating 18–20 hour days of intense, optimized light in the Greenery™ S.

OPTIMIZED EFFICIENCY

Economy Mode helps keep the Greenery S as energy efficient as possible while still growing healthy, strong, and flavorful plants.

COMPLETE CONTROL

Custom power and color light combinations can be used to drive production, coax out interesting plant characteristics, and more. The strong red and blue LEDs specifically target leaf and stem development, leading to larger and heavier plants and higher yields.



AIR

IDEAL CLIMATE CONDITIONS

Whether it is located in snowy mountains, scorching deserts, or smoggy cities, the Greenery™ S farm's robust insulation and complete suite of climate control components work together to recreate the perfect growing environment 365 days a year.

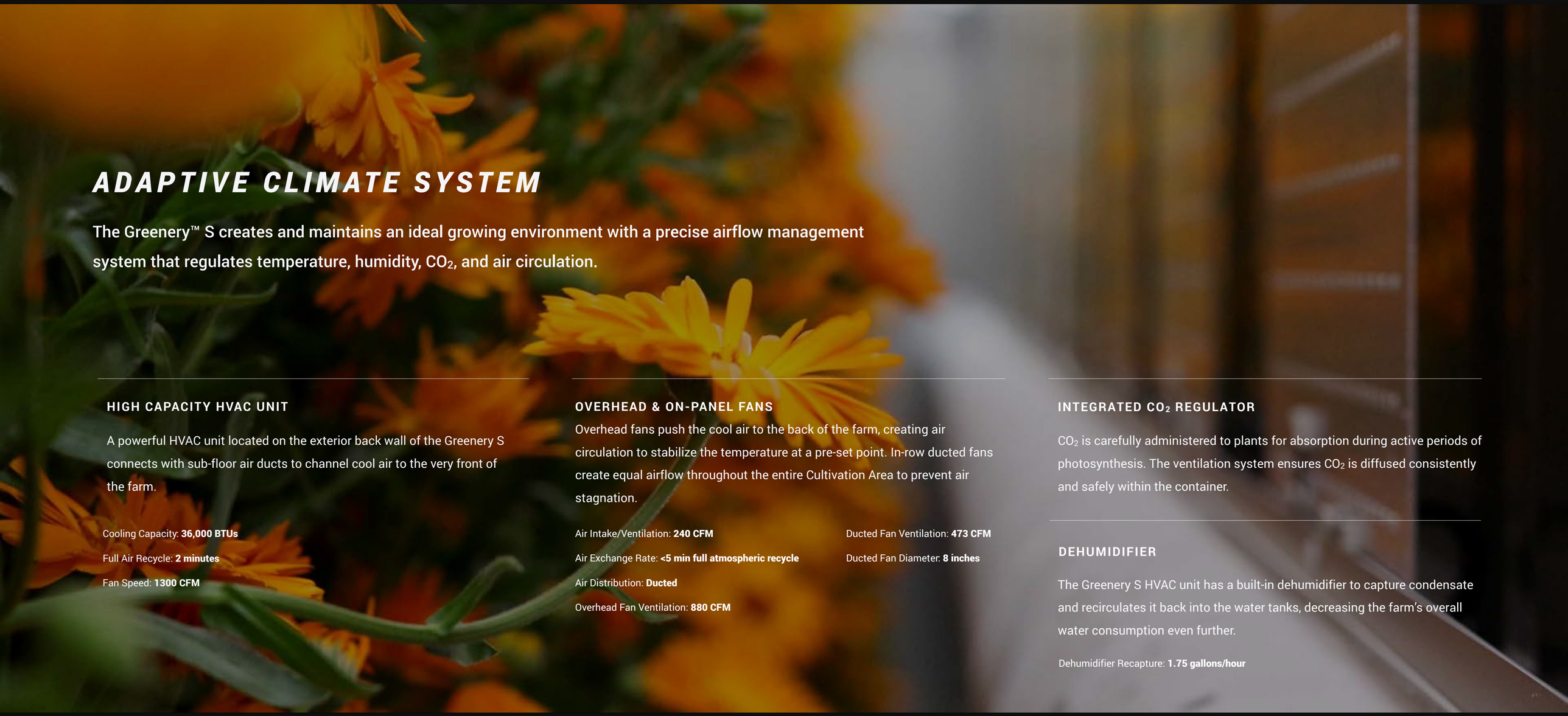
ADVANCED INSULATION

The Greenery™ S is built inside of a custom-designed container, developed specifically for the purpose of growing food in all environments. The shell provides plants with the proper insulation to protect them from inhospitable outdoor climates.

Thermal U-Value: **180 BTU/hr/C**

Observed Operating Temperatures: **-30°F–120°F**

Average Indoor Temperature: **70°F**



ADAPTIVE CLIMATE SYSTEM

The Greenery™ S creates and maintains an ideal growing environment with a precise airflow management system that regulates temperature, humidity, CO_2, and air circulation.

HIGH CAPACITY HVAC UNIT

A powerful HVAC unit located on the exterior back wall of the Greenery S connects with sub-floor air ducts to channel cool air to the very front of the farm.

Cooling Capacity: **36,000 BTUs**

Full Air Recycle: **2 minutes**

Fan Speed: **1300 CFM**

OVERHEAD & ON-PANEL FANS

Overhead fans push the cool air to the back of the farm, creating air circulation to stabilize the temperature at a pre-set point. In-row ducted fans create equal airflow throughout the entire Cultivation Area to prevent air stagnation.

Air Intake/Ventilation: **240 CFM**

Air Exchange Rate: **<5 min full atmospheric recycle**

Air Distribution: **Ducted**

Overhead Fan Ventilation: **880 CFM**

Ducted Fan Ventilation: **473 CFM**

Ducted Fan Diameter: **8 inches**

INTEGRATED CO_2 REGULATOR

CO_2 is carefully administered to plants for absorption during active periods of photosynthesis. The ventilation system ensures CO_2 is diffused consistently and safely within the container.

DEHUMIDIFIER

The Greenery S HVAC unit has a built-in dehumidifier to capture condensate and recirculates it back into the water tanks, decreasing the farm's overall water consumption even further.

Dehumidifier Recapture: **1.75 gallons/hour**

OPERATE IN ANY CONDITIONS

The insulation in the Greenery™ S keeps extreme weather out while protecting the carefully calibrated interior climate, making it possible to grow food in any conditions.

GROW SEASONAL CROPS ALL YEAR

With complete control of all climate components, it is possible to recreate perfect summer days in the middle of winter, growing delicate greens in typically inhospitable places.

PRODUCE TOP QUALITY PLANTS

With no exposure to sudden temperature changes and protection from pests and plant disease, operators can produce high-quality crops with great flavor and no aesthetic flaws.

OPERATIONS

A SIMPLE WORKFLOW

All of the components within the Greenery™ S are designed to simplify the farming workflow as much as possible, making it easy for anyone — regardless of farming experience — to easily manage farm operations.

STREAMLINED SUPPLY

Freight Farms' farmhand® Shop offers all supplies that new (and veteran) container farmers need to be successful — from tools and cleaning supplies to everyday consumables like grow plugs and nutrients.

The Combo Kit

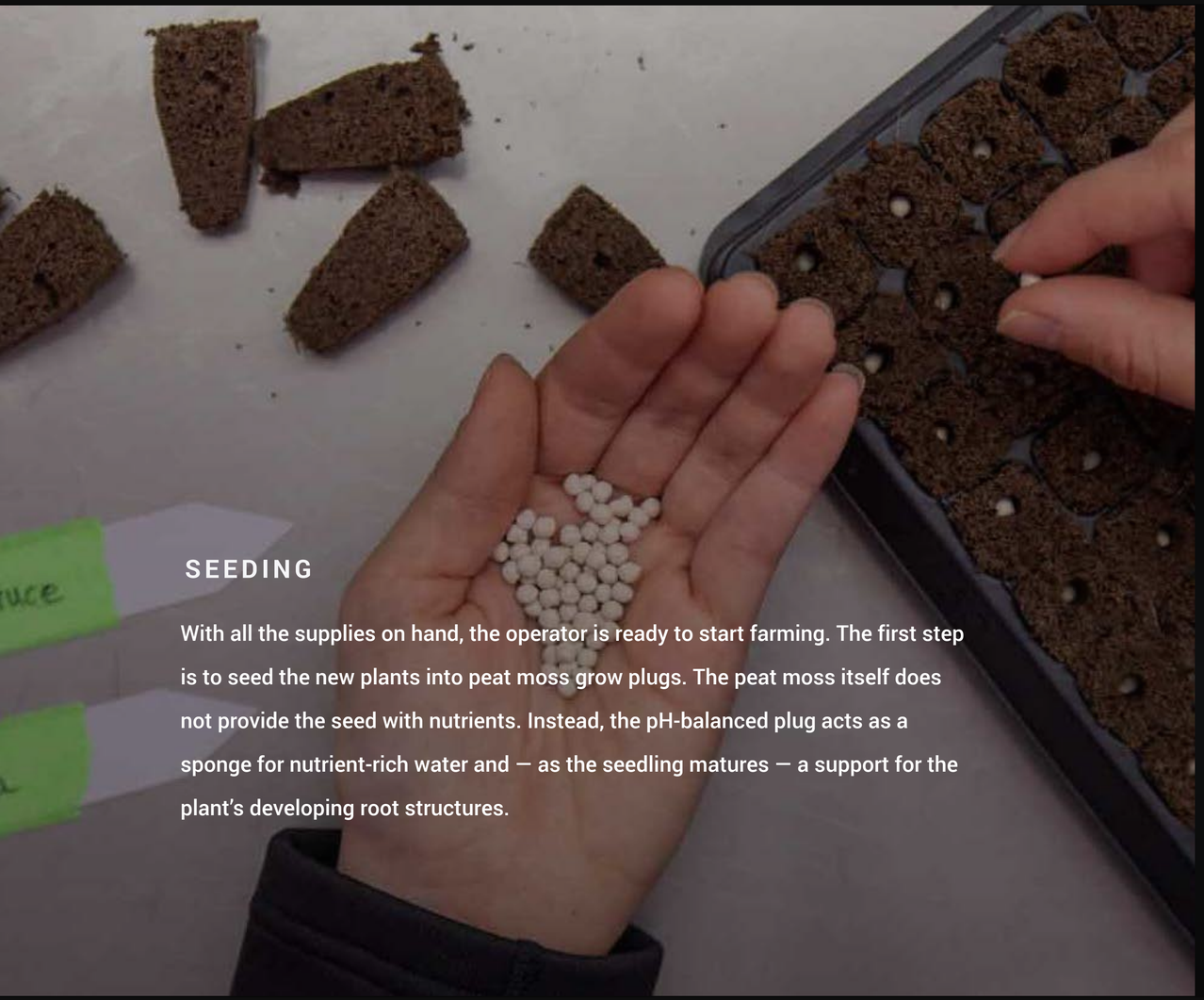
With a 3-month supply of the solutions, substrate, and nutrients needed to operate the Greenery™ S, this comprehensive kit includes all consumables needed for day-to-day farming operations.

The Starter Kit

The perfect kit to get farmers started, this contains all the must-have tools and accessories for farming, like LED grow room glasses, apron, scale, and spray bottle.

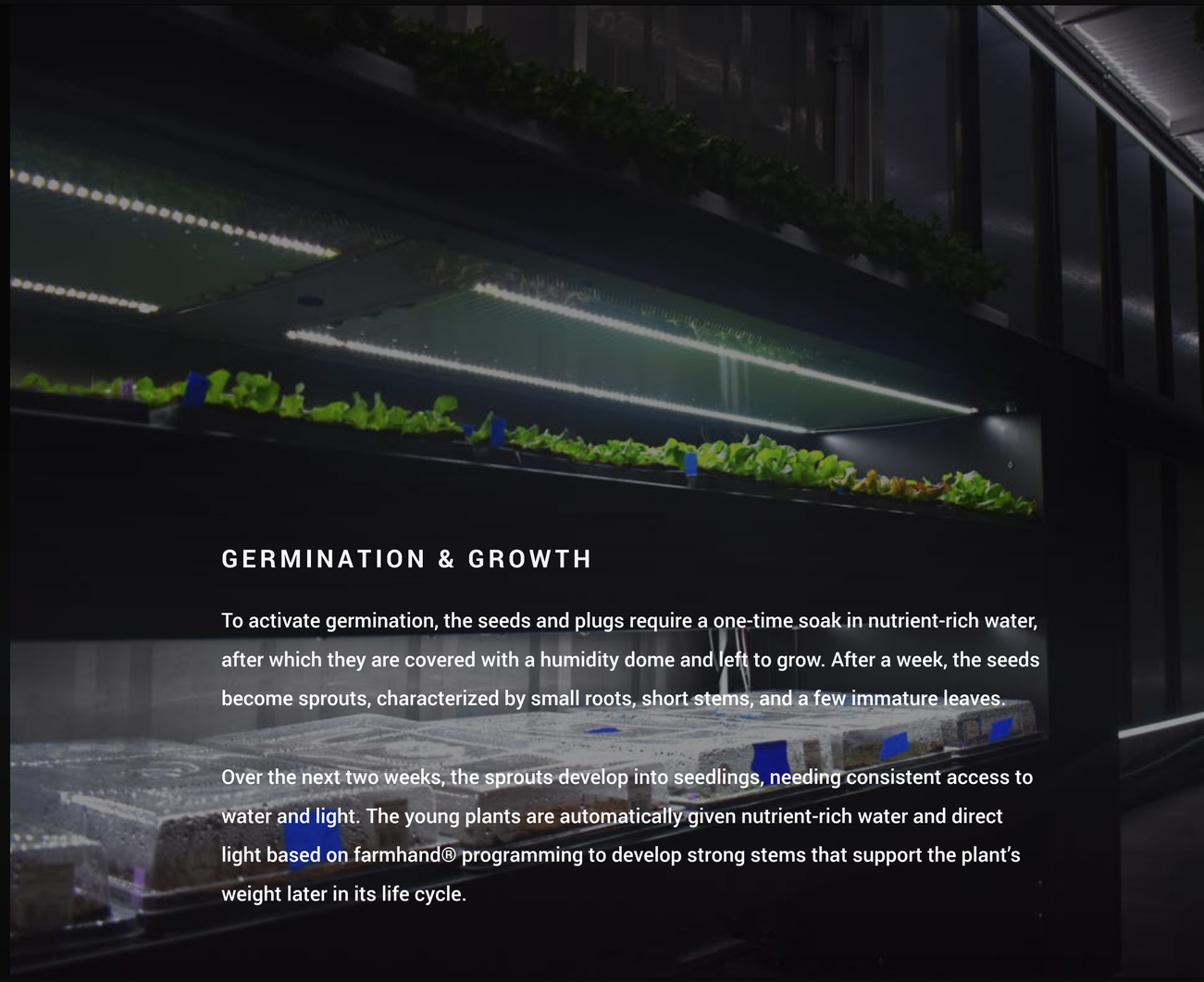
- Additional curated kits to make the growing process smooth, offering our proprietary blend of premium hydroponic plant nutrients: **farmhand form**, **bloom**, **grow**, and **grow RO**.
- Recurring subscriptions make it easy to automatically restock, so farmers never have to worry about having supplies on hand.

EASY OPERATIONS



SEEDING

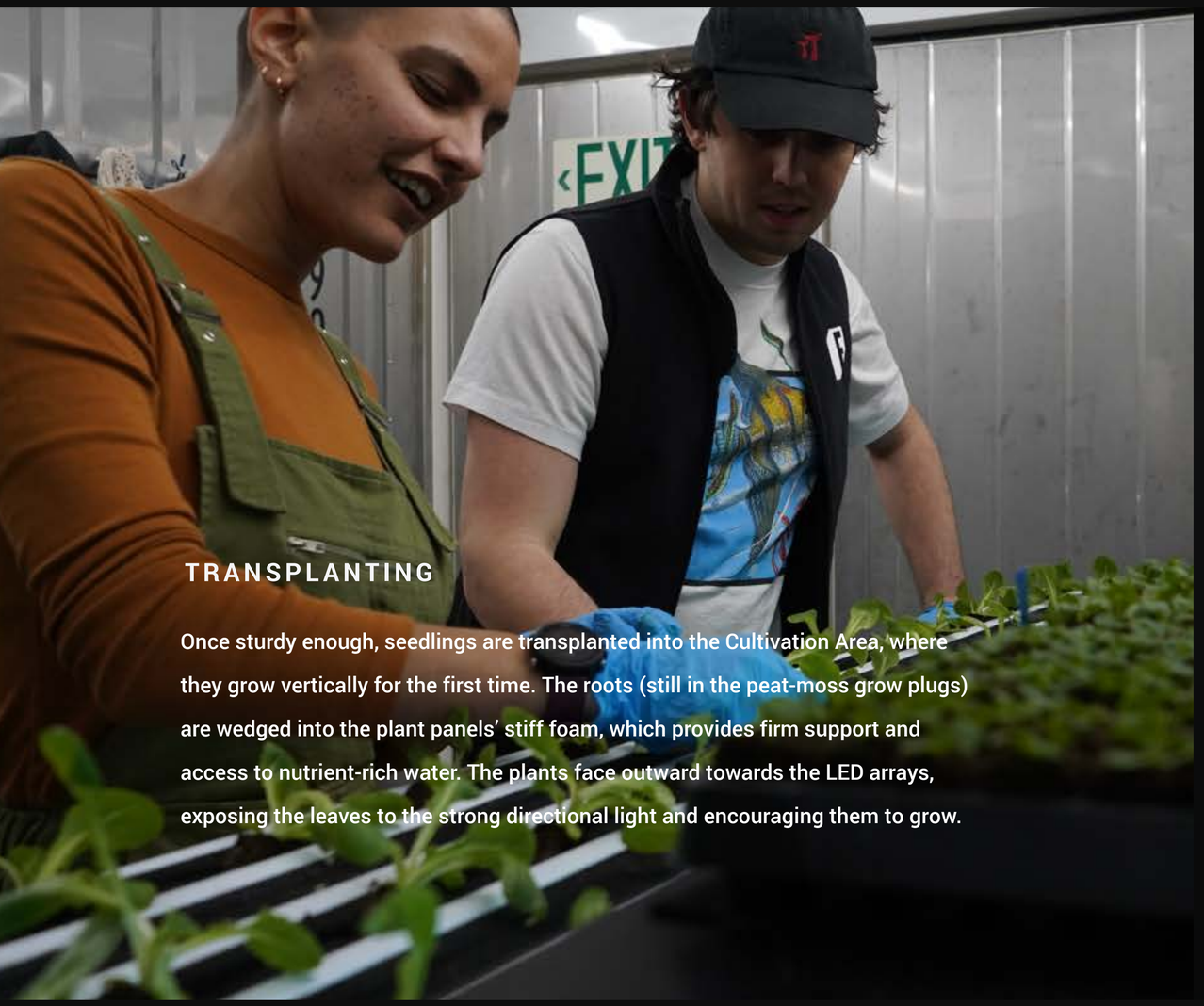
With all the supplies on hand, the operator is ready to start farming. The first step is to seed the new plants into peat moss grow plugs. The peat moss itself does not provide the seed with nutrients. Instead, the pH-balanced plug acts as a sponge for nutrient-rich water and — as the seedling matures — a support for the plant's developing root structures.



GERMINATION & GROWTH

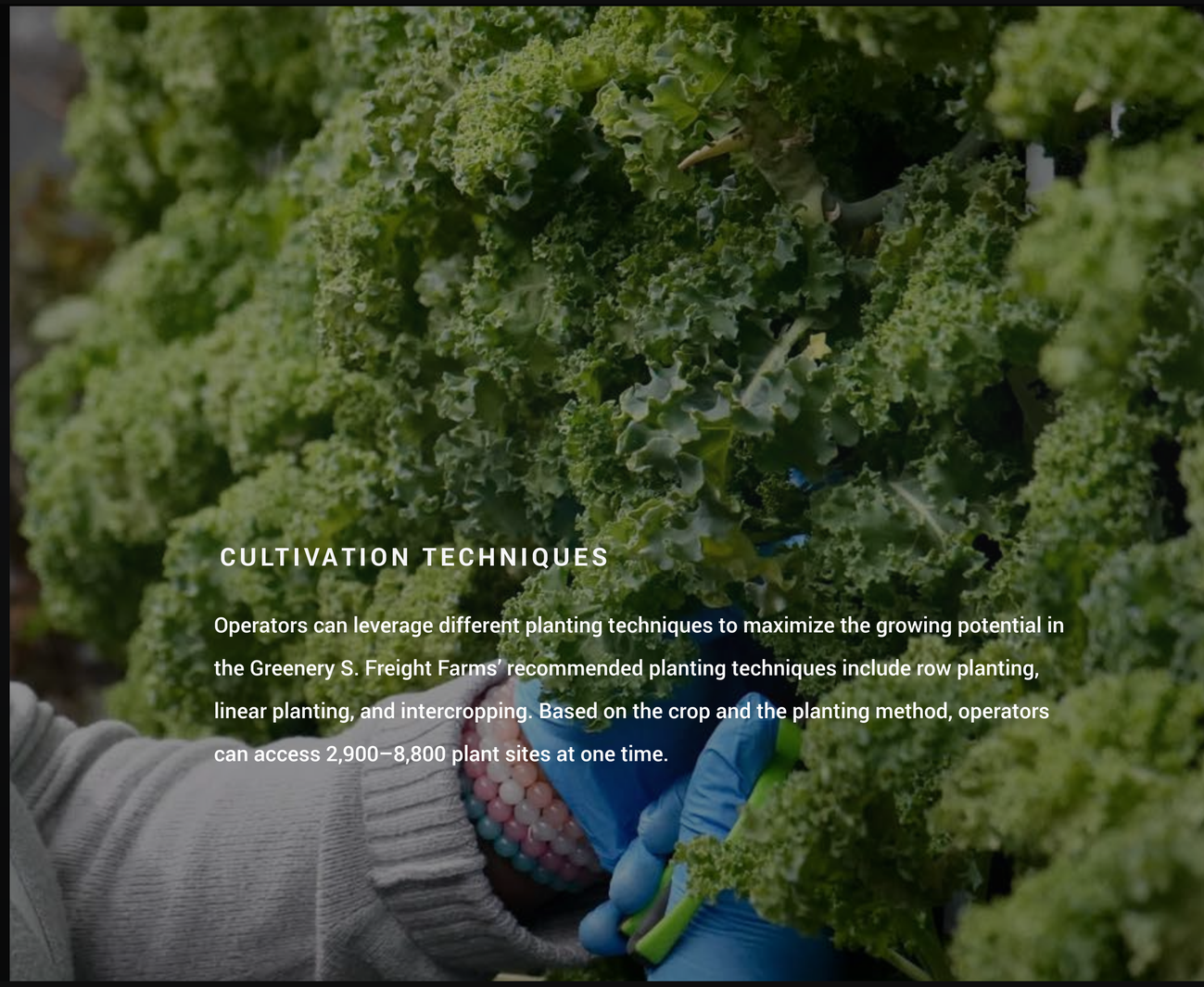
To activate germination, the seeds and plugs require a one-time soak in nutrient-rich water, after which they are covered with a humidity dome and left to grow. After a week, the seeds become sprouts, characterized by small roots, short stems, and a few immature leaves.

Over the next two weeks, the sprouts develop into seedlings, needing consistent access to water and light. The young plants are automatically given nutrient-rich water and direct light based on farmhand® programming to develop strong stems that support the plant's weight later in its life cycle.



TRANSPLANTING

Once sturdy enough, seedlings are transplanted into the Cultivation Area, where they grow vertically for the first time. The roots (still in the peat-moss grow plugs) are wedged into the plant panels' stiff foam, which provides firm support and access to nutrient-rich water. The plants face outward towards the LED arrays, exposing the leaves to the strong directional light and encouraging them to grow.



CULTIVATION TECHNIQUES

Operators can leverage different planting techniques to maximize the growing potential in the Greenery S. Freight Farms' recommended planting techniques include row planting, linear planting, and intercropping. Based on the crop and the planting method, operators can access 2,900–8,800 plant sites at one time.

CULTIVATION TECHNIQUES — EXPLAINED

ROW PLANTING

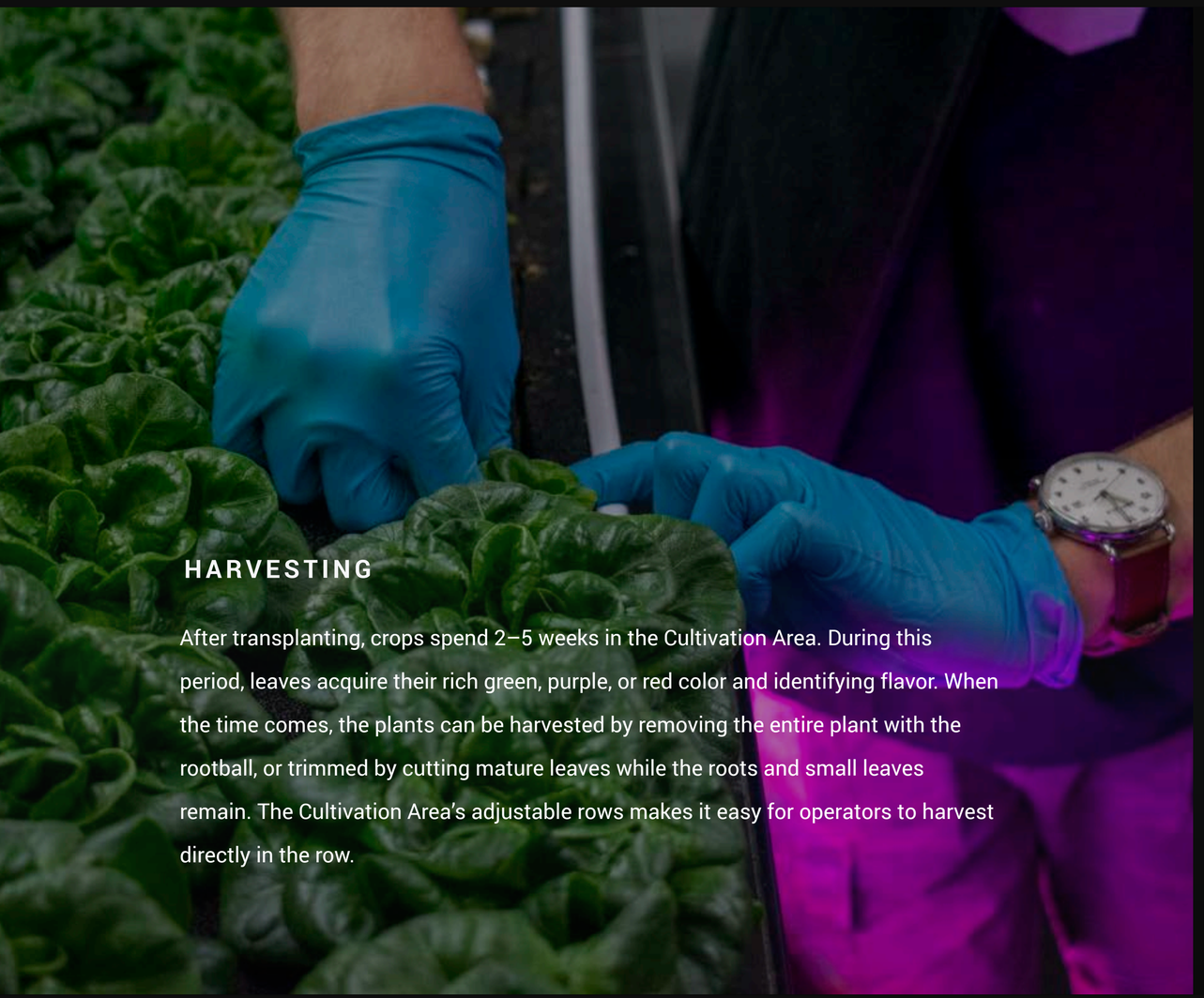
Active channels	1 3 5
Plant sites per channel	**10–15**
Total farm plant sites	**2,600–3,900**
Recommended crops*	**Large crops:** Lettuces, kale, mizuna, Swiss chard

LINEAR PLANTING

Active channels	1 2 3 4 5
Plant sites per channel	**15–20**
Total farm plant sites	**6,600–8,800**
Recommended crops*	**Small trim crops:** Arugula, watercress, mustard greens **Herbs:** Basil, parsley, cilantro, thyme

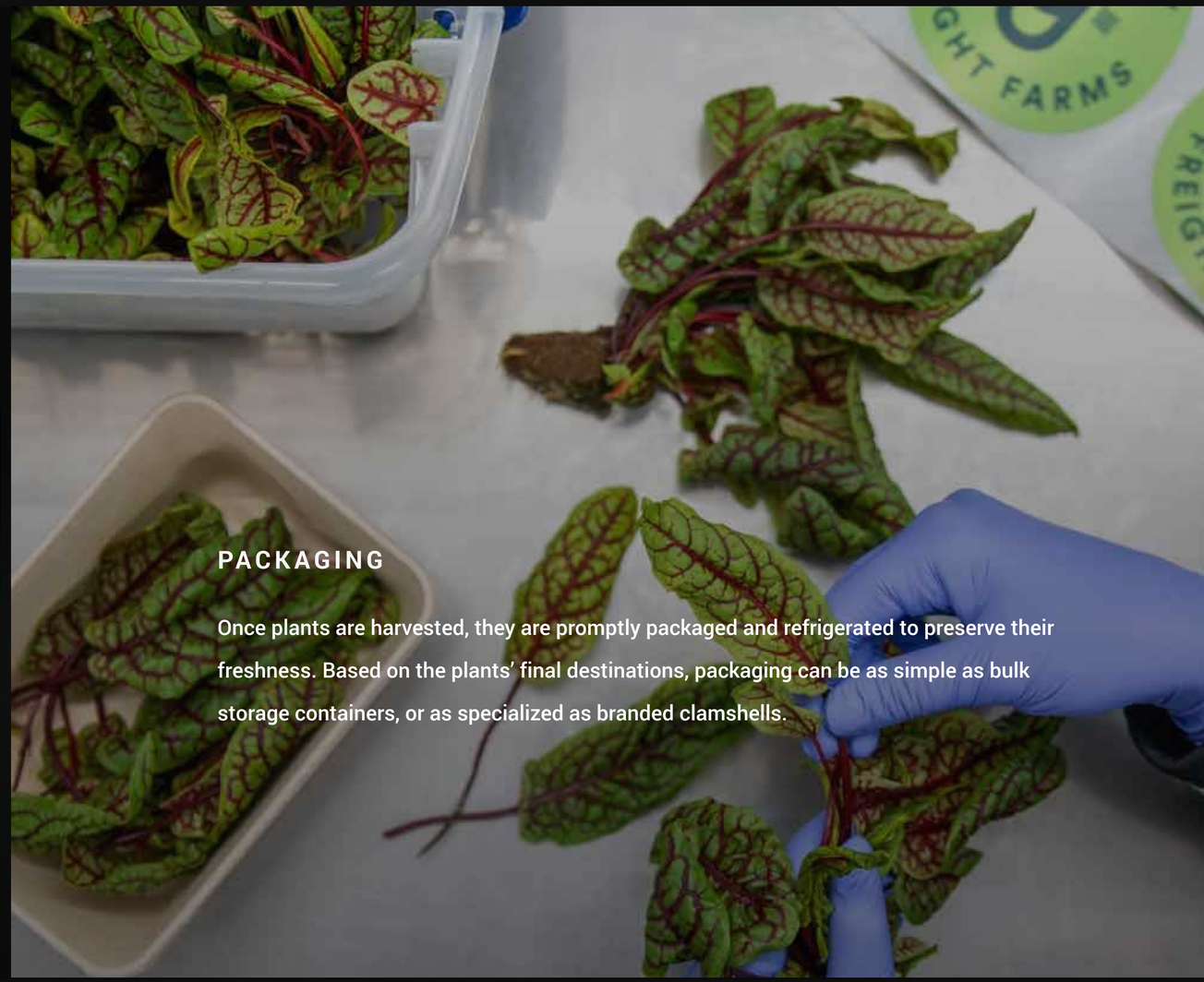
INTERCROPPING

Active channels	1 2 3 4 5
Plant sites per channel	**Large crops: 15–20** **Small crops: 17–20**
Total farm plant sites	**6,600–8,800**
Recommended crops*	**Large crops:** Lettuces, kale, mizuna, Swiss chard + **Root vegetables:** Radishes, turnips, carrots, beets



HARVESTING

After transplanting, crops spend 2–5 weeks in the Cultivation Area. During this period, leaves acquire their rich green, purple, or red color and identifying flavor. When the time comes, the plants can be harvested by removing the entire plant with the rootball, or trimmed by cutting mature leaves while the roots and small leaves remain. The Cultivation Area's adjustable rows makes it easy for operators to harvest directly in the row.



PACKAGING

Once plants are harvested, they are promptly packaged and refrigerated to preserve their freshness. Based on the plants' final destinations, packaging can be as simple as bulk storage containers, or as specialized as branded clamshells.

Operators are encouraged to track all their yields in farmhand® for better clarity into their farm's performance. For even greater automation, farmhand offers operators a crop scheduling feature designed to simplify the planning behind a consistent and diverse harvest.

GREENERY™ S SPECIFICATIONS

Site Requirements

SITE

Place the Greenery™ S on a flat, unobstructed plot measuring 50’x10’. The site surface must support the farm’s 8-ton gross weight. Asphalt, trap rock, railroad ties, sonotubes, or a concrete pad are all adequate. The Greenery S should be pitched so that the front of the farm is approximately 2 inches higher than the rear of the farm.

ELECTRICITY

The Greenery S comes standard with a 150-amp 240V split-phase electrical connection. The farm should be connected to electricity by a licensed electrician.

If your site requires 208V 3-phase power connection for 100A service, Freight Farms will provide instructions. Freight Farms will not provide parts; they must be supplied by your local electrician.

WATER

The Greenery S uses an average of 5 gallons of water a day. The site should have water access within 50 feet; alternatively, operators can schedule regular water deliveries.

WIFI

A WiFi signal is necessary for farmhand® connectivity. Farmhand will use about 5 GB of data per month, per farm.

Operational Requirements

SUPPLIES

Operators can source their supplies from any vendor or conveniently replenish them via farmhand Shop. Everyday consumables include peat moss plugs, nutrient solutions, and cleaning supplies.

TRAINING

Freight Farms offers a variety of training options to teach theoretical as well as hands-on practical skills. Learn more about the Certified Farmer Training Programs offered.

FARMHAND

Farmhand software is required to properly operate and control the farm. In addition to the operational benefits, farmhand is essential for farmer support, as it connects operators directly to the Client Services team.

Container & Climate

Container

Dimensions	40′ x 8′ x 9.5′
Thermal U-Value	180 BTU/hr/C

Climate Control Unit

Capacity	36,000 BTU
Cooling	50°F at 70°F return
HVAC fan	1300 CFM
Air Intake/Ventilation	240 CFM
Air Exchange Rate	2-min full atmosphere recycle
Air Distribution	Ducted
Overhead Fan Ventilation	880 CFM
Ducted Fan Ventilation	473 CFM
Ducted Fan Diameter	8 in
Integrated Dehumidifier	1.75 gal/hr

CO_2

Regulator	Integrated regulator for canisters

LED

Overview

Red LED Photosynthetic Wavelength	660 nm
Blue LED Photosynthetic Wavelength	440 nm

Nursery Station

Number of LED Boards	4
LED Boards Dimensions	42 in x 14.75 in x 0.0625 in
LED Array Intensity	12 DLI / 298 PPFD
LED Array Spectrum	White
LED Array Spectrum Isolation	R/B/W
LED Array Efficacy	4.06 uMol/J Hyper Red 2.80 uMol/J Deep Blue >2.0 uMol/J Full Spectrum White
LED Array Beam Angle	120 degrees, FWHM 50%

Cultivation Area

Number of LED Boards	112
Number of LED Arrays	4
LED Boards Dimensions	38.5 in x 13.78 in x 0.0625 in
Canopy Intensity	9–18 DLI / 208–342 PPFD
LED Array Spectrum Isolation	R/B
LED Array Efficacy	4.06 uMol/J Hyper Red 2.80 uMol/J Deep Blue
LED Array Beam Angle	120°, FWHM 50%

Hydroponics

Irrigation

Circulation Pump Filtration	6 nylon monofilament meshes
Aeration System	798 gal/hr fluid oxygenator
Mesh Rating	75 micron
Number of Peristaltic Dosing Pumps	8
Peristaltic Dosing Pumps Flow Rate	113 ml/min @ 24V
Nutrient Tanks	4 x 5-quart tube tanks located in the dosing cabinet that service both Nursery and Cultivation water tanks

Nursery Station

Hydroponics System	Dual 270 GPH drain pumps Dual 12-gallon ebb-and-flow troughs
Nursery Tank Capacity	31 gallons, continuous mix 250GPH Recirculation flow circuit with in-tank aerator
Nutrient Delivery	4 dedicated 50/ml/m pump injection

Cultivation Area

Hydroponics System	Dual 1200 GPH 1 /6HP utility pump with nylon monofilament mesh filter Dual-zone, closed-loop overhead drip at 2GPM
Cultivation Tank Capacity	90 gallons, continuous mix 500GPH recirculation flow circuit with in-tank aerator
Nutrient Delivery	4 dedicated 50/ml/m pump injection

Delivery Disclaimer: At Freight Farms, we take pride in delivering high-quality container farms to our valued customers. However, we would like to inform our customers that occasionally, during the delivery process, minor imperfections may occur on the exterior of the containers. These imperfections, such as scuffs or small dents, are typically the result of handling during transportation and are purely cosmetic in nature. They do not affect the functionality or performance of the container farm itself. Rest assured, we thoroughly inspect and test each container farm before it leaves our facility to ensure it meets our stringent quality standards. If you receive your farm with a dent that has penetrated the exterior shell, please document and contact your Customer Support Specialist.

Worktable & Nursery Station

Nursery Station	
Seedling Capacity	Up to 4,608
Seedling Tray Capacity	16 trays
Number of Seedling Troughs	Two full-width seedling troughs

Worktable	
Table Dimensions	90 in x 27 in x 43 in
Seedling Tray Capacity	TIG-welded stainless steel

Plant Panels & Adjustable Rows

Plant Panel	
Plant Panel Design	5-channel
Plant Panel Construction	High impact polystyrene
Plant Panel Growing Medium	Inert reticulated foam
Total Number of Panels	88
Total Number of Channels	440
Combined Linear Growing Space	36,960 in / 3,080 ft / 2.5 acres

Adjustable Rows	
Number of Grow Rows	4
Adjustment System	Rack-and-pinion
System Load-Bearing Capacity	1,300 lbs max.
Number of Frames	3
Frame Construction	Aluminum
Track Construction	Anodized aluminum
Carriage Construction	Anodized aluminum, rubber-coated wheels

Tech

farmhand Hub	
Number of Controlled Outputs	40
Number of Spare Outlets	1
Number of Controlled Inputs	10
Number of Spare Inputs	2 x 24V 4 x 4-20mA
Number of Zones	2 hydro zones (pH, EC, and temperature sensors) 1 climate zone (temp, RH%, CO_2)
Number of Sensors	2 water level sensors (Nursery Station tank, Cultivation Area tank)

farmhand Connected Cameras	
Number of Cameras	2 x Nursery Station 4 x Cultivation Area
Camera Data Storage	Cloud storage
Camera Resolution	960P 1.3 megapixel (1296 x730P) 140° viewing angle

Bluetooth® Speakers	
Number of Speakers	4 Dayton Audio speakers — Dayton Audio ND91-4 3-$^1/_2$ in Aluminum cone full-range neo driver 4 ohm
Speaker Connection	Bluetooth® connected
Speaker Construction	Weather-resistant ABS plastic enclosure and aluminum grills Polypropylene 5-$^1/_4$-in woofer Metaled Mylar 1-in dome tweeter

FREIGHT FARMS

freightfarms.com

SAGE
ENVIRONMENTAL

December 26, 2023

Ms. Joanna Pawlina
Environmental Scientist
Rhode Island Department of Environmental Management
Office of Land Revitalization and Sustainable Materials Management
Site Remediation Program
235 Promenade Street
Providence, Rhode Island 02908
Sent via U.S. Mail and E-mail: Joanna.Pawlina@dem.ri.gov

RE: Combined Remedial Action Work Plan (RAWP)
10 Higginson Avenue, 756 & 770 Lonsdale Avenue – Proposed School
Central Falls, Rhode Island 02863
RIDEM File Nos. SR-04-2061 & SR-04-2061B
SAGE Project Nos. S3969 & S4350

Dear Ms. Pawlina:

SAGE Environmental Inc. (SAGE), on behalf of the City of Central Falls, has prepared this Remedial Action Work Plan (RAWP) for the subject property (hereinafter, "Site"). The Site consists of three (3) parcels comprising approximately 8.52 acres and is identified by the Central Falls Tax Assessor's Office as Plat Map 9, Lots 26 (770 Lonsdale Ave.) & 203 (756 Lonsdale Ave.), and a portion of Plat Map 9, Lot 50 (10 Higginson Ave.). Note that while the initial investigations at the Higginson and Lonsdale properties were conducted at two (2) separate times and have been assigned two (2) separate RIDEM file numbers, the proposed development spans both properties, and the selected remedial alternative is the same for both properties. As such, SAGE has prepared a combined RAWP for the three (3) Site parcels.

A United States Geological Survey (USGS) Quadrangle Site Location Map showing the location of the Site relative to pertinent geographic features is included in **Figure 1**, and a plan depicting the Site boundaries and other relevant features is included in **Figure 2**. This RAWP is subject to the limitations presented in **Attachment A**.

The completed Remedial Action Approval Application Fee Form is included in **Attachment B** and payment will be included with the hard copy of this report.

Regulatory Background

10 Higginson Avenue (A Portion of Plat 9, Lot 50)
On December 16, 2022, SAGE submitted a Site Investigation Report (SIR) to RIDEM for 10 Higginson Avenue in accordance with the *Rules and Regulations of the Investigation and Remediation of Hazardous Material Releases*, as amended January 4, 2022 (the "*Remediation Regulations*"). Because the Site is the

proposed location of the Central Falls High School, the investigation was also performed in accordance with the RIDEM guidance document entitled *School Siting Guidance for the Evaluation of Vapor Intrusion Potential in Proposed Rhode Island School Sites* (the "*School Siting Guidance*"; dated September 19, 2012) and the *Industrial Property Remediation and Reuse Act* (*Rhode Island General Laws § 23-19.14*).

The SIR detailed investigation activities that were conducted at the Site in October 2021. During the investigation activities, a total of ten (10) soil borings were advanced at select locations throughout the Site. Both surficial (0-2 feet below surface grade [BSG]) and deeper soil samples were collected across the Site and submitted for laboratory analysis of polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), total metals, total petroleum hydrocarbons (TPH), and volatile organic compounds (VOCs). Three (3) of the soil borings were completed as groundwater monitoring wells within the area of the proposed school building. Groundwater samples were collected for laboratory analysis of VOCs. The results of the investigation identified the following:

- **Soil** – Select SVOCs, select metals, and TPH were identified in excess of RIDEM Method 1 Residential Direct Exposure Criteria (R-DEC). Additionally, benzo(a)pyrene and arsenic were identified in select samples in excess of the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC). No contaminants of concern were identified in soil in excess of the applicable RIDEM Method 1 GB Leachability Criteria (GB-LC); and
- **Groundwater** – No target analytes were detected in groundwater in excess of applicable RIDEM Method 1 GB Groundwater Objectives (GB-GWOs). Furthermore, no VOCs were identified above laboratory detection limits.

Subsequent to the SIR, RIDEM issued a Program Letter for the Site dated March 14, 2023, in concurrence with the selected remedial alternative. SAGE issued a post-SIR public notification on March 21, 2023. During the 14-calendar day comment period, SAGE received and addressed one (1) public comment regarding the flooding potential of 10 Higginson Avenue and nearby properties. The RIDEM received the public comment on March 30, 2023, and issued a Request for Response to Public Comment to the City of Central Falls on April 7, 2023.

SAGE provided a response on May 8, 2023, that indicated that stormwater considerations will be made as part of the civil engineering design of the Site redevelopment, and stormwater management practices are anticipated to include bioswales and rain gardens. All stormwater designs will follow the RIDEM Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8), meet the eleven minimum standards as required, and comply with the specific performance criteria, which include a requirement of a stormwater management site plan review by appropriate State and local government agencies; however, the stormwater management system design is outside of SAGE's environmental investigation scope.

On August 10, 2023, the RIDEM issued a Letter Response to SIR Public Comment, which included the original Public Comment Letter, SAGE's response to the public comment, and the RIDEM's supplemental response. The RIDEM's supplemental response indicated that SAGE, on behalf of the City of Central Falls, has sufficiently responded to the public comment. The RIDEM subsequently issued a Remedial Decision Letter for the Site on August 22, 2023.

The preferred remedial alternative for the property, as presented in the SIR, includes the implementation of the following engineering and institutional controls:

- Installation of a vapor barrier and active sub-slab depressurization system (SSDS);
    - Although the system is proposed to be active, prior to Site use and system activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling is required. The threshold for conducting indoor air sampling will be the Massachusetts Department of Environmental Protection (MassDEP) Residential Sub-Slab Soil Gas Screening Values (R-SSGSVs) for the contaminants of concern (COCs). Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-Dichloroethene (trans-1,2-DCE), cis-1,2-Dichoroethene (cis-1,2-DCE), Tetrachloroethene (PCE), and total petroleum hydrocarbons (TPH). Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for Air-Phase Petroleum Hydrocarbon (APH) by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will conduct quarterly indoor air sampling to compare to MassDEP Residential Indoor Air Threshold Values (R-TVs) for the identified COCs for a minimum of one (1) year. Upon completion of sub-slab soil gas testing, a pilot test will be conducted to ensure adequate fan size and radius of influence for system activation. Details of the pilot test are included in **Section 1.10.3 (B)** of this report;
- Placement and/or maintenance of physical barriers (i.e., building foundations, asphalt/concrete/acrylic surfacing pavements, fencing, and landscaped areas meeting the RIDEM capping requirements for an approved engineered barrier); and
- Recording of an Environmental Land Use Restriction (ELUR) and Soil Management Plan (SMP), which will include annual inspections to ensure the maintenance of engineered controls.

<u>756 & 770 Lonsdale Avenue (Plat 9, Lots 26 & 203)</u>

On May 11, 2023, SAGE submitted an SIR to RIDEM for 756 & 770 Lonsdale Avenue in accordance with the *Remediation Regulations*. Because the Site is the proposed location of the Central Falls High School, the investigation was also performed in accordance with the RIDEM guidance document entitled *School Siting Guidance for the Evaluation of Vapor Intrusion Potential in Proposed Rhode Island School Sites* (the "*School Siting Guidance*"; dated September 19, 2012) and the *Industrial Property Remediation and Reuse Act* (*Rhode Island General Laws § 23-19.14*).

The SIR detailed investigation activities that were conducted at the Site in October 2022. During the investigation activities, a total of seven (7) soil borings were advanced at select locations throughout the Site. Both surficial (0-2 feet below surface grade [BSG]) and deeper soil samples were collected across the Site and submitted for laboratory analysis of SVOCs, total metals, TPH, and VOCs. Five (5) of the soil borings were completed as groundwater monitoring wells. Additionally, one (1) existing groundwater monitoring well observed along the southeastern property boundary was incorporated into the sampling plan for the Site. Groundwater samples were collected for laboratory analysis of VOCs. Overall, the results of the investigation identified the following:

- **Soil** – Select SVOCs, select metals, and TPH were identified in excess of RIDEM Method 1 R-DEC. Additionally, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and arsenic were

identified in excess of the RIDEM Method 1 I/C-DEC. No contaminants of concern were identified in soil in excess of the RIDEM GB-LC; and

- **Groundwater** – Select VOCs were detected above laboratory detection limits in groundwater; however, no target analytes were detected in groundwater in excess of RIDEM GB-GWOs.

Subsequent to the SIR, RIDEM issued a Program Letter for the Site dated July 14, 2023, in concurrence with the selected remedial alternative. SAGE issued a post-SIR public notification on July 28, 2023, which was followed by a 14-calendar day comment period. No public comments were received during this time. Upon the closing of the public comment period, the RIDEM issued a Remedial Decision Letter for the Site dated August 22, 2023.

The preferred remedial alternative for the property, as presented in the SIR, includes the implementation of the following engineering and institutional controls:

- Installation of a vapor barrier and active sub-slab depressurization system (SSDS);
    - Although the system is proposed to be active, prior to Site use and system activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling is required. The threshold for conducting indoor air sampling will be the MassDEP R-SSGSVs for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will conduct quarterly indoor air sampling to compare to MassDEP R-TVs for the identified COCs for a minimum of one (1) year. Upon completion of sub-slab soil gas testing, a pilot test will be conducted to ensure adequate fan size and radius of influence for system activation. Details of the pilot test are included in **Section 1.10.3 (B)** of this report;
- Placement and/or maintenance of physical barriers (i.e., building foundations, asphalt/concrete/acrylic surfacing pavements, fencing, and landscaped areas meeting the RIDEM capping requirements for an approved engineered barrier); and
- Recording of an Environmental Land Use Restriction (ELUR) and Soil Management Plan (SMP), which will include annual inspections to ensure the maintenance of engineered controls.

As previously mentioned, because the proposed school development spans both properties, the following RAWP sections detail the proposed remedial actions for both properties. This approach will increase the efficiency of the RIDEM communication and will streamline the process for reaching compliance with the RIDEM *Remediation Regulations* for each property.

Remedial Action Work Plan

This RAWP has been prepared in accordance with Section 1.10 of the RIDEM *Remediation Regulations* and with recently revised/accepted RIDEM RAWP formats, the *School Siting Guidance*, and *Rhode Island General Laws 23-19.14* to document the proposed Remedial Action implementation plan as follows.

1.10.2 Remedial Objectives: *The Remedial Action Work Plan shall present a Remedial Action which addresses remedial objectives for all impacted media at the Contaminated-Site in a manner consistent with Section 1.9 of the Part (Risk Management), including, as appropriate, the following:*

A. *Groundwater Objectives: The Performing Party shall propose a remedial objective for all Hazardous Substances found to have actual or potential impacts on groundwater.*

"Not Applicable" – Based on the results of the SIRs conducted for each property, groundwater at the Site meets the applicable RIDEM Method 1 GB-GWOs. Therefore, no remedial objective has been proposed for this media.

B. *Surface Water and Sediment Objectives: The Performing Party shall propose a remedial objective for all Hazardous Substances found to have actual or potential impacts on surface water and/or sediments, that is consistent with the actual and potential uses of the surface water and/or sediment in the impacted area, and the policies and regulations of the Office of Water Resources;*

"Not Applicable" – Based on the information obtained during the Site Investigations, surface water and sediment are not present on-Site, and impacts to surface water and sediment are not anticipated based on such Site conditions. Therefore, remedial objectives have not been proposed for these media.

C. *Soil Objectives: The Performing Party shall propose a remedial objective for all Hazardous Substances and TPH found to have actual or potential impacts on soil that is consistent with the actual and potential uses of the land in the impacted area. The remedial objective for soil shall also take into account the potential for the Hazardous Substances to leach into groundwater and/or surface water from these impacted soils and, subsequently, should be consistent with the actual and potential uses of the ground water and/or surface water in the impacted area and the policies and regulations of the appropriate regulatory authority for that resource; and*

As noted in the SIRs, several contaminants were identified in Site soils in excess of the RIDEM R-DEC and/or I/C-DEC. The proposed remedial objective for all hazardous substances and TPH in soil is to limit direct contact with impacted soils by way of using a combination of engineering controls, such as proposed building foundations; four (4) inches of asphalt, concrete, and/or acrylic surfacing underlain by a minimum of six (6) inches subgrade of clean fill (or exempt material such as recycled asphalt); two (2) feet of clean fill atop of impacted soil; one (1) foot of clean fill underlain by a geotextile fabric with a minimum CBR puncture strength of 220 (consistent with current RIDEM policy) atop of impacted soil in accordance with the RIDEM capping specifications; or the installation of fencing to limit access to uncapped areas. Note that it is anticipated that the school building will be occupied prior to completion of all capping activities at the Site. Any areas that have not been capped will remain fenced to limit access until capping of the proposed areas has been completed. Based upon the proposed construction plan prepared by The Vertex Companies, LLC and Ai3 Architects, the northern portion of the Site will be improved by the proposed high school building and associated paved parking/driveway/walkway areas in addition to landscaping. The

central portion of the Site will remain improved by the existing synthetic turf athletic field and surrounding hardscape track. Note that a proposed stormwater drainage line is planned to bisect the existing synthetic turf athletic field and hardscaped track. A portion of the synthetic turf athletic field and hardscaped track will be removed to accommodate the proposed drainage line. The drainage line excavation is proposed to be capped with geotextile fabric and a minimum of one (1) foot of clean fill. Aside from capping the drainage line excavation, no additional capping is being proposed within the synthetic athletic field and surrounding hardscape track area in order to preserve the recently installed improvements. It is SAGE's opinion that the remaining synthetic athletic field and surrounding hardscape track provide a sufficient barrier to limit direct contact with Site soils.

The south/southwestern portion of the Site will be landscape capped along with two basketball courts, and the western portion of the Site will be capped with a paved walkway/driveway extending from north to south.

A majority of the eastern portion of the Site is significantly overgrown with dense vegetation and consists of a large slope with a retention wall along the eastern edge of the existing hardscaped track and synthetic turf athletic field. Due to the large slope and infeasibility of capping in this area, SAGE proposes to leave this area vegetated and limit access with fencing along the toe of the sloped area as well as around the existing stormwater swale near the southern portion of the Site, which is proposed to remain as an existing stormwater management structure. In addition, due to the existing tree line of arborvitaes along the western side of the walkway/driveway running north to south along the western property line, SAGE proposes to cap around the base of the existing and new trees with geotextile fabric and four (4) inches of crushed stone to prevent damage to the root structures of the existing trees.

See **Figure 3** for the proposed capping plan.

All engineering controls will be further maintained with an Environmental Land Use Restriction (ELUR) and Soil Management Plan (SMP). Along with recording the ELUR, annual inspections of all capped surfaces will be performed, as required, to ensure said engineering controls are properly maintained.

The underlying groundwater classification at the Site and surrounding area is "GB." GB areas are defined as "groundwater resources which are known or presumed to be unsuitable for drinking water use without treatment". The GB-LC remedial objective takes into account the potential for hazardous substances and petroleum to leach into groundwater from impacted soils and is consistent with the potential uses for groundwater in the impacted area.

As noted in the SIRs conducted at the Site, no target analytes in analyzed soil samples were identified in excess of the applicable RIDEM Method 1 GB-LC.

D. *Air Objectives: The Performing Party shall propose a remedial objective for all Hazardous Substances found to have actual or potential impacts on air quality, whether the impact is from gaseous or particulate emissions and/or entrainment on soil. That air objective shall be consistent*

with the requirements of the Rhode Island Clean Air Act and the rules and regulations promulgated pursuant thereto.

Contaminants of concern at the Site consist of select metals, SVOCs, and TPH. Where detected, no VOCs were identified in excess of the applicable RIDEM standards. As such, there is no anticipated potential for vapor intrusion into the indoor air of the proposed Site structure(s). Furthermore, vapor mitigation efforts will be completed as part of the facility design, including the installation of a vapor barrier and an active SSDS.

Prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling is required. The threshold for conducting indoor air sampling will be the MassDEP R-SSGSVs for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will conduct quarterly indoor air sampling to compare to MassDEP R-TVs for the COCs for a minimum of one (1) year. Upon completion of sub-slab soil gas testing, a pilot test will be conducted to ensure adequate fan size and radius of influence for system activation. Details of the pilot test are included in **Section 1.10.3 (B)** of this report.

Proper stormwater management, erosion and sedimentation controls, and dust control measures will be taken during remedial activities to prevent particulate emissions and entrainment.

1.10.3 Proposed Remedy: *The Remedial Action Work Plan shall clearly explain the proposed remedy and justify the ability of the remedy to meet the remedial objectives. For remedies that include on-site treatment and/or containment of contaminated media, the Remedial Action Work Plan shall include the best management practices proposed to:*

A. Prevent the infiltration/migration of Hazardous Substances at levels harmful to human health or the environment;

The overall Proposed Remedy for the Site is designed to achieve this goal and is as follows:

1. Capping of impacted soil on the Site;
2. On-Site reuse of excavated soil to meet the planned grading requirements for the proposed redevelopment under the proposed engineered barrier and/or off-site disposal of excavated soils;
3. The placement and/or maintenance of future/existing physical barriers (i.e., building foundations, asphalt/concrete/acrylic surfacing pavements, and/or landscaped areas meeting the RIDEM requirements for an approved engineered barrier) to prevent human exposure to and migration of impacted soil;

4. The placement and maintenance of fencing along densely vegetated, sloped areas behind a retention wall and an existing stormwater swale to limit access;
5. Installation of a vapor barrier along with an active SSDS to mitigate a potential future vapor intrusion pathway. Prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling is required to ensure the effectiveness of the SSDS. The threshold for conducting indoor air sampling will be the MassDEP R-SSGSVs for the contaminants of concern COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will conduct quarterly indoor air sampling to compare to MassDEP R-TVs for the COCs for a minimum of one (1) year. Upon completion of sub-slab soil gas testing, a pilot test will be conducted to ensure adequate fan size and radius of influence for system activation. Details of the pilot test are included in Section 1.10.3 (B) of this report; and,
6. The implementation of an ELUR and SMP.

Relative to soil, Department-approved caps will provide a barrier to direct contact with impacted soil and to prevent the migration of impacted soil.

As previously stated, a majority of the eastern portion of the Site is significantly overgrown with dense vegetation and consists of a large slope with a retention wall along the eastern edge of the track. Due to the large slope and infeasibility of capping in this area, SAGE proposes to leave this area vegetated and prevent access through the use of fencing along the toe of the slope as well as around the existing stormwater swale near the southern portion of the Site, which is proposed to remain as an existing stormwater management structure. In addition, due to the existing tree line of arborvitaes along the western side of the walkway/driveway running north to south along the western property line, SAGE proposes to cap around the base of the existing and new trees with geotextile fabric and four (4) inches of crushed stone in order to prevent damage to the root structures of the existing trees. Areas of capping as described herein are depicted in **Figure 3**.

As noted above, no analytes were reported above their applicable RIDEM Method 1 GB-LC in soil samples collected at the Site. Therefore, infiltration of stormwater and/or groundwater through soil at the Site does not require restriction by an impervious surface. Stormwater infiltration systems are being proposed for stormwater management at the Site. See **Figure 3** for the stormwater infiltration system locations. Soil analytical data within the vicinity of the proposed infiltration systems did not identify GB-LC exceedances. On November 22, 2023, The Vertex Companies, LLC, Ai3 Architects, Peregrine Group, LLC, and SAGE Environmental, Inc. personnel met with representatives of the RIDEM Office of Water Resources and the Office of Land Revitalization and Sustainable Materials Management Site Remediation Program to discuss stormwater management plans and wetlands and stormwater permitting. During this meeting, SAGE presented the findings of the previous investigations conducted at the Site in relation to

the proposed infiltration areas. Ms. Ashley Blauvelt of the Site Remediation Program indicated that restrictions on stormwater infiltration were not anticipated at the Site based on the results of previous investigations. Based on this information, stormwater infiltration practices are not anticipated to result in the infiltration or migration of hazardous substances at levels that are harmful to human health or the environment.

In order to address any potential vapor intrusion, SAGE proposes the installation of a vapor barrier and active SSDS system. The project architect firm, Ai3 Architects, has engaged GZA GeoEnvironmental, Inc. for the design of the SSDS and vapor barrier. The SSDS and vapor barrier design consists of six inches of ¾" filter stone and 4" SSDS piping on top of the existing grade. The crushed stone and SSDS piping will then be overlain by a 15-Mil thickness vapor barrier across the entire building footprint beneath the proposed building slab. The active SSDS will mitigate a potential future vapor intrusion pathway and will prevent the migration of future potential sub-slab VOCs into indoor air. The vapor barrier will restrict the potential for vapor intrusion through the concrete slab, and the active SSDS will vent the under-slab building footprint, eliminating the potential for volatilization to indoor air. The proposed vapor barrier and SSDS system designed by GZA GeoEnvironmental, Inc. are discussed further in the following section.

The ELUR will ensure the preservation and maintenance of the proposed engineering controls, vapor barrier, and SSDS and will include a SMP to ensure the proper handling of impacted soil in the event of future disturbance. A draft ELUR and SMP, prepared in accordance with Section 1.9.9 of the Remediation Regulations, will be provided to the RIDEM for review and approval prior to submission of the Remedial Action Closure Report (RACR). A Capping Plan illustrating the configuration of the proposed engineered cap and/or physical barriers is included in **Figure 3**. Note that it is anticipated that the school building will be occupied prior to completion of all capping activities at the Site. Any areas that have not been capped will remain fenced to limit access until the capping of the proposed areas has been completed.

Material imported to the Site to construct the engineered cap will be sampled for VOCs, TPH, PAHs, Priority Pollutant 13 metals, and polychlorinated biphenyls (PCBs) (*via* Soxhlet extraction) at a frequency of one sample per 1,000 cubic yards to confirm that these contaminants are not present in the imported fill material at concentrations above their corresponding R-DEC and GB-LC as established in the *Remediation Regulations*. Non-jurisdictional materials (i.e., recycled asphalt, brick, or concrete) are exempt from clean fill testing requirements.

B. *Prevent direct contact with Hazardous Substances at levels harmful to human health and the environment;*

The proposed engineered barrier and fencing will prevent direct contact with soils and the vapor barrier with the SSDS will mitigate the potential for future vapor intrusion, thereby mitigating the risk to human health and the environment. Note that it is anticipated that the school building will be occupied prior to completion of all capping activities at the Site. Any areas that have not been capped will remain fenced to limit access until the capping of the proposed areas has been completed.

Engineered Barrier

The proposed capped surfaces will fall into one of the following four categories:

Hardscape Cap Areas

During the proposed Site redevelopment, a new Central Falls High School will be constructed along the northern portion of the Site. The final building footprint will serve as part of the engineered cap.

During the proposed Site redevelopment, placement and/or maintenance of future/existing physical barriers (i.e., asphalt/concrete/acrylic surfacing pavements) will be installed on-Site. Surface soil in the new asphalt/concrete/acrylic surfacing pavement areas will either be:

- Excavated and replaced with at least 4 inches of asphalt or concrete or acrylic surfacing underlain by a minimum of 6-inches of clean subgrade material; or,
- The asphalt/concrete/acrylic surfacing and/or clean fill will be placed directly on top of existing Site soil without excavation in accordance with the RIDEM-established presumptive capping specifications.

Landscaped Areas

During the proposed Site redevelopment, new landscaped areas will be installed on-Site, and a portion of the existing landscaped areas will remain. Note, for major planting areas where trees and/or shrubs are planned, clean fill will include planting mix around the root balls. Surface soil in the new and existing landscaped areas will either be:

- Excavated to a minimum depth of either one (1) or two (2) feet below the planned grade and: 1) replaced with a minimum of 12-inches of clean fill (inclusive of the thickness of synthetic landscape turf surfacing and/or turf pavers), placed over a non-woven geotextile with minimum CBR puncture strength of 220 (consistent with current RIDEM policy), or 2) replaced with a minimum of 24-inches of clean fill (inclusive of the thickness of synthetic landscape turf surfacing and/or turf pavers); or,
- The clean fill and/or geotextile will be placed directly on top of existing Site soil without excavation in accordance with the RIDEM-established presumptive capping specifications.

To protect the trunk and root structure of existing trees and/or shrubs that are to remain during the proposed Site redevelopment along the western side of the Site, SAGE requests that a variance to the presumptive capping methods be granted. This variance will be:

- Placement on top of the existing grade of four (4) inches of washed stone over a non-woven geotextile with minimum CBR puncture strength of 220 (consistent with current RIDEM policy) surrounding the existing tree trunk and exposed root structure with a tapered excavation of up to a depth of four (4) inches below the existing grade and added to/replaced with a minimum of four (4) inches of washed stone placed over a non-woven geotextile with minimum CBR puncture strength of 220 (consistent with current RIDEM policy) to maintain current grade.

To preserve the synthetic athletic field and surrounding hardscaped track that currently exists at the Site, SAGE requests that a variance to presumptive capping methods be granted to limit capping activities to areas outside of these existing improvements. It is SAGE's opinion that the synthetic athletic field and surrounding hardscape track provide a sufficient barrier to limit direct contact with Site soils. Note that as part of Site redevelopment, a stormwater drainage line is proposed to be installed beneath the synthetic athletic field and/or surrounding hardscape track, resulting in a disturbance to a portion of the hardscape track and synthetic turf field. The drainage line excavation is proposed to be capped with geotextile fabric and a minimum of one (1) foot of clean fill. Aside from capping the drainage line excavation, no additional capping is being proposed within the synthetic athletic field and surrounding hardscape track area in order to preserve the recently installed improvements.

Due to significant vegetation, a steep slope, and a retention wall along the eastern portion of the Site, SAGE requests that a variance to the presumptive capping methods be granted in this area. This variance will be:

- Installation of a combination of a split rail and chain-link fence along the toe of the slope and around an existing stormwater swale due to the infeasibility of capping in this area. The fencing will also be placed along the eastern lot line to prevent access from off-Site properties. Note that no fence is proposed across the existing drainage swale, as this would require fencing through a RIDEM-identified wetland area. The proposed capping/fencing plan is included in **Figure 3**.

Vapor Barrier

GZA GeoEnvironmental, Inc. has been contracted by the project architect for the vapor barrier and SSDS design. According to the SSDS layout plan and details included in **Figure 4**, to provide a uniform sub-slab ventilation zone, a continuous layer of ¾-inch filter stone with a minimum thickness of 6 inches shall be installed below the building slab in contact with the ground surface.

For areas where sub-slab ventilation piping is to be installed, a minimum 2-inch layer of stone shall be below and above the piping.

A minimum 15 mil vapor barrier or equivalent shall be installed above the stone bed. This vapor barrier shall be installed on top of the stone bed, above the SSDS system, and prior to the installation of the slab. and the vapor barrier is to be installed in conformance with the manufacturer's specifications.

Sub-Slab Depressurization System

According to the SSDS Layout Plan and Details included as **Figure 4**, the extraction piping shall be 4-inch diameter, schedule 40 PVC (polyvinyl chloride) perforated piping. The conveyance piping shall be 6-inch diameter, schedule 40 PVC solid piping. **Figure 4** depicts the proposed orientation of extraction and conveyance piping.

All sub-slab piping installed shall be PVC welded and solidly bedded below the slab with a minimum of 2-inches of crushed stone base under and above the piping. For extraction piping, 5/8-inch diameter holes are to be drilled every five (5) inches. Above grade conveyance/vent stack piping shall be clearly labeled "Vapor Mitigation System" every five (5) feet.

The section of conveyance/vent stack shall terminate no less than 2 feet above the roofline and a minimum of 1 foot above any walls within 10 feet of the vent outlet. Additionally, the discharge point shall be a minimum of 25 feet from any HVAC rooftop unit with air intake or opening into the building in all directions. **Figure 4** provides further information regarding the design of the SSDS.

As previously stated, the ELUR will ensure the preservation and maintenance of the proposed engineering controls, vapor barrier, and SSDS and will include a SMP to ensure the proper handling of impacted soil in the event of future disturbance.

Note, prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling should be conducted to ensure the effectiveness of the SSDS. The threshold for indoor air sampling will be the MassDEP SSGSVs for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed by the Air-Phase Petroleum Hydrocarbon (APH) method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will conduct quarterly indoor air sampling to compare to MassDEP Residential Indoor Air Threshold Values (R-TVs) for the COCs for a minimum of one (1) year.

SSDS Activation:

Upon completion of the initial sub-slab soil gas sampling, an SSDS pilot test using the installed SSDS piping infrastructure will be conducted to collect the necessary data for the purpose of estimating a radius of influence (ROI) and correctly sizing the extraction fan(s). The goal of the

active SSDS will be to install and operate an SSDS providing a negative pressure gradient beneath the Site building to eliminate a vapor intrusion pathway.

As part of the pilot test, a network of sub-slab soil gas points to collect data will be installed as depicted in **Figure 4**. A portable vacuum would then be used to apply vacuum to the existing SSDS infrastructure. For the purposes of estimating an ROI, a conservative minimum of -0.012 inches of water column will be used as a threshold value at the sub-slab soil gas points for inclusion in the ROI. To complete the pilot test, SAGE would apply a vacuum pressure at each extraction point, during which the following data will be collected:

- Negative pressure at the extraction point using a Magnahelic gauge;
- Velocity pressure at the extraction point using a pitot tube and Magnahelic gauge; and
- Negative pressure at sub-slab soil gas points using a digital manometer.

The results of the pilot test would then be provided to the RIDEM for input and approval prior to the installation/activation of any active SSDS. Based on the pilot test results, the number and location of extraction fan(s) will be determined. The extraction fan(s) will be mounted on the exterior of the Site building, and the effluent piping will extend above the building roofline. The manufacturer specification sheet for the chosen extraction fan(s) will be provided to the RIDEM prior to the installation/activation of any active SSDS. A remote telemetry system will also be installed to send notifications to the property owner, the RIDEM, and SAGE in the event of system failure.

During pilot testing, the pilot test effluent would be screened with a photoionization detector (PID) to assess whether pre-treatment of SSDS effluent may be required and would also be evaluated upon final active SSDS installation.

The Environmental Land Use Restriction (ELUR) will be written to ensure that the SSDS will be inspected annually to validate that it is functioning properly, that the SSDS effluent will be screened with a PID, and that negative pressure and flow readings will be collected. Annual SSDS monitoring will be reported to the RIDEM as part of ELUR compliance reporting.

C. Eliminate volatilization and entrainment of Hazardous Substances

While no VOCs were identified at the Site in excess of applicable standards, the proposed remedial design includes vapor intrusion considerations in the event that volatile compounds become a contaminant of concern in the future. The proposed vapor barrier will restrict the potential for vapor intrusion through the concrete slab, and the active SSDS will vent the sub-slab building footprint, eliminating the potential for volatilization to indoor air. The proposed engineered barrier surfaces will prevent the entrainment/migration of hazardous substances and/or petroleum *via* volatilization.

Note, prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling should be conducted to evaluate the effectiveness of the SSDS. The threshold for indoor air sampling will be the MassDEP SSGSVs

for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will perform a pilot test to evaluate proper fan size to convert the system from passive to active. Upon converting the system to an active system, SAGE will conduct quarterly indoor air sampling to compare to MassDEP R-TVs for the COCs for a minimum of one (1) year after converting the system to an active system.

D. *Minimize and manage surface runoff from the area including during and after the Remedial Action. The plan shall identify all locations of existing and/or proposed infiltration systems.*

SAGE anticipates that appropriate dust and erosion control measures will be implemented throughout the proposed redevelopment and the proposed remedial activities to prevent surface runoff.

Following the proposed redevelopment, the Site will consist of the Site building footprint(s), asphalt/concrete/acrylic surfacing pavements, fenced areas, and landscaped areas. Precipitation will be allowed to infiltrate on-Site in the landscaped areas and/or flow into various proposed stormwater management systems at the Site, which will be designed as part of the civil engineering design of the Site redevelopment conducted by others. Stormwater management practices are anticipated to include underground infiltration chambers, bioretention areas, a lined detention pond, and a drainage system that will discharge to the existing drainage swale near the southeastern portion of the Site. **Figure 3** depicts proposed stormwater management and infiltration areas. Note that soil samples collected within the vicinity of the proposed infiltration systems are compliant with RIDEM GB-LC. As such, it is the opinion of SAGE that stormwater infiltration in these areas is acceptable.

All stormwater designs will follow the RIDEM Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8) and will meet the eleven minimum standards as required and comply with the specific performance criteria listed in §§8.6 through 8.17 of the Rules, which includes a requirement of a stormwater management site plan review by State and local government; however, the stormwater management system design is outside of SAGE's environmental investigation scope.

Pursuant *to Section 3.2.8 Rhode Island Stormwater Design and Installation Standards Manual* (RISDISM) *Subsurface Contamination Guidance* document, as amended October 2014, SAGE conducted an evaluation of Environmentally Sensitive Areas to assign the level of hydraulic loading allowable at the Site in the proposed infiltration system areas.

The evaluation included a review of readily available information viewable *via* the RIDEM Environmental Resource Map and the United States Fish & Wildlife Service (U.S. FWS) Information for Planning and Consultation (IPAC). A review of the information provided by the U.S. FWS IPAC online database identified one threatened (Northern Long-eared Bat) and one

candidate (Monarch Butterfly) species as being potentially affected by activities at the Site. However, the U.S. FWS Official Species List document, included as **Attachment C**, indicates that:

- There are no critical habitats within your project area under this office's jurisdiction. A critical habitat, as defined by the U.S. FWS Critical Habitat – What Is It fact sheet and included as **Attachment C**, is the "specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation."

According to the RIDEM Environmental Resource Map, a portion of the Site is identified as:

- Local conservation land for recreational purposes with public access;
- Land & Water Conservation Fund 6(f) recipient for the development of the Higginson Avenue Playground;
- State conservation land for recreational purposes with public access;
- National Conservation Easement Site for public access to recreation areas;
- Protected Area Database Site as it relates to public access to recreational areas; and
- Composite Conservation Opportunity Area regarding receiving funding for the development of the Higginson Avenue Playground.

While these conservation land designations are for public access to recreational areas, given the Site's redevelopment as the Central Falls High School, it is SAGE's opinion that these designations do not meet the definition of an environmentally sensitive area, as the conservation land areas are not intended for the preservation of the natural character of the property or a wildlife management area. Furthermore, a part of the redevelopment of the Site will include additional recreational areas for the public school (e.g., athletic fields, basketball courts, and a track).

In addition to the above, the following areas have been identified at and/or within 200-feet of the Site according to the RIDEM Environmental Resource Map:

- An emergent marsh/wet meadow wetland along the southern portion of the Site. Upon further review, this appears to be a wetland mapping error, as this area is a developed turf field, track, and active soccer field consisting of grass only;
- A scrub-shrub swamp along the southern portion of the Site. Upon further review, this appears to be a wetland mapping error, as this area is an active soccer field consisting of grass only and a commercially developed property to the southwest of the Site;
- A scrub-shrub swamp along the northern edge of the southwestern side of the Site. Upon further review, this appears to be a wetland mapping error, as this area appears to be a paved and industrially/commercially developed facility. No wetland areas are identified;
- A deciduous forested wetland along the northwestern side of the Site. Upon further review, this appears to be a wetland mapping error, as this area is a developed parking lot and industrial/commercial facility. No wetland areas are identified;

- A scrub-shrub swamp wetland, emergent marsh/wet meadow wetland, a palustrine open water wetland, and the Moshassuck River Class B surface water body directly to the south of the Site; and
- A natural heritage area to the west of the Site across Moshassuck Valley Industrial Highway.

A 200-foot buffer from the southerly abutting wetlands and western natural heritage area is depicted in **Figure 5**. No stormwater infiltration is proposed within these buffer zones. Proposed stormwater management practices within the 200-foot buffer zone of the southern-adjacent wetlands and western natural heritage area include a lined detention basin and a drainage pipe that will discharge to an existing stormwater/drainage swale on the southern portion of the Site. On November 22, 2023, the Site architect and engineering team met with RIDEM Office of Water Resources representatives to discuss stormwater management plans and associated permitting. A stormwater/wetlands permit application will be prepared by others and submitted to RIDEM for review. Note that soil outside of these buffer zones meets GB-LC within the proposed infiltration areas. See **Figure 3** for the locations of the proposed stormwater management structures.

1.10.4 Remediation of Impacted Groundwater: *The Remedial Action Work Plan shall clearly explain how impacted groundwater will be remediated. Remediation of groundwater shall meet the requirements of Section 16 of the Groundwater Quality Rules, as well as the requirements of Section 1.9 (RISK MANAGEMENT) of the Remediation Regulations. Any Remedial Action Work Plan which includes the proposal of a discharge zone and/or a residual zone shall submit the required proposals and meet the required demonstrations of Rules 13.2 and 13.3 of the Groundwater Quality Rules, respectively.*

"Not Applicable" – Based on the results of the SIRs, groundwater at the Site meets the applicable RIDEM Method 1 GB-GWOs. Therefore, no remedial actions are proposed for the remediation of groundwater at the Site.

1.10.5 Limited Design Investigation: *The Director may require the Performing Party to include a proposed Limited Design Investigation in the Remedial Action Work Plan in order to gather information necessary for the design and construction of a specific remedy. The Performing Party may also propose to include a Limited Design Investigation in the Remedial Action Work Plan in order to gather information necessary for the design and construction of a specific remedy. Activities proposed as part of this Limited Design Investigation shall meet the requirements of Section 1.8 (SITE INVESTIGATION) of these regulations.*

As previously stated, upon building construction and prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine indoor air sampling is required to ensure SSDS effectiveness. The threshold for indoor air sampling will be the MassDEP SSGSVs for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will perform quarterly indoor air sampling to compare to MassDEP R-TVs for the COCs for a minimum of one (1) year. Upon completion of the initial sub-slab soil gas testing, a pilot test will be

conducted to determine the radius of influence and to ensure proper fan size for the SSDS activation. The SSDS will be activated prior to any indoor air sampling.

1.10.6 Points of Compliance: *The Remedial Action Work Plan (RAWP) shall clearly indicate the locations, for each impacted medium where Hazardous Substances will be measured in order to determine if the remedial objectives have been met. These points will be designated Points of Compliance. Remedial Actions will be initially focused on meeting remedial objectives set for the Contaminated Site, and compliance shall be measured throughout that Contaminated Site. The Points of Compliance shall be managed in a manner consistent with Rule 1.9.8 (Points of Compliance). Rule 1.13.0 specifies requirements unique to arsenic in soil.*

Based on the information collected during the Site Investigations, the following proposed remedial actions will achieve the Points of Compliance for soil and indoor air and meet the requirements of Section 1.9.8 of the *Remediation Regulations*, *School Siting Guidance*, and *Rhode Island General Law 23-19.14*:

1. Excavation of impacted soil to meet the planned grading requirements for the proposed redevelopment;
2. Off-Site recycling/disposal of excavated soil and/or on-Site reuse of excavated soil under the proposed engineered barrier;
3. The placement and/or maintenance of physical barriers (i.e., building foundations, asphalt/concrete/acrylic surfacing pavements, and/or landscaped areas meeting the RIDEM requirements for an approved engineered barrier) to prevent human exposure to and migration of impacted soil;
4. The placement and/or maintenance of fencing off of densely vegetated, sloped areas behind a retention wall and an existing stormwater swale to prevent human exposure to and migration of impacted soil;
5. Installation of a vapor barrier along with an active SSDS to mitigate a potential future vapor intrusion pathway. Note, prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling is required for. The threshold for indoor air sampling will be the MassDEP SSGSVs for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will conduct quarterly indoor air sampling to compare to MassDEP R-TVs for the COCs for a minimum one (1) year. Prior to indoor air sampling, a pilot test using the installed SSDS infrastructure will be conducted to determine the radius of influence and ensure proper fan sizing. The SSDS will be activated prior to indoor air sampling; and
6. The implementation of an ELUR and SMP.

No further actions are warranted with respect to groundwater, surface water, and/or sediment, as no remedial objectives have been proposed for these media. Note that it is anticipated that the school

building will be occupied prior to completion of all capping activities at the Site. Any areas that have not been capped will remain fenced to limit access until the capping of the proposed areas has been completed.

1.10.7 Proposed Schedule for Remediation: *The Remedial Action Work Plan shall include a proposed schedule for implementing the proposed Remedial Action.*

Implementation of the Proposed Remedy and Site redevelopment is anticipated to commence within the first half of the year 2024. Upon completion of the Proposed Remedy, a Remedial Action Completion Report (RACR) will be submitted to the RIDEM, and once approved by the RIDEM, the final RIDEM-approved ELUR and SMP will be recorded with the City of Central Falls Recorder of Deeds.

A copy of the recorded ELUR and SMP will be submitted to the RIDEM within fifteen (15) days of recording. ELUR inspections will be conducted annually, and a copy of the inspection report will be submitted to the RIDEM.

1.10.8 Contractors and/or Consultants: *The Performing Party shall include the names, addresses and telephone numbers of the contact Persons of any contractors or consultants hired to implement or operate the remedy proposed in the Remedial Action Work Plan. The responsibilities of each consultant and/or contractor shall be clearly explained. If the actual consultant or contractor has not been determined at the time of application, the expected duties of each company shall be explained and the Department shall be notified as soon as the specific companies are selected.*

A remediation contractor has not been selected as of the date of submittal of this RAWP. Contact information for the selected contractor will be provided to the RIDEM *via* E-mail prior to the start of work.

Environmental Consultant

SAGE Environmental, Inc.
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Telephone: 401-723-9900
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1.10.9 Site Plan: *The Remedial Action Work Plan shall include a site plan. The site plan submitted as part of the Site Investigation, conducted pursuant to Rule 1.8.3.F, shall be amended to include any further information available to the Performing Party, and the locations of all proposed remedial units and monitoring points. The Points of Compliance shall also be clearly marked on the site plan.*

A USGS Quadrangle Site Location Map and a Site Plan are attached as **Figures 1 and 2**, respectively. A Capping Plan illustrating the configuration of the proposed engineered cap and proposed fencing is included in **Figure 3**.The full-scale active SSDS design is depicted in **Figure 4**.

1.10.10 Design Standards and Technical Specification: *The Remedial Action Work Plan shall include all design standards and technical specifications necessary for the design of the proposed remedy. Design standards and technical specifications will include, where appropriate:*

A. *Identification of the materials of construction of all portions of the remedy;*

The materials of construction of all portions of the remedy are discussed above under **Section 1.10.3 Proposed Remedy**.

B. *The type of equipment to be used, including unit capacity and dimensions;*

Typical construction equipment will be utilized to implement the Proposed Remedy. Upon completing the pilot test for activating the SSDS system, a specification sheet for the selected fan will be provided to the RIDEM for review.

C. *The results of any laboratory or pilot-scale tests conducted to determine the effectiveness of the proposed Remedial Action; and*

Prior to Site use and SSDS activation, post-construction sub-slab soil gas sampling will be conducted to determine whether indoor air sampling is required to evaluate the SSDS effectiveness. The threshold for indoor air sampling will be the MassDEP SSGSVs for the COCs. Based on the soil and groundwater analytical results, volatile COCs consist of Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH. Sub-slab soil gas samples will be analyzed by Method TO-15. Additionally, because petroleum was detected in soil, the sub-slab soil gas samples will be analyzed for APH by the MassDEP method. Only Site COCs will be reported. Should a COC exceed the associated R-SSGSV, SAGE will perform quarterly indoor air sampling to compare to MassDEP R-TVs for the COCs for a minimum of one (1) year after converting the system to an active system. Upon completion of the initial sub-slab soil gas testing, a pilot test will be conducted to evaluate proper fan size for SSDS activation. Details of the SSDS pilot test are included in **Section 1.10.3 (B)** of this report. The SSDS will be activated prior to conducting any indoor air sampling. Results of the sub-slab soil gas testing and SSDS pilot test will be included in the RACR.

D. *Any manufacturer's literature and/or technical guidance documents on the construction, implementation and/or operation of proposed units.*

Copies of the manufacturer specification sheets and installation instructions for the vapor barrier will be provided to the RIDEM upon selection. Additionally, the manufacturer specification sheet will be provided to the RIDEM upon SSDS fan selection following completion of the SSDS pilot test.

These portions of the Remedial Action Work Plan shall be prepared under the supervision of a Registered Professional Engineer in the State of Rhode Island and stamped by that engineer prior to submittal.

1.10.11 Set-up Plans: *The Remedial Action Work Plan shall explain any pre-operational staging or construction requirements which shall be completed prior to the installation and operation of the proposed Remedial Actions. These pre-operational staging or construction activities may include the installation of pads, liners, or berms; any intrusive activities; or any Contaminated-Site contouring or grading which may be necessary. The Set-Up Plan shall show how any construction or staging activities will be done in a manner in compliance with any applicable laws, rules and regulations.*

Prior to conducting excavation work at the Site as part of grading activities and building foundation preparation, DigSafe will be notified to provide markings of utilities in the area.

As noted previously, SAGE anticipates that appropriate temporary stormwater and erosion control measures will be implemented throughout the proposed redevelopment and the proposed remedial activities. Temporary fencing will be installed along the boundaries of the work area, if necessary. As appropriate, 6-mil polyethylene sheeting, for the temporary stockpiling of excavated soil, will be staged on-Site prior to commencing construction. A Construction Soil Management Plan (CSMP) is included as **Attachment D**, which details soil management and sampling activities.

1.10.12 Effluent Disposal: *The Remedial Action Work Plan shall include specific plans for the management and disposal of any products or by-products from the proposed Remedial Action. This section shall also identify what regulations shall be complied with during, and what permits or approvals shall be obtained prior to, any planned effluent disposal actions.*

Implementation of the Proposed Remedy may generate excess excavated soil from the Site that cannot be encapsulated during Site capping activities. SAGE anticipates that the excess excavated soil will either be placed on/covered by 6-mil polyethylene sheeting or will be live-loaded for off-Site reuse/disposal following the completion of *in-situ* and/or stockpile waste characterization and approval by an appropriate receiving facility. If the soil will be stockpiled, the sheeting will be a minimum of 6 mil in thickness and of sufficient width to encompass the width of the stockpile with an additional apron of at least four feet on all sides. Sheeting with the same characteristics will be used to fully cover the stockpile. The stockpiles will be maintained in a covered condition to alleviate the potential for erosion of the stockpile and will be wetted as necessary for dust control during stockpiling activities.

Waste characterization samples of soils proposed for off-Site reuse/disposal will be collected and analyzed to develop a waste profile prior to transport and disposal. The characterization information, collected either pre- or post-excavation, will be used to identify an appropriate receiving facility and to transport the soil in accordance with all local, state, and federal regulations. Excess soils generated during the remedial action will be handled in accordance with the CSMP. The CSMP outlines soil stockpiling, characterization, re-usability, and disposal procedures.

SAGE assumes that Site representatives will be present to certify the waste profile shipping documentation, as required.

Construction dewatering may be required during the Site redevelopment. If excess groundwater is generated during construction, the water will be properly containerized and characterized for potential

treatment, discharge, and/or off-site disposal. Any dewatering activities will be conducted under the appropriate permits/approvals.

1.10.13 Contingency Plan: *The Remedial Action Work Plan shall include a Contingency Plan which clearly explains the procedures to be followed and the Persons to be notified in the event of an unexpected incident involving Hazardous Materials at the Contaminated-Site. The Contingency Plan shall include, at a minimum, the following information:*

A Site-specific CSMP will be available on-Site during the implementation of the remedial action. The CSMP will identify safe work practices, emergency coordinators, and emergency response procedures. A summary of the procedures that will be followed and notifications that will be made in the event that an unexpected incident involving hazardous materials and/or petroleum occurs at the Site during implementation of the remedial action are as follows.

A. *The names and telephone numbers of all emergency coordinators;*

Jacob H. Butterworth and Lacy Reyna
SAGE Environmental, Inc.
Telephone: (401) 723-9900
E-mail: jbutterworth@sage-enviro.com and lreyna@sage-enviro.com

B. *All emergency response procedures and arrangements;*

Spills of oil or hazardous materials: The spill will be controlled and cleaned-up to the extent that it is safe to do so with available tools, containers, and personal protective equipment available on-Site. If necessary, additional spill response equipment and or personnel will be mobilized to the Site.

Ignition of flammable material: Dry chemical fire extinguishers will be available on-Site. Ignited flammable materials will be extinguished to the extent that it is safe to do so with the available fire extinguishers. If necessary, additional fire response equipment and/or personnel will be mobilized to the Site.

Notification of spills or unexpected releases of hazardous materials and/or petroleum will be reported as follows:

- RIDEM Office of Emergency Response: During normal business hours (Mon-Fri 0800-1600) = (401) 222-1360; Anytime, any emergency = (401) 222-3070
- City of Central Falls Fire Department: 911. Non-emergency number: (401) 727-7446
- SAGE Project Manager: Jacob H. Butterworth and Lacy Reyna = (401) 723-9900

Notification of incidents involving fire or explosion:

- City of Central Falls Fire Department: 911
- SAGE Project Manager: Jacob H. Butterworth and Lacy Reyna = (401) 723-9900

C. *A description of the procedures necessary for the prevention of ignition and/or reaction of any flammable material or reactive materials, where appropriate.*

No reactive materials are known to exist or are planned to be stored on-Site during the remedial and/or redevelopment activities. Flammable materials will be limited to fuels contained in on-Site vehicles and equipment used to implement the remedial action. An adequate number of fire extinguishers will be maintained on-Site to address incipient fire conditions.

1.10.14 Operating Log: *The Remedial Action Work Plan shall include a proposed Operating Log which clearly and completely records activities on-site and shows how the implementation and operation of the Remedial Action is progressing. This Operating Log shall include, at a minimum, the following information:*

An Operating Log will be maintained to record remedial activities during the implementation of this RAWP. Copies of the Operating Logs will be provided in the RACR to be submitted to the RIDEM.

A. *Time periods of operation of the remedial unit and approximate flow rates;*

Documentation of Site-wide capping, installation of fencing, and the installation of the vapor barrier and active SSDS will be documented in the RACR. Upon completion of the SSDS pilot test, the active fan manufacturer's specification sheet will be provided to the RIDEM. No other active remedial equipment is included in this RAWP.

B. *Records of any analyses conducted as part of the Remedial Action;*

Records of soil characterization analytical results including disposal and imported fill materials will be maintained throughout the project. In addition, results of the SSDS pilot test will be recorded and maintained as part of the remedial activities at the Site. This information will be provided in the RACR.

C. *Instances of implementation of the Contingency Plan; and*

If an emergency response is required, RIDEM will be notified and the response actions recorded. These response actions will also be recorded and included in the RACR.

D. *An inspection plan designed to insure the proper operation of the proposed remedial unit. Operating treatment units shall be inspected at least weekly unless an alternative inspection frequency is approved by the Director.*

No active remedial treatment equipment is proposed in this RAWP. SAGE will be present at the Site intermittently throughout all remedial actions to document capping progress as well as the installation of the vapor barrier and active SSDS. As previously stated, annual inspections and screening of the SSDS will be included in the proposed ELUR for the Site, which will be provided to RIDEM for review and approval prior to the completion of remedial activities. Post-remedial inspections will include annual ELUR inspections to ensure the preservation and maintenance of the proposed engineering controls, vapor barrier, and SSDS and will include a SMP to ensure

the proper handling of impacted soil in the event of future disturbance. Annual inspection reports will be submitted to the RIDEM. No other inspections are proposed.

1.10.15 Security Procedures: *The Remedial Action Work Plan shall include a description of the security procedures proposed to prevent unknowing access to the Contaminated-Site or key features identified at the Contaminated-Site. This section shall include descriptions of any natural boundaries or any existing or proposed walls or fences surrounding the Contaminated-Site. Means to control entry to the Contaminated-Site or key features identified at the Contaminated-Site shall also be clearly explained.*

Appropriate Occupational Safety and Health Administration (OSHA) safe work practices shall be employed during the implementation of the Proposed Remedy. Site access will be controlled *via* fencing during construction. Unauthorized personnel will not be permitted to enter the Site during redevelopment. The gate to the fence will be locked after work hours to prevent unauthorized access to the Site. No additional security procedures are proposed for the selected remedial approach. Note that it is anticipated that the school building will be occupied prior to completion of all capping activities at the Site. Any areas that have not been capped will remain fenced to limit access until the capping of the proposed areas has been completed.

1.10.16 Shut-Down, Closure and Post-Closure Requirements: *The Remedial Action Work Plan shall contain a section outlining the procedures required to shut-down and close the remedial units. This section shall also outline any proposed post-closure activities, including monitoring and/or institutional controls restricting future land usage at the Contaminated Site. All post-closure groundwater monitoring shall be done in accordance with a program meeting the requirements of Section 12 of the Groundwater Quality Rules.*

During the placement of, and following the installation of, the engineered barrier, inspections will be conducted to document that the proper thickness of barrier is installed. As necessary, copies of the geotextile specification sheet, laboratory data for clean fill, soil disposal documentation, and/or the operating logs will be submitted to the RIDEM as part of the RACR. Furthermore, upon completion of the SSDS pilot test, the manufacturer specification sheet for the selected fan will be provided to the RIDEM.

Post-closure activities will include the implementation of the ELUR and SMP which will manage risks associated with direct contact with Site soil, ensure the proper handling of exposed soil in the event of future disturbance activities on- Site, and ensure the preservation and maintenance of the engineered cap, fencing, vapor barrier, and active SSDS. The Environmental Land Use Restriction (ELUR) will be written to ensure that the SSDS will be inspected annually to validate that it is functioning properly, that the SSDS effluent will be screened with a PID, and that negative pressure and flow readings will be collected. Annual SSDS monitoring will be reported to the RIDEM as part of ELUR compliance reporting. Following the filing of the RIDEM-approved ELUR and SMP, ELUR inspections will be conducted annually to ensure continued compliance and a copy of the inspection report will be submitted to the RIDEM.

Although the RIDEM has not promulgated indoor air regulations and standards for vapor intrusion, the following is proposed to validate the efficacy of the active vapor mitigation system. Specifically, volatile

COCs identified in soil and/or groundwater included: Toluene, trans-1,2-DCE, cis-1,2-DCE, PCE, and TPH.

1.) Permanent sub-slab soil gas points will be installed during the construction of the building. The soil gas points will consist of a permanent VaporPin® installed per the manufacturer's standard operating procedure (SOP) provided as **Attachment E** After installation, each VaporPin® will be leak tested per the SOP in **Attachment E**. These points will be utilized to determine vacuum beneath the building and allow for pilot testing of the SSDS to determine the radius of influence and proper fan size.
2.) Sub-slab soil gas sampling will be conducted prior to occupancy and prior to SSDS activation. At least one sample will be collected from each of the three SSDS zones of the building (**Figure 4**).
3.) Sub-slab soil gas samples will be collected in certified clean summa canisters equipped with 30-minute regulators. Sub-slab soil gas samples will be analyzed by a certified laboratory for VOCs via EPA method TO-15 and for volatile aliphatic and aromatic hydrocarbons via the Massachusetts Department of Environmental Protection (MassDEP) Method for determination of APH. Results will be compared to MassDEP R-SSSGSVs. Only Site COCs will be reported.
4.) Results will be issued as part of the RACR, which will include an evaluation of the efficacy of the vapor barrier and passive system and recommendations regarding additional monitoring requirements. Note that should any of the identified COCs exceed the associated R-SSSGSV, SAGE will conduct quarterly indoor air sampling for a minimum of one (1) year, as described below.
5.) Following the initial sub-slab soil gas sampling, SAGE will conduct a SSDS pilot test to evaluate for the radius of influence and proper fan sizing in order to convert the system to an active system as part of the proposed vapor intrusion mitigation system. Results of the pilot test will be recorded and included in the RACR. Furthermore, upon fan selection, the fan manufacturer specification will be provided to RIDEM for review and comment. Inspection of the ventilation system will be incorporated into the annual ELUR inspections.
6.) Should Site COCs be identified in sub-slab soil gas samples in excess of the associated R-SSSGSVs, SAGE will conduct follow-up indoor air testing following SSDS activation. The indoor air sampling will be conducted on a quarterly basis for a period of a minimum of one (1) year. The results of the indoor air sampling will evaluate for the effectiveness of the active SSDS, and a summary report will be provided to the RIDEM following each quarter's sampling event. Only Site COCs will be reported.

1.10.17 Institutional Controls and Notices: *The Remedial Action Work Plan shall indicate a methodology for providing notice to the general community, and contain specific plans and implementation procedures for land usage restrictions, restrictions on the use of groundwater on the Contaminated-Site, and institutional controls in accordance with Rule 1.9.9 (Institutional Controls) for all Remedial Actions that are not determined by the Director to provide a permanent solution.*

Notices indicating the completion of SIR activities were sent prior to the development of the subject RAWP. No additional notices are anticipated at this time. The Proposed Remedy includes the implementation of an ELUR and SMP which will manage risks associated with direct contact with Site soil, ensure the proper handling of exposed soil in the event of future disturbance activities on-Site,

and ensure the preservation and maintenance of the engineered barrier, fencing, vapor barrier, and active SSDS.

A draft ELUR and SMP, prepared in accordance with Section 1.9.9 of the Remediation Regulations, will be provided to the RIDEM for review and approval prior to submission of the RACR. Upon approval of the ELUR and SMP by the RIDEM and implementation of the approved remedy (including construction of the RIDEM-approved engineered barrier, fencing, vapor barrier, and active SSDS), the ELUR and SMP will be recorded with the City of Central Falls Recorder of Deeds. A copy of the recorded ELUR and SMP will be provided to the RIDEM within 15 days of recording.

1.10.18 Compliance Determination: *The Remedial Action Work Plan shall include a section outlining the procedures to be employed in order to demonstrate that the remedial objectives for the Contaminated-Site have been met. Such compliance determination shall be proposed in a manner consistent with Rule 1.9.10 (Compliance Sampling)*

Upon completion of the Proposed Remedy and recording of the Department-approved ELUR & SMP, a RACR will be submitted to the RIDEM documenting compliance. At such time, a Letter of Compliance will be requested. The ELUR will require annual inspections to ensure engineered barriers are maintained and Site uses are consistent with the ELUR. Inspection results will be provided to RIDEM for each annual inspection. These mechanisms will provide compliance with soil objectives. Additionally, inspection of the active ventilation system will be incorporated into the annual ELUR inspections to demonstrate proper SSDS function.

1.10.19 Certification Requirements: *The Remedial Action Work Plan and all associated progress reports shall include the following statements signed by an authorized representative of the party specified:*

CERTIFICATIONS

I certify that the RAWP is a complete and accurate representation of the contaminated Site and the Release and contains all known facts surrounding the Release to the best of my knowledge.

01/02/2024

Mr. Jim Vandermillen — Date
Director of the Department of Planning and Economic Development
City of Central Falls

We certify that information contained within this RAWP is complete and accurate to the best of our knowledge. This report has been prepared and reviewed by the undersigned staff in ***accordance with SAGE's standard Quality Control Procedures.***

1/2/2024

Lacy Reyna, MS, Project Manager — Date
SAGE Environmental, Inc.

1/2/24

Jacob H. Butterworth, MS, LSP, Vice President — Date
SAGE Environmental, Inc.

12/27/23
Date

Jason R. Proulx, PE
Rhode Island Professional Engineer No. 9829

JASON R. PROULX
No. 9828
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

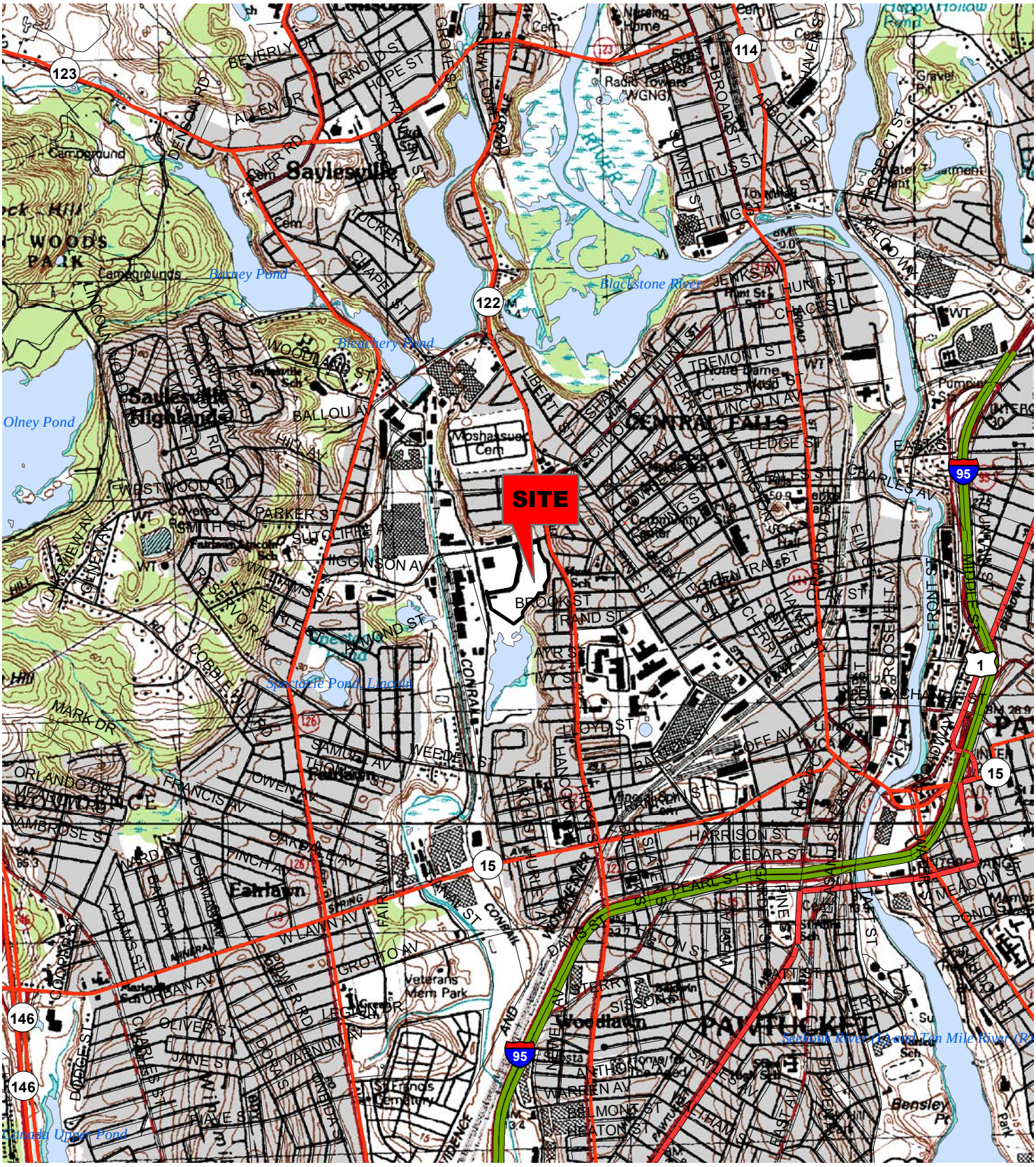
FIGURES

Figure 1: USGS Quadrangle Site Location Map
Figure 2: Site Plan
Figure 3: Proposed Capping Plan
Figure 4: SSDS Design Plan
Figure 5: Groundwater Priorities Map

ATTACHMENTS

Attachment A: Limitations
Attachment B: Remedial Action Approval Application Fee Form
Attachment C: U.S. FWS Official Species List
Attachment D: Construction Soil Management Plan
Attachment E: VaporPin® Standard Operating Procedures

FIGURES



USGS QUADRANGLE
PAWTUCKET, RHODE ISLAND

★ Site Location

USGS Quadrangle Site Location Map

10 Higginson Avenue
Central Falls, Rhode Island

Figure 1

DATE: 09/01/2021

JOB #: S3969

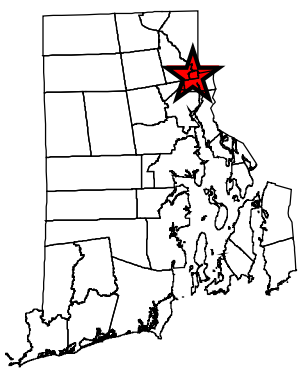
CREATED BY: JPL

N

Data Provided by RIGIS

0 600 1,200 2,400 3,600 4,800 Feet

SAGE ENVIRONMENTAL



Site Location

Site Plan

10 Higginson Avenue
Central Falls, Rhode Island

Figure 2

Date: 11/15/2023
Job #: S3969
Created By: ALM

N

Data Provided by RIGIS
Orthoimagery provided by nearmap

Approximate Site Boundary

0 25 50 100 150 200 Feet

SAGE ENVIRONMENTAL

HIGGINSON AVENUE

LONSDALE AVENUE

CROW POINT ROAD

SE-103

SE-105(MW)

SE-102(MW)

SE-104(MW)

SE-101(MW)

SE-101(MW)

SE-102(MW)

SE-107

MW-1

SE-106(MW)

SE-103(MW)

Transformer on Concrete Pad

SE-104

Gate

SE-105

Landscape Cap Over Drainage Excavation. Rest of Track to Remain.

Arborvitaes

EXISTING CAP

Gate

SE-106

SE-107

SE-108

Locked Access Gate

SE-109

Split Rail Fence

SE-110

Access Gate

Retaining Wall

Existing Drainage Swale & Overgrown Slope

Overgrown Slope with Vegetation

Site Location

Proposed Capping Plan

10 Higginson Avenue
Central Falls, Rhode Island

Figure 3

Date: 12/19/2023
Job #: S3969
Created By: ALM

N

Data Provided by RIGIS
Orthoimagery provided by nearmap.com

- Approximate Site Boundary
- Existing Cap
- Proposed Acrylic Surfacing Pavement Cap
- Proposed Asphalt Cap
- Proposed Building Cap
- Proposed Concrete Cap
- Proposed Landscape Cap
- Proposed Area to be Grubbed and Capped
- Proposed Lined Detention Pond
- Underground Injection Control Areas
- Existing Drainage Swale
- Bio Swales Infiltrating
- Property Line Chainlink Fence
- Proposed Chainlink Fence - to have Restricted Access
- Proposed Drainage Pipes Fed by Drainage Structures Throughout the Site (Existing & New)
- Proposed Geotextile Fabric & 4" Crushed Stone Around
- Approximate Soil Boring Location (0-2') (10 Higginson Avenue)
- Approximate Monitoring Well Location (10 Higginson Avenue)
- Approximate Soil Boring Location (756 & 770 Lonsdale Avenue)
- Approximate Soil Boring/Monitoring Well Location (7756 & 770 Lonsdale Avenue)

0 25 50 100 150 200 Feet

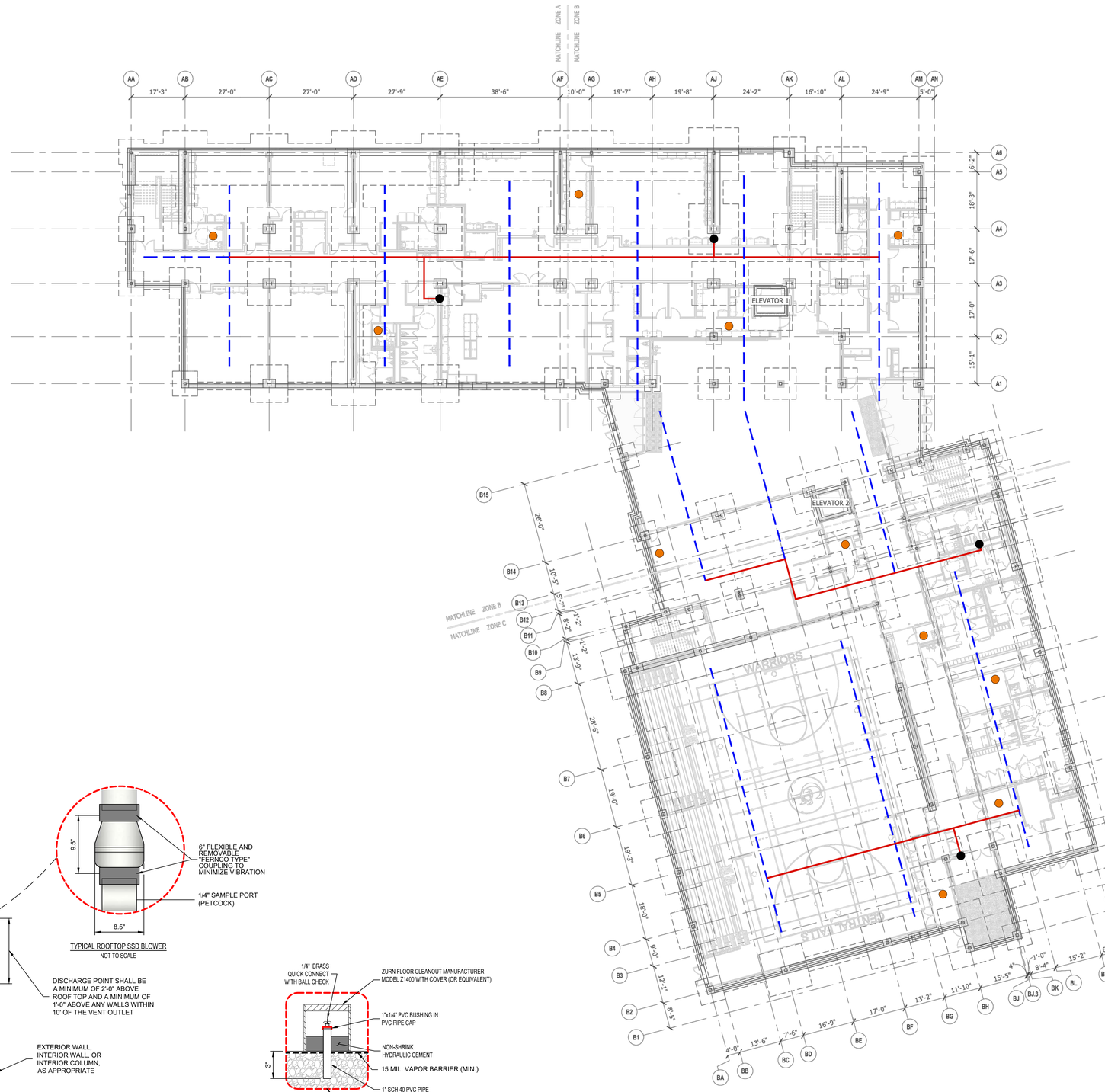
SAGE ENVIRONMENTAL

GENERAL NOTES:

1. BASE MAP DEVELOPED FROM ELECTRONIC IMAGE FILE TITLED "S1.10 OVERALL FOUNDATION PLAN.PDF" WHICH WAS PREPARED BY Ai3 ARCHITECTS AND PROVIDED TO GZA DATED OCTOBER 27, 2023.
2. THIS DRAWING IS FOR SUB-SLAB DEPRESSURIZATION (SSD) SYSTEM LAYOUT REFERENCE ONLY. REFER TO ARCHITECTURAL, ELECTRICAL, LIFE SAFETY/ALARM, STRUCTURAL, CIVIL, AND PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION AND COORDINATION.
3. ALL SSD SYSTEM COLLECTION PIPES SHALL BE SCH. 40 PVC PERFORATED IN ACCORDANCE WITH THE DETAIL SHOWN. SSD SYSTEM PIPES SHALL BE INSTALLED WITH ONE ROW OF PERFORATIONS FACING DOWN FOR CONDENSATE AND WATER DRAINAGE.
4. SECURE THE VAPOR BARRIER TO ALL SLAB PENETRATIONS, OVERLAPPING SEAMS AND ALONG FOUNDATION WALLS WITH BUTYL TAPE OR APPROVED MASTIC SEALANT.
5. PROVIDE A 6" PVC SCH. 40 PIPE WITH SCREEN TEE CAP FOR THE EXHAUST (UP THROUGH ROOF) FROM STANDPIPE TO EXHAUST SUB-SLAB.
6. PROVIDE 120V AC 20 AMP ELECTRICAL SERVICE TO WITHIN 2' OF ALL SSD BLOWERS.
7. HARD WIRED WATERPROOF SHUT-OFF REQUIRED WITHIN 2' OF SSD BLOWER. ACTIVE RISER TO BE SELECTED BY GZA FOLLOWING PILOT TEST.
8. IF AN ACTIVE SSD SYSTEM IS REQUIRED, ALL UNUSED RISERS (THOSE THAT ARE NOT EQUIPPED WITH A FAN BLOWER) WILL NEED TO BE CAPPED WITH A "FERNCO TYPE" REMOVABLE CAP. IF AN ACTIVE SYSTEM IS NOT REQUIRED, THE RISERS WILL BE LEFT OPEN SO THE SYSTEM CAN PASSIVELY VENT.
9. SSD BLOWER TO BE DETERMINED BY FIELD TESTING CONDUCTED BY ENGINEER FOLLOWING INSTALLATION OF SSD SYSTEM PIPING AND CONSTRUCTION OF FLOOR SLAB.
10. COMPLY WITH ALL APPLICABLE LOCAL AND STATE BUILDING CODES WITH REGARD TO THE INSTALLATION OF PVC PIPE IN PLENUM SPACES.

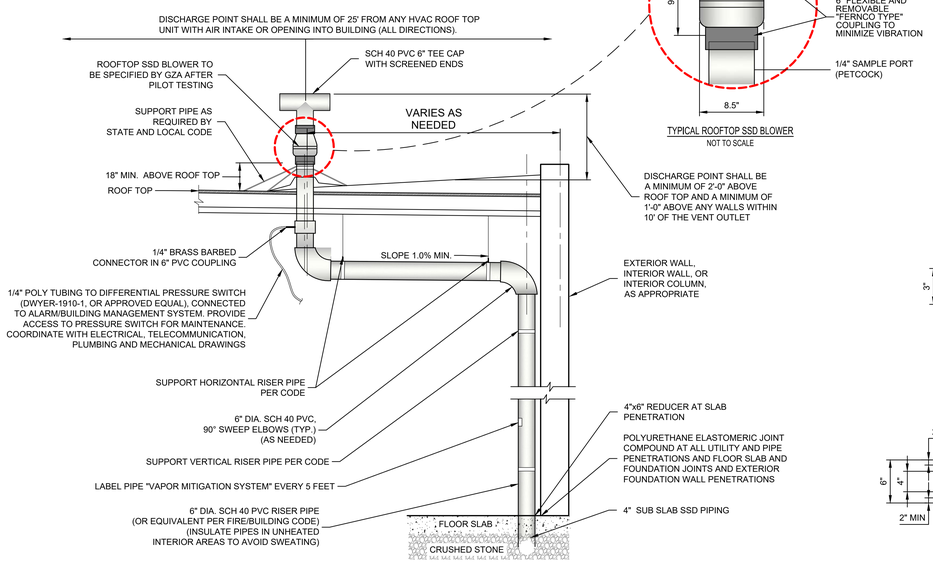
LEGEND:

- SUB-SLAB VACUUM MONITORING POINT (MP) (EXACT LOCATION TO BE DETERMINED IN THE FIELD)
- 6" DIA. SOLID SCH. 40 PVC STAND PIPE TO ROOF (OR EQUIVALENT PER FIRE/BUILDING CODE). EXACT LOCATION TO BE SELECTED BY ARCHITECT.
- 4" DIA. SOLID SCH. 40 PVC HEADER PIPE
- 4" DIA. PERFORATED SCH. 40 PVC COLLECTOR PIPE (TYP.)



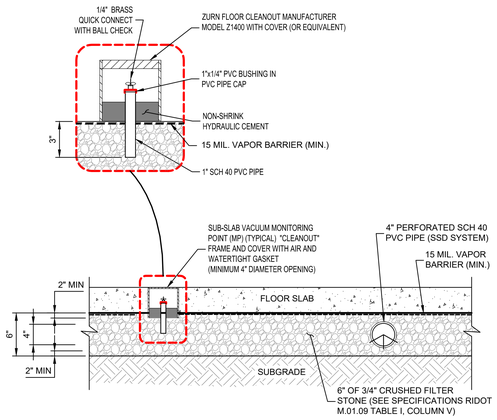
1 OVERALL FOUNDATION PLAN
1" = 15'-0"
0 7.5' 15' 30'
SCALE IN FEET 1" = 15'

TYPICAL SSD SYSTEM PERFORATED PIPE OPTION
NOT TO SCALE



TYPICAL SSD SYSTEM RISER AND ROOF DETAIL
NOT TO SCALE

TYPICAL ROOFTOP SSD BLOWER
NOT TO SCALE



TYPICAL SSD SYSTEM BELOW ENTIRE SLAB WITH TYPICAL MONITORING POINT
NOT TO SCALE

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GZA GeoEnvironmental, Inc.
www.gza.com

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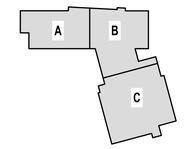
CENTRAL FALLS HIGH SCHOOL
10 HIGGINSON AVE, CENTRAL FALLS, RI

ALBERT J. FLORI
No. 9672
REGISTERED PROFESSIONAL ENGINEER
CIVIL

100% CONSTRUCTION DOCUMENTS

KEY PLAN NORTH ARROW

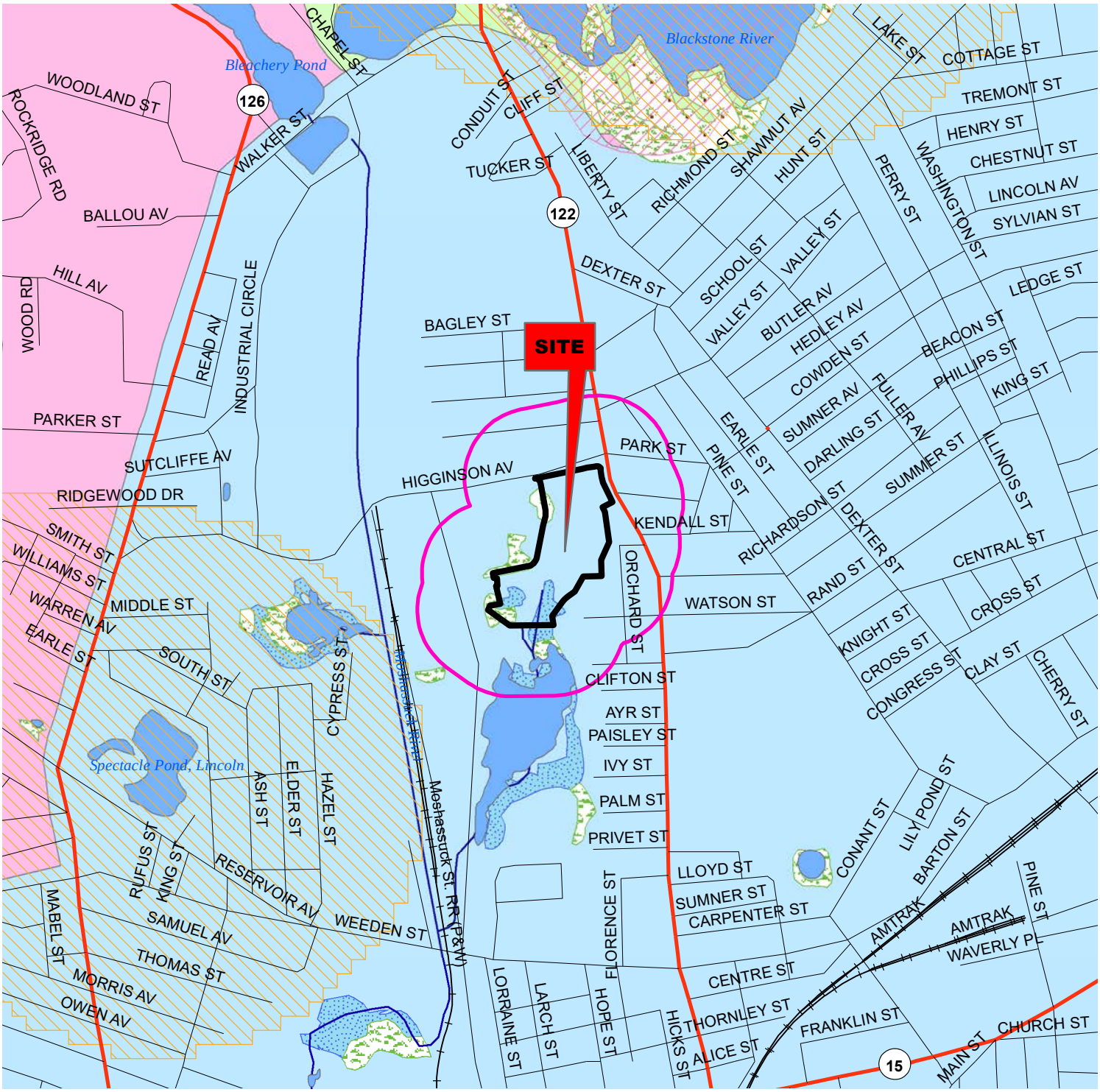
KEYPLAN



DRAWING NAME:

SUB-SLAB DEPRESSURIZATION (SSD) SYSTEM LAYOUT PLAN AND DETAILS

DRAWN BY:	GRB
REVIEWED BY:	AIF/EAS
SCALE: AS INDICATED	DRAWING NUMBER:
JOB NO.: 35304.00	A0.60
DATE: OCTOBER 13, 2023	



Approximate Site Boundary
500' Radius
Community Wellhead Protection Areas
Non Community Wellhead Protection Areas
Natural Heritage Areas
Noncommunity Wells
Public Wells
Wildlife Management Areas
Rare Species Habitat
Lakes and Ponds
Streams and Rivers

Wetlands
Emergent Wetland: Emergent Fen or
Emergent Wetland: Marsh/Wet Meadow
Estuarine Emergent Wetland
Estuarine Scrub-Shrub Wetland
Forested Wetland: Coniferous
Forested Wetland: Dead
Forested Wetland: Deciduous
Scrub-Shrub Swamp
Scrub-Shrub Wetland: Shrub Fen

Groundwater Quality Standard
GA
GAA
GB
GC

Not to Scale

Groundwater Classification & Priority Resources Map

10 Higginson Avenue
Central Falls, Rhode Island

Figure 5

DATE:	11/17/2023	JOB #:	S3969
CREATED BY:	LM	FILENAME:	wetlandspec.mxd

Site Location

N

0 275 550 1,100 1,650 2,200 Feet

SAGE ENVIRONMENTAL

ATTACHMENT A

SAGE
ENVIRONMENTAL

LIMITATIONS

1. This report was prepared for the exclusive use of the City of Central Falls ("Client"). This report and any findings and conclusions contained therein shall not, in whole or in part, be provided to, used, or relied upon by any other person, firm, entity or governmental agency in whole or in part, without the prior written approval of SAGE. Reliance by any other person, firm, entity, or governmental agency in whole or in part, for any use, without SAGE's prior written approval, shall be at that party's sole risk and without any liability to SAGE.

2. This report, and the findings and conclusions contained therein, are based on services provided to Client under the conditions stated herein, pursuant to the agreement between SAGE and Client. Use of this report, in whole or in part, at other locations or for other purposes, without SAGE's prior written approval, will be at Client's sole risk and without any liability to SAGE.

3. This report has been prepared in accordance with generally accepted practices. SAGE's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property.

4. In preparing this report, SAGE may have relied upon certain information made available by governmental agencies, Client, and/or other persons, firms, or entities. SAGE cannot verify the accuracy or completeness of that information and cannot guarantee or warrant the information provided by non-SAGE sources.

5. SAGE does not and cannot represent that a site contains no hazardous material, oil, or other condition beyond that observed by SAGE during its study. Additionally, SAGE does not assume responsibility for limited sampling and explorations, fluctuations in water levels, or the presence of chemical constituents that are not the subject of this investigation and which are not included in the of analyzed parameters for a study.

6. The findings and conclusions presented in this report are based solely on the information contained or referenced in this report. If additional environmental or other relevant information that was not made available to SAGE at the time of this report is developed at a later date, Client agrees to promptly bring such information to the attention of SAGE. Upon evaluation of such information, SAGE reserves the right to recommend modification of this report and its findings and conclusions.

7. No warranty, express or implied, is made by way of SAGE's performance of services or providing a work product, including but not limited to any warranty with the contents of a report or with any and all work product.

ATTACHMENT B

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF LAND REVITALIZATION & SUSTAINABLE MATERIALS MANAGEMENT
235 Promenade Street, Providence, Rhode Island 02908

REMEDIAL ACTION APPROVAL APPLICATION FEE FORM

Rule 1.11.2 of the Department's Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases, requires an application fee for Remedial Action Approvals in the amount of one thousand ($1,000) dollars. Please submit this form and check, made payable to the State of Rhode Island General Treasurer, directly to:

R.I. Department of Environmental Management
Office of Management Services - Rm 340
235 Promenade Street
Providence, RI 02908

Please complete this page and attach it to the check or money order. This information must be provided to coordinate your fee with the application submitted.

Site Name: Higginson Avenue School

Address: Higginson Avenue School

Town/City: Central Falls, Rhode Island

File Number: File No. SR-04-2061

Contact Person: Jacob Butterworth

Phone No: 401-723-9900

RIDEM Project Manager: Joanna Pawlina

FOR RIDEM OFFICE USE ONLY:

Fee Amount Received: _____
Date Received: _____
Check#: _____

Receipt Account:
10.074.3765103.03.461043
cc:74:3481 Leg.17-18-841

ATTACHMENT C

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Providence County, Rhode Island

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300

Concord, NH 03301-5094

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

NOT FOR CONSULTATION

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

NOT FOR CONSULTATION

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list,click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted

Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

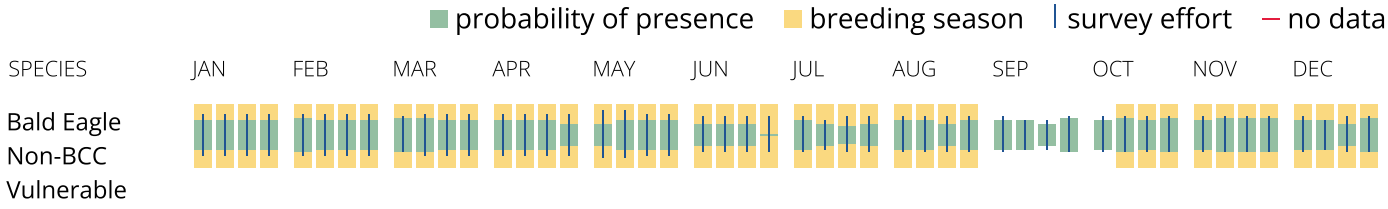
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project

intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-

measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler Vermivora pinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

NOT FOR CONSULTATION

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cerulean Warbler Dendroica cerulea — Breeds Apr 29 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2974

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

NOT FOR CONSULTATION

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

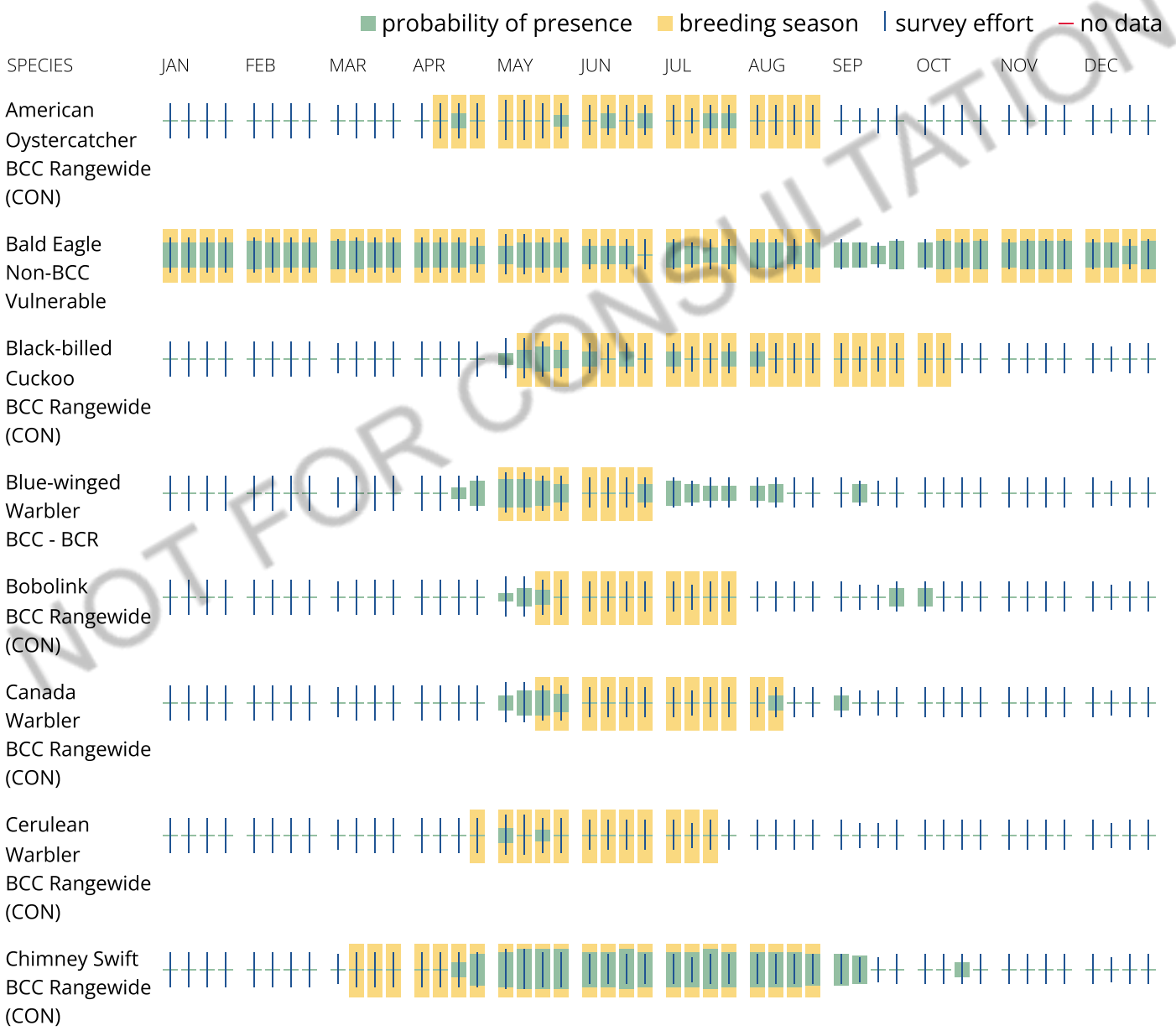
NOT FOR CONSULTATION

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION

NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

NOT FOR CONSULTATION

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

NOT FOR CONSULTATION

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

ATTACHMENT D

CONSTRUCTION SOIL MANAGEMENT PLAN

10 Higginson Avenue, 756 Lonsdale Avenue and 770 Lonsdale Avenue
Assessor's Plat 9, Lots 26, 50, and 203
Central Falls, Rhode Island 02863
SAGE Project No. S3969 & S4350
File No. SR-04-2061 & SR-04-2061B

Prepared for:

The City of Central Falls
580 Broad Street
Central Falls, Rhode Island 02863

Prepared by:

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SAGE Project No. S3969 & S4350

November 2023

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FIGURES

1.0 INTRODUCTION

This Construction Soil Management Plan (SMP) has been prepared for the redevelopment of the property located at 10 Higginson Avenue, 756 Lonsdale Avenue, and 770 Lonsdale Avenue in Central Falls, Rhode Island and identified by the City of Central Falls Assessor's Office as Assessor's Plat Map 9, Lots 26, 50, and 203 (hereinafter, "Site"). The Site is identified by the Rhode Island Department of Environmental Management (RIDEM) by File No. SR-04-2061 and SR-04-2061B. A United States Geological Survey (USGS) Quadrangle Site Location Map and Existing Conditions Aerial Photograph is included as **Figures 1 and 2,** respectively.

Soils at the Site have been identified to be impacted with polycyclic aromatic hydrocarbons (PAHS), total petroleum hydrocarbons (TPH) and metals in excess of applicable RIDEM Residential Direct Exposure Criteria (R-DEC) and/or Industrial/Commercial Direct Exposure Criteria (I/C-DEC). Polychlorinated biphenyls and volatile organic compounds (VOCs) were also identified in soils below applicable standards. In addition, low-level chlorinated volatile organic compounds (CVOCs) have been identified in groundwater but not above applicable RIDEM Method 1 criteria. As such, the purpose of this plan is to limit human and environmental exposures to these soils and to protect against the unauthorized relocation of materials during redevelopment. Certain activities involving soil disturbance, such as excavation, must be conducted in accordance with the SMP procedures. This SMP has been developed to establish policies and procedures for protecting the health and safety of surrounding receptors and of workers engaged in activities at the Site.

Strict adherence to this plan will reduce threats to an insignificant level but will not eliminate the potential for harm from soil at the Site. On-Site personnel are responsible for reporting all potential hazards to the Project Superintendent (PS), whose job is to implement and enforce this plan.

Proposed redevelopment activities include:

1. Excavation of impacted soil to meet the planned grading requirements for the proposed redevelopment;
2. Off-Site recycling/disposal of excavated soil and/or on-Site reuse of excavated soil under the proposed engineered barrier;
3. Placement and/or maintenance of physical barriers (i.e., building foundations, asphalt/concrete/acrylic surfacing, and landscaped areas meeting the RIDEM requirements for an approved engineered barrier);
4. Installation of a vapor barrier along with a passive SSDS (designed to be converted to an active SSDS, if required in the future); and
5. Implementation of an Environmental Land Use Restriction (ELUR) and Soil Management Plan (SMP).

The proposed capping surfaces will fall into one of the following categories:

- Earthen Cap Areas – Consists of a minimum of 12-inches of clean fill (inclusive of the thickness of synthetic landscape turf surfacing and/or turf pavers), placed over a non-woven geotextile with minimum CBR puncture strength of 220 (consistent with current RIDEM policy) or a minimum of

24-inches of clean fill (inclusive of the thickness of synthetic landscape turf surfacing and/or turf pavers); or

- Hardscape Cap Areas (such as: Building Foundation Areas and Pavement/Concrete/Acrylic Surfacing) – Consists of a minimum of 6-inches of clean fill subgrade (or exempt material such as recycled asphalt) with a minimum of 4-inches of asphalt or concrete or acrylic surfacing or a minimum of 10-inches of asphalt or concrete or acrylic surfacing.

Note that variances to the RIDEM-established presumptive capping include fencing along a vegetated slope/retaining wall and existing drainage swale area on the eastern side of the Site and the placement of woven geotextile fabric with a puncture strength of 200 and four (4) inches of washed stone surrounding the existing tree trunks and exposed root structures along the western side of the Site.

A capping plan identifying the proposed capping surfaces on the Site following redevelopment is included as **Figure 3**.

2.0 IDENTIFICATION OF NEW CONDITIONS(S) WARRANTING RIDEM NOTIFICATION

If an unexpected situation arises during excavation activities (e.g., identification of a previously unknown buried tank or structure, or other contaminated soil), such activities should immediately stop. A Qualified Environmental Professional (QEP) should be contacted to provide environmental oversight to make an evaluation as to whether the contamination constitutes a "new" condition warranting RIDEM notification and possible subsequent response actions.

3.0 HAZARD EVALUATION

PAHs, petroleum hydrocarbons, metals, and low levels of VOCs and PCBs within soil have been identified at the Site, and the threats from these contaminants arise through chronic long-term exposure via dermal contact, ingestion, or inhalation of contaminated dust or vapors. The proper precautions involve intercepting these exposure routes.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Based on an evaluation of the anticipated hazards, at a minimum, Level D protection will be required for any construction worker entering the Site. Level D personal protective equipment (PPE) is acceptable for all tasks where workers will not be directly engaged with contaminated or potentially contaminated soils or exposure to sub-slab soil gas.

In the event workers are to enter an OSHA-compliant excavation as part of potential drainage or utility work, these workers have a greater potential of contacting contaminated soil *via* inhalation, skin absorption, ingestion, and/or eye contact or contaminated sub-slab soil gas *via* inhalation. Consequently, this worker is required to wear a particulate filtration respirator (Level C) in addition to the Level D protection measures.

Level D PPE will, at a minimum, consist of the following PPE:

1. Appropriate work boots with over-boots, as needed;
2. Eye protection (safety glasses or chemical splash goggles);
3. Ear protection;
4. Nitrile gloves/inner latex or PVC gloves;
5. Hard hat; and
6. Work coveralls.

Level C PPE will, at a minimum, consist of the following PPE:

1. Appropriate work boots with over-boots, as needed;
2. Eye protection (safety glasses or chemical splash goggles);
3. Ear protection;
4. Nitrile gloves/inner latex or PVC gloves;
5. Hard hat;
6. Work coveralls; and
7. Half Face Respirator (Recommended 3M™ OV/P100 Household Multi-Purpose Respirator Mask).

5.0 SITE OPERATING PROCEDURES/SAFETY GUIDELINES

Regardless of the level of PPE necessary to complete work at the Site, the following general health and safety guidelines will be followed during the performance of any excavation activities associated with known or suspected hazardous substances and/or petroleum products (HSP) impacted soils or sub-slab soil gas. Adherence to these guidelines will reduce the potential worker exposure to media impacted with contaminants.

1. Work conducted on-Site shall be coordinated through a designated contractor, employee, or assignee responsible for the implementation of the requirements of this SMP (including all health and safety procedures);
2. The location of utilities in the vicinity of the excavation(s) shall be established prior to beginning work (to be performed by the Site General Contractor or their subcontractor);
3. In order to mitigate excessive dust during excavation activities, the Site General Contractor or their subcontractor shall perform standard construction wetting practices;
4. Spectators will remain at a safe distance from the excavation (at least 50 feet) and under no circumstances will approach the excavation without the consent of the responsible contractor or consultant;
5. A pre-work meeting will be conducted at the beginning of each day to discuss health and safety procedures;
6. Contamination avoidance will be practiced: never sit down or kneel in an excavation, never lay equipment on the ground, avoid obvious sources of contamination such as puddles, and avoid unnecessary contact with objects in an excavation;
7. Workers must be alert to unusual changes in their physical condition and never ignore warning signs. They will notify the responsible contractor or consultant of suspected

exposures;

8. Equipment used in an excavation should be properly cleaned and maintained in good working order. Equipment should be inspected for signs of defect and/or contamination daily before use;
9. Eating, drinking, chewing gum, and smoking should be prohibited in active excavation areas; and,
10. The discovery of a condition that would suggest the existence of a situation more hazardous than anticipated should result in the evacuation of personnel from the excavation and the re-evaluation of the hazard and the level of protection.

A list of standing orders has been developed to ensure that all persons are cognizant of potential hazards. These standing orders will be reviewed by the PS. Any changes in the orders will be announced officially during the scheduled safety meetings. The following orders apply:

1. Prescribed PPE shall be worn as directed by the PS;
2. Assumptions will not be made concerning the nature of suspect materials found on the Site. Should any unusual situations occur or materials be encountered, operations will cease, and the PS shall be contacted for further direction;
3. The PS shall be informed when:
    a. Unusual or suspect odors are detected;
    b. Visual evidence of suspect soil or waste is noted; or
    c. Symptoms of chemical exposure or suspicious health conditions become apparent.
4. Any unsafe conditions shall be reported immediately;
5. Workers shall minimize contact with hazardous materials by:
    a. Avoiding areas of obvious or likely contamination;
    b. Using polyethylene sheeting to help contain contaminants, when identified; and
    c. Avoiding direct contact with potentially contaminated materials.
6. Only essential personnel shall be permitted in the work zones; and
7. Whenever possible, personnel will be located upwind during material handling.

6.0 SITE CONTROL

The Site control program is used to control the movement of people and equipment to minimize exposure to contamination. To control access to the Site during redevelopment, only individuals involved in the redevelopment shall be allowed onto the Site. In addition, to control access to the Site from unauthorized individuals, a temporary security fence, where needed, should be placed around the perimeter.

People visiting the Site for the first time shall be informed of this SMP and be held to the requirements described herein. To ensure their understanding, the PS shall be responsible for briefing individuals visiting the Site and require their signature to document their understanding of the requirements. These records shall be maintained on-Site by the PS.

7.0 DUST CONTROL

Preventative measures shall be made during all on-Site construction activities to minimize the generation of dust. During the progress of work, whenever Site soils are exposed, dust control shall be maintained by applying a spray mist of water to soils to minimize the creation and dispersion of dust. Site soils shall be lightly misted (not saturated) continuously throughout the entire workday or controlled by some other PS-approved method such as calcium chloride.

8.0 EROSION CONTROL

As discussed in the section above, proper misting of exposed Site surfaces should be completed to prevent fugitive dust. Additionally, measures shall be implemented to prevent the movement of soils across the Site through other methods, such as rain events or stormwater runoff. To prevent off-Site movement of soils, proper erosion controls shall be placed along the perimeter of the work Site whenever Site soils are exposed. These measures shall include, where deemed necessary by the PS, silt fencing in conjunction with hay bales or straw wattles. Erosion controls should be inspected weekly and after rainstorms to ensure their effectiveness is maintained.

9.0 SOIL MANAGEMENT PRACTICES

If an unexpected observation or situation arises during Site work (such as olfactory or visual evidence of HSP or asbestos debris disposal), such activities will immediately stop. Workers will not attempt to handle the situation themselves but will contact the PS for further direction.

9.1 Soil Stockpile Management, Reuse, and Off-Site Disposal

During any excavation activities, soils required to be stockpiled shall be placed upon and covered with 6-mil polyethylene sheeting. During cases where soils are to be stockpiled for an extended period (i.e., greater than a week), daily inspection of the stockpile shall be made to ensure controls are maintained and, if needed, repaired. In addition, to limit the loss of the cover and protect against stormwater and/or wind erosion, other measures in conjunction with the sheeting shall be implemented (i.e., hay bales and/or silt fencing/straw wattles or compost socks) at the discretion of the PS.

Excavated soils staged and temporarily stored shall be limited to a designated area of the Site. Within reason, the storage location will be selected to limit the unauthorized access to the materials (i.e., away from public roadways and walkways). No soil will be stockpiled on-Site for greater than 60 days without prior approval.

In the event soils generated as part of the work need to be disposed of, testing and analysis shall be completed by a QEP, and proper application and disposal at a licensed facility is required. This will entail, at a minimum, sampling of stockpiled soils for the permitted facility's requirements and documentation of the disposal receipts for record-keeping purposes. Copies of the material shipping records associated with the disposal of the material shall be maintained by the PS and included in the final closure report for the Site.

Please note, soils excavated from the Site that are deemed suitable by the QEP may be reused on-Site as grading/fill beneath the RIDEM-approved cap.

9.2 Clean Fill Certification and Analysis

To evaluate options for clean fill to be utilized on-Site as backfill (such as capping materials), a representative composite sample (one location chosen for collection of a discrete volatile organic compounds (VOCs) sample) should be collected from each type and source of backfill material. Clean fill certification samples will be collected at a frequency of one sample per 1,000 cubic yards to confirm that the fill material meets the Residential Direct Exposure Criteria (R-DEC) and the GB Leachability Criteria (GB-LC) as established in the RIDEM *Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases* (*Remediation Regulations*). The samples shall be analyzed by a state-certified laboratory for the following parameters:

1. VOCs *via* U.S. EPA Method 8260;
2. PAHs *via* U.S. EPA Method 8270;
3. Total petroleum hydrocarbons (TPH) *via* modified U.S. EPA Method 8100;
4. Polychlorinated biphenyls (PCBs) *via* U.S. EPA Method 8082 (extracted by manual Soxhlet *via* U.S. EPA Method 3540); and
5. Priority Pollutant 13 (PP13) metals plus Barium, Manganese, and Vanadium *via* U.S. EPA Methods 6010/7471.

Upon receipt of the laboratory analytical results, a determination shall be made whether the material tested is suitable as backfill for the Site. Soil that does not meet the R-DEC and GB-LC will be prohibited from being used on-Site.

10.0 GROUNDWATER MANAGEMENT

Although not expected to be encountered during redevelopment, a QEP shall be notified to provide oversight and management of groundwater dewatering in the following instance:

1. Groundwater requires pumping or removal from excavations and/or manholes during construction activities.

If encountered, a groundwater management plan may need to be developed for redevelopment activities.

11.0 DECONTAMINATION ACTIVITIES

Equipment decontamination shall be performed at each work location atop a decontamination pad so as not to contribute to the migration of potentially impacted soil. Decontamination shall consist of broom sweeping of equipment. Decontamination areas shall be pre-determined prior to the initiation of construction activities. All required personnel decontamination equipment and materials shall be provided in accordance with OSHA 29 CFR 1926.65. All PPE shall be disposed of in accordance with all applicable state and federal regulations. Furthermore, workers are also required to wash their hands with soap and water prior to eating, drinking, smoking, or leaving the Site.

Prior to leaving the Site, any equipment and/or vehicle used for the excavation or transport of impacted soil shall be suitably cleaned of gross soil that could fall off onto public ways or create dust. Excavation equipment buckets that came into contact with soils at the Site should be rinsed within the excavation to prevent off-Site movement of materials.

If needed, a construction entrance in the form of crushed stone shall be constructed to prevent vehicular dispersal of soils beyond the limits of work. Heavy soils must be brushed from vehicle tires prior to leaving the Site. In the event soils are tracked onto nearby roadways, the roadways will be swept clean, and materials deposited on-Site to be capped.

12.0 COMMUNICATION AND EMERGENCY PROCEDURES

The following items should be located and discussed with all field personnel prior to the initiation of work at the Site:

1. PPE
2. PS Contact
3. Location of Nearest Telephone

In the event of an emergency, development of hazardous conditions, or significant changes in the work plan, communication will be established as soon as is practicable to the appropriate authorities.

Contacts (Additional Contacts to be Added by PS)	TELEPHONE
Emergency	911
Andrew F. Anderson Emergency Center at Rhode Island Hospital (80 Dudley Street, Providence, Rhode Island)	(401) 444-5411
Rhode Island Department of Health (Providence, RI)	(401) 222-5960
RIDEM Emergency Response Hotline	(401) 222-3070
Rhode Island State Police	(401) 444-1000
DigSafe	(888)-344-7233
SAGE Environmental, Inc.	(401) 723-9900

In the event of serious chemical exposure or worker injury, the responsible contractor or employee will immediately be alerted. This person will follow the steps indicated below:

1. Summon the appropriate emergency response agency. Convey the following information:

    a. Nature of emergency;
    b. Location of the victim;
    c. Specific information about exposure or accident (gases, chemical, asphyxiation, etc.);
    d. Length of exposure; and
    e. Hazards that may be involved in rescue or treatment.

2. If taken to a hospital, notify the hospital of the nature of the injury and conditions associated with the injury including:

    a. Potential for hospital contamination;
    b. Any contaminated items and the nature of the contamination; and
    c. Estimated arrival time.

13.0 MISCELLANEOUS HEALTH AND SAFETY ITEMS

This CSMP is intended to cover workers who are exposed to greater hazards than the general employee population. Consequently, a clerk in an office on the periphery of the Site who does not enter the operations part of the Site and is exposed only to background levels of HSP is not covered under this CSMP. Employees who regularly enter the operations areas of the Site and who are exposed to levels significantly over background are covered by this SMP.

This plan concentrates on those substances that will create the greatest risk to employees. Risk assessment considers the following: substance toxicity, potential for exposure, proximity to toxic substance, and availability of controls. For example, a level of exposure to a general population that is not likely to exceed background levels would not normally require notification. Similarly, a level of exposure above background but below established permissible exposure limits would also not require specific notification.

If levels are unknown, employees, contractors, and subcontractors will be informed of the potential for exposure as a precaution.

14.0 SAFETY MEETING

Weekly safety meetings will be held to discuss the following:

1. Contents of the Site SMP;
2. Hazards of chemicals potentially present; and
3. Safety precautions/work practices.

An attendance sheet shall be completed at the Safety Meeting and a log of the discussion, questions, and answers made amongst those in attendance will be maintained. These sheets will be maintained in the job file.

ATTACHMENT – A

PLAN APPROVAL AGREEMENT

The following individual has reviewed the SMP for the construction project at 10 Higginson Avenue, 756 Lonsdale Avenue, and 770 Lonsdale Avenue in Central Falls, Rhode Island. The individual noted below is responsible for implementing and enforcing the conditions/provisions by this plan.

_____ _____

Project Superintendent Date

ATTACHMENT – B

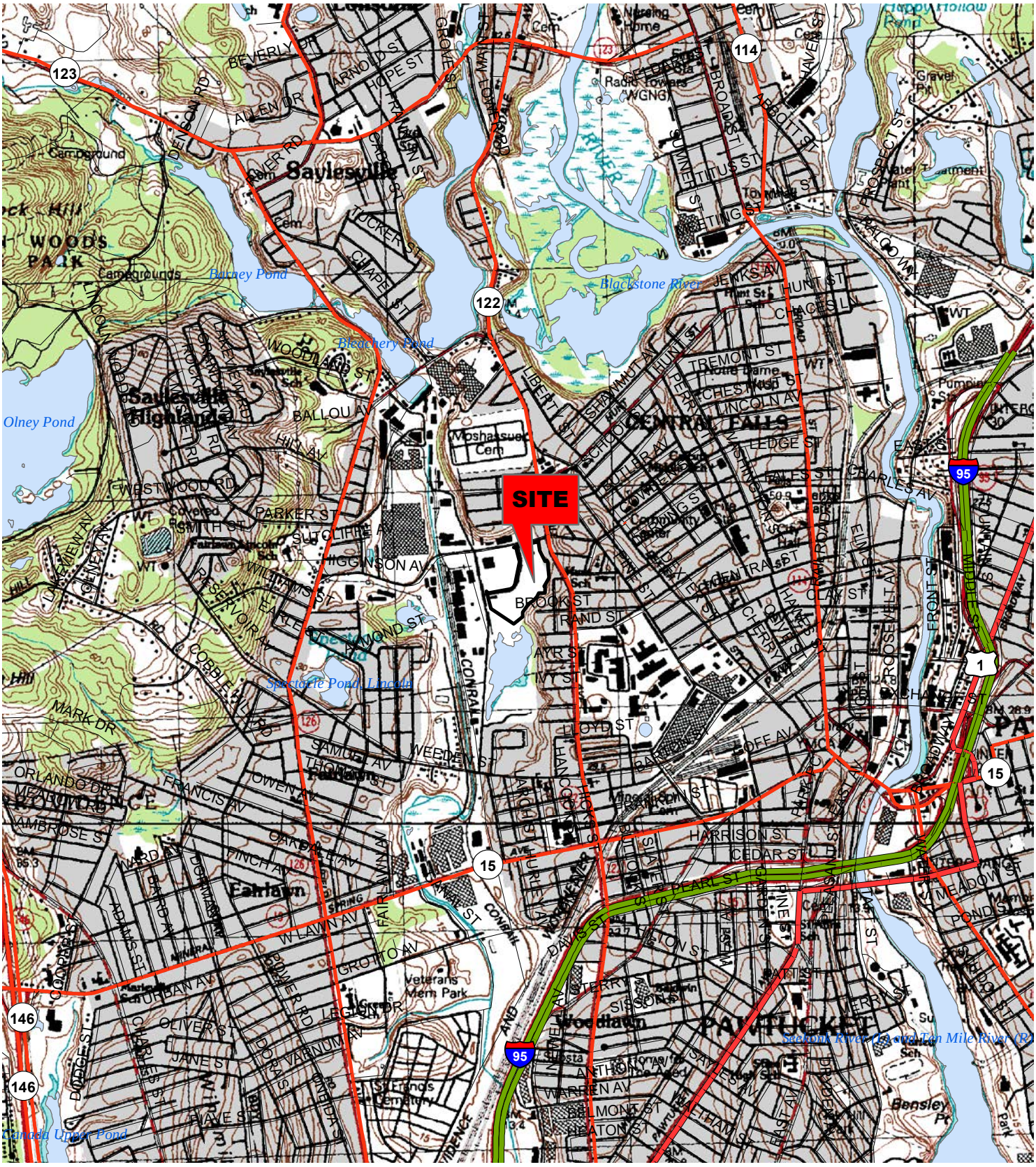
COMPLIANCE AGREEMENTS

All appropriate on-Site personnel (i.e., Contractor employees and subcontractors) must complete and sign this section to be allowed continued presence on the construction project at 10 Higginson Avenue, 756 Lonsdale Avenue, and 770 Lonsdale Avenue in Central Falls, Rhode Island.

I have read and understood the contents of this plan and have had all relevant questions answered to my satisfaction. In addition, I agree to comply with the conditions/provisions outlined therein.

NAME (print)	SIGNATURE	COMPANY	DATE

FIGURES



USGS QUADRANGLE
PAWTUCKET, RHODE ISLAND

★ Site Location

USGS Quadrangle Site Location Map

10 Higginson Avenue
Central Falls, Rhode Island

Figure 1

DATE: 09/01/2021

JOB #: S3969

CREATED BY: JPL

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Data Provided by RIGIS

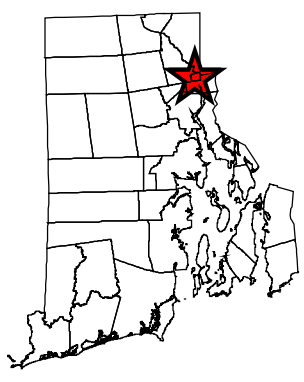
0 600 1,200 2,400 3,600 4,800 Feet

SAGE ENVIRONMENTAL

Existing Conditions Plan

10 Higginson Avenue
Central Falls, Rhode Island

Figure 2



Site Location

Date: 11/15/2023
Job #: S3969
Created By: ALM

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Data Provided by RIGIS
Orthoimagery provided by nearmap

Approximate Site Boundary

0 25 50 100 150 200 Feet

SAGE ENVIRONMENTAL

HIGGINSON AVENUE

LONSDALE AVENUE

CROW POINT ROAD

SE-103

SE-105(MW)

SE-102(MW)

SE-104(MW)

SE-101(MW)

SE-101(MW)

SE-102(MW)

SE-107

MW-1

SE-106(MW)

SE-103(MW)

SE-104

SE-105

EXISTING CAP

SE-106

SE-107

SE-108

SE-109

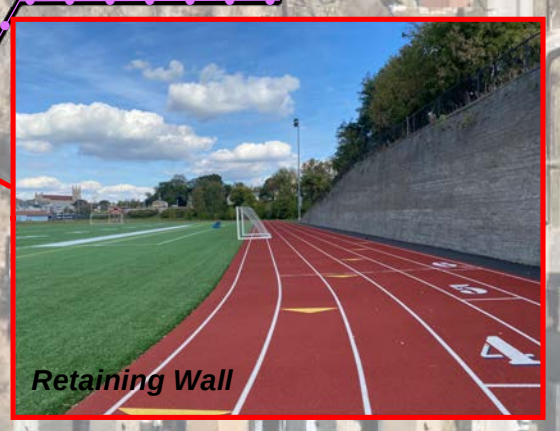
SE-110

Locked Access Gate

Split Rail Fence

Access Gate

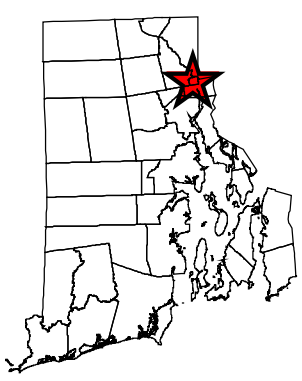
Arborvitaes



Retaining Wall

Existing Drainage Swale & Overgrown Slope

Overgrown Slope with Vegetation



Site Location

Proposed Capping Plan

10 Higginson Avenue
Central Falls, Rhode Island

Figure 3

Date: 11/15/2023
Job #: S3969
Created By: ALM

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Data Provided by RIGIS
Orthoimagery provided by nearmap.com

- Approximate Site Boundary
- Existing Cap
- Proposed Acrylic Surfacing Pavement
- Proposed Asphalt
- Proposed Building Cap
- Proposed Concrete Cap
- Proposed Landscape Cap
- Proposed Area to be Grubbed and
- Proposed Lined Detention Pond
- Underground Injection Control
- Existing Drainage Swale
- Bio Swales Infiltrating
- Property Line Chainlink Fence
- Proposed Chainlink Fence - to have Restricted
- Proposed Drainage Pipes Fed by Drainage Structures Throughout the Site (Existing & New)
- Proposed Geotextile Fabric & 4" Crushed Stone Around
- Approximate Soil Boring Location (0-2') (10 Higginson
- Approximate Monitoring Well Location (10 Higginson
- Approximate Soil Boring Location (756 & 770 Lonsdale
- Approximate Soil Boring/Monitoring Well Location (7756 & 770 Lonsdale Avenue)

0 25 50 100 150 200 Feet

SAGE ENVIRONMENTAL

ATTACHMENT E

Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated September 9, 2016

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.

Figure 1. Assembled VAPOR PIN®

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).

Figure 3. Installed VAPOR PIN®

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the Nylaflow tubing (Figure 5). Put the

Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.

Figure 5. VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 7. Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

3) Replacement parts and supplies are available online.

Standard Operating Procedure Leak Testing the VAPOR PIN® Via Water Dam

Updated July 14, 2020

Scope:

The operating procedure describes the methodology to test a VAPOR PIN® or equivalent sub-slab sampling device for leakage of indoor air.

Purpose:

The purpose of this procedure is to assess the potential for indoor air to leak past the VAPOR PIN ® and dilute the sub-slab soil gas sample.

Equipment Needed:

- VAPOR PIN® water dam
- Play-Dough or VOC free modeling clay
- distilled water
- VAPOR PIN® and associated sample tubing.

Procedure:

1) Drill a 5/8" diameter hole in the concrete slab and install the VAPOR PIN® as per the Standard Operating Procedure (SOP).

2) Clean the slab within a 2-inch radius of the VAPOR PIN® to remove dust. Avoid wetting the concrete or wait until the concrete is dry before proceeding and avoid cleaning with VOC-containing substances. A whisk broom or shop vacuum is recommended. Any remaining dust can be picked up with a piece of scrap Play-Dough or modeling clay.

3) Roll a 1-inch diameter ball of Play-Doh or modeling clay between your palms to form a "snake" approximately 7 inches long and press it against the end of the water dam. Push the water dam gently against the slab to form a seal with the concrete.

4) Attach the sample tubing to the top of the VAPOR PIN® and pour enough distilled water into the water dam to immerse base of the VAPOR PIN®, and if desired, the tubing connection at the top of the VAPOR PIN®.

5) Purge the sample point as required by the data quality objectives. Concrete will absorb some of the water, which is normal; however, if water is lost to the sub-slab, stop, remove the water from the water dam, and reposition the VAPOR PIN® to stop the leakage. Reseat the leak test equipment, if needed.

6) If the VAPOR PIN® is installed in the flush-mount configuration, the larger hole can be filled with water in place of the water dam and Play-Dough.

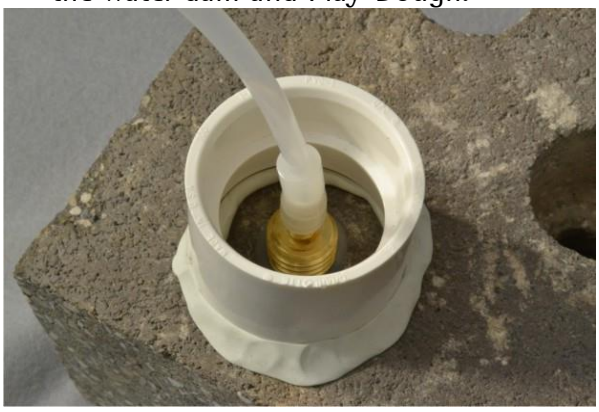

Figure 6. Water dam used for leak detection

VAPOR PIN® protected under US Patent # 8,220,347 B2