BARN

ESSEX COUNTY FARMWORKER HOUSING RENOVATION

DRAWINGS	
T-000	TITLE PAGE
G-001	GENERAL NOTES
G-002	CODE SUMMARY
A-001	OVERALL PLANS AND EGRESS
A-002	ENVELOPE DIAGRAM
A-110	FIRST FLOOR EXISTING AND REMOVALS PLAN
A-115	FIRST FLOOR PROPOSED PLAN
A-117	FIRST FLOOR POWER AND FLOOR FINISHES PLAN
A-120	SECOND FLOOR EXISTING AND REMOVALS PLAN
A-125	SECOND FLOOR PROPOSED PLAN
A-127	SECOND FLOOR POWER AND FLOOR FINISH PLAN
A-130	ATTIC EXISTING AND REMOVALS PLAN
A-135	ATTIC PROPOSED PLAN
A-137	ATTIC POWER AND FLOOR FINISH PLAN
A-140	ROOF EXISTING AND REMOVALS PLAN
A-145	PROPOSED ROOF PLANS
A-200	EXTERIOR ELEVATIONS
A-210	EXTERIOR ELEVATIONS
A-300	PROPOSED BUILDING SECTION
A-310	PROPOSED BUILDING SECTION
A-400	SECOND FLOOR TOILETS ENLARGED PLANS AND INTERIOR ELEVATIONS
A-410	TYPICAL LOFT ROOM ENLARGED PLANS AND INTERIOR ELEVATIONS
A-420	TYPICAL SINGLE ROOM ENLARGED PLANS AND INTERIOR ELEVATIONS
A-430	FIRST FLOOR TOILET ENLARGED PLAN
A-500	EXTERIOR WALL SECTIONS
A-510	EXTERIOR WALL SECTIONS
A-520	EXTERIOR DETAILS
A-530	EXTERIOR STAIR DETAILS
A-540	EXTERIOR STAIR DETAILS
A-550	TYPICAL INTERIOR DETAILS
A-560	INTERIOR STAIR DETAILS
A-600	SCHEDULES
A-710	FIRST FLOOR REFLECTED CEILING PLAN
A-720	SECOND FLOOR REFLECTED CEILING PLAN
A-730	ATTIC REFLECTED CEILING PLAN
A-810	FIRST FLOOR FURNITURE PLAN
A-820	SECOND FLOOR FURNITURE PLAN

B.1 BASE BUILDING (GENERAL CONTRACTOR)
B.2 BASE BUILDING (PLUMBING)
B.3 BASE BUILDING (HVAC)
B.4 BASE BUILDING (ELECTRICAL)

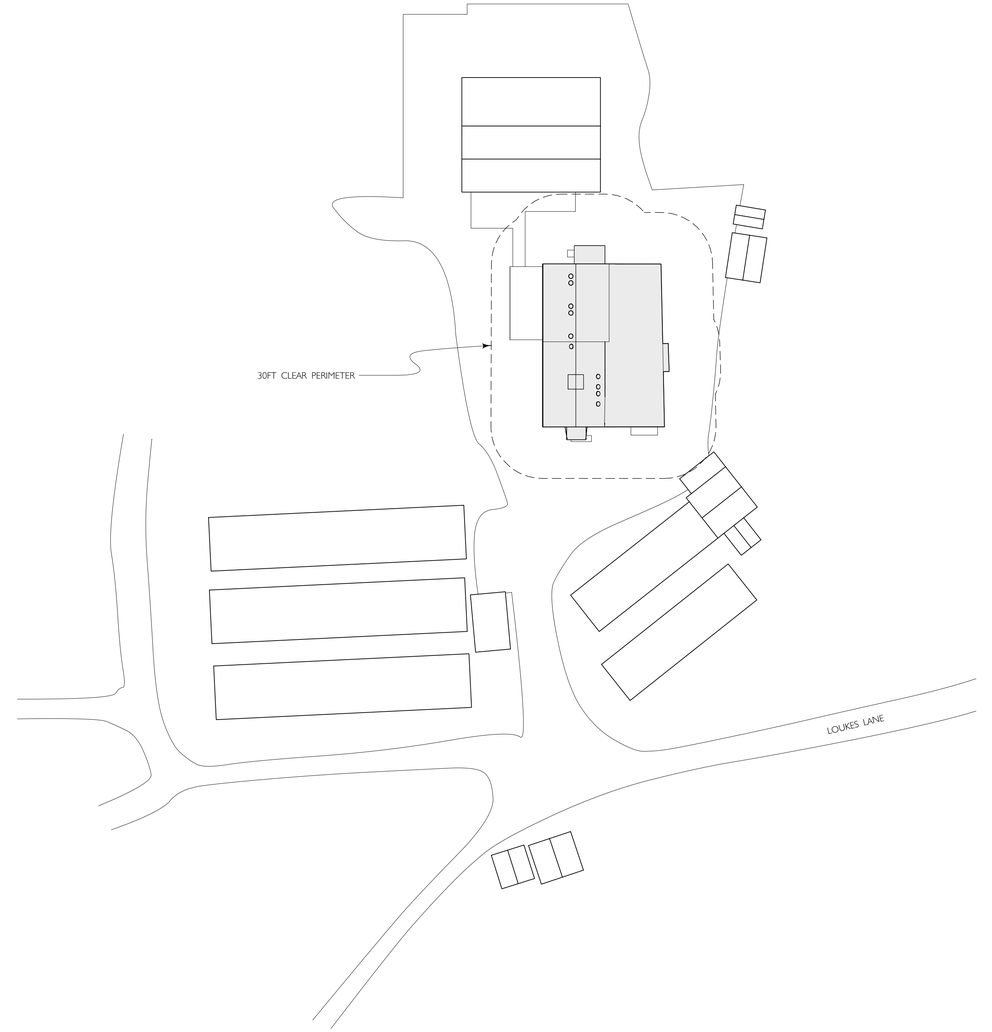
ALTERNATES:

B.5 ENTRY STAIR + RAMP
See A-110, A-115, A-540

B.6A FLOOR 1 TOILET ROOM (GENERAL CONTRACTOR)
See A-110, A-115, A-430, A-600, M-series
B.6B FLOOR 1 TOILET ROOM (PLUMBING)
See A-110, A-115, A-430, A-600, M-series
B.6C FLOOR 1 TOILET ROOM (HVAC)
See A-110, A-115, A-430, A-600, M-series
B.6D FLOOR 1 TOILET ROOM (ELECTRICAL)
See A-110, A-115, A-430, A-600, M-series

B.7 FURNITURE
See A-600, A-810, A-820

B.8 ELECTRICAL SERVICE UPGRADE
See A-117



SITE PLAN PROPOSED
Scale: 1:500

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

T-000

TITLE PAGE

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ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AP	ACCESS PANEL
ACOUS	ACOUSTICAL
ADJ	ADJACENT
A/C	AIR CONDITIONING
ALU	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
BLKG	BLOCKING
CLG	CEILING
CH	CEILING HEIGHT
CL	CENTER LINE
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
DTL	DETAIL
DIM	DIMENSION
DR	DOOR
DBL	DOUBLE
DN	DOWN
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
EL	ELEVATION
EMER	EMERGENCY
EQ	EQUAL
EQPT	EQUIPMENT
EXG	EXISTING
EXT	EXTERIOR
FIN	FINISH
FF	FINISHED FLOOR
FP	FIREPROOF
FPSC	FIREPROOF SELF-CLOSING
FL	FLOOR
FLUOR	FLUORESCENT
FT	FOOT/FEET
BY OTHER	BO
GL	GLASS
GRL	GRILLE
GFI	GROUND FAULT INTERRUPTER
GWB	GYPSUM WALLBOARD
HNDRL	HANDRAIL
HDBD	HARDBOARD
HDWD	HARDWOOD
HVAC	HEATING, VENTILATION AND A/C
HC	HOLLOW CORE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
IN	INCHES
INSUL	INSULATION
J.B.	JUNCTION BOX
LAM	LAMINATE
L.V.	LOW VOLTAGE
MATL	MATERIAL
MAX	MAXIMUM
MDO	MEDIUM-DENSITY OVERLAY
MECH	MECHANICAL
MTL	METAL
MIN.	MINIMUM
MISC	MISCELLANEOUS
MLDG	MOLDING
MTD	MOUNTED
MUL	MULLION
NOM	NOMINAL
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
OPNG	OPENING
OPP. HAND	OPPOSITE HAND
PTD	PAINTED
PART	PARTITION
PL	PLASTER
PLAM	PLASTIC LAMINATE
PLYWD, PLY	PLYWOOD
QTY	QUANTITY
REC.	RECESSED
REQD	REQUIRED
R.A.	RETURN AIR
REV.	REVISION
R.O.	ROUGH OPENING
SCHED.	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SC	SOLID CORE
SQ FT	SQUARE FOOT/FEET
SS	STAINLESS STEEL
STD	STANDARD
STOR.	STORAGE
TEL	TELEPHONE
TBD	TO BE DETERMINED
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
VCT	VINYL COMPOSITE TILE
W/	WITH
W/O	WITHOUT
WD	WOOD
WRB	WEATHER-RESISTIVE BARRIER

DRAWING SYMBOLS

DATUM / ELEVATION — ELEVATION LEVEL

GRID — GRID LINE

PROPERTY LINE

BREAK LINE

WEATHER/VAPOR BARRIER

HIDDEN OBJECT

OBJECT ABOVE

CENTER

ALIGN

ALIGN — ALIGN

DIMENSION — DIMENSION LINE

INDENTIFICATION SYMBOLS

00.00.00 — KEY NOTE

NO. — WINDOW TAG

NO. — DOOR TAG

— PARTITION TAG

1 — REVISION CLOUD AND TAG

REFERENCE SYMBOLS

NORTH ARROW

DWG / SHEET — DETAIL CALLOUT

DWG / SHEET — SECTION REFERENCE

DWG / SHEET — EXTERIOR ELEVATION REFERENCE

DWG / DWG SHEET DWG / DWG — INTERIOR ELEVATION REFERENCE

ELECTRICAL SYMBOLS

S — SWITCH

D S — DIMMER SWITCH

T S — TIMER SWITCH

3 S — 3-WAY SWITCH

SCO — CEILING-MOUNTED SMOKE/CO ALARM (LINKED TO ALARM OUTSIDE ROOM)

DUPLEX RECEPTACLE

CEILING-MOUNTED SURFACE LIGHT FIXTURE

RECESSED LIGHT FIXTURE

PLUMBING SYMBOLS

CO — CLEAN-OUT

WASTE LINE

VENT LINE

HOT WATER SUPPLY LINE

COLD WATER SUPPLY LINE

SHUT-OFF VALVE

MATERIAL SYMBOLS

CONCRETE

BRICK MASONRY

STEEL

CONTINUOUS/STRUCTURAL BLOCKING

NON-CONTINUOUS BLOCKING OR SHIM

ALUMINUM

BATT INSULATION

RIGID INSULATION

PARTITION TYPES

EXG PARTITION TO REMAIN

EXG BRICK WALL

NEW GWB PARTITION

EXG PARTITION TO BE REMOVED

HVAC SYMBOLS

SUPPLY DUCT UP

SUPPLY DUCT DN

RETURN DUCT UP

RETURN DUCT DN

T — THERMOSTAT

GD — GRAVITY DAMPER

cfm — SUPPLY DIFFUSER

cfm — RETURN DIFFUSER

cfm — EXHAUST DIFFUSER

SUPPLY GRILLE

RETURN GRILLE

GENERAL NOTES

1) The construction manager / general contractor shall verify all existing conditions in the field prior to commencing work and shall report any discrepancies between the drawings and existing conditions to the architect.

2) Minor details not usually shown or specified but necessary for proper construction of any part of the work shall be included as if they were indicated in the drawings except for compromise to base building systems and finishes.

3) The construction manager / general contractor shall coordinate all work with requirements of local authorities.

4) The construction manager / general contractor shall verify all load-bearing walls, posts, beams, etc and notify architect immediately of any discrepancies or conflicts with new work.

5) All dimensions are from finished walls and partitions unless otherwise indicated. Walls shown to 'align' shall be finished flush and smooth with existing work. After the floor channels for the partition walls have been laid the architect is to be notified so that work may be inspected and approved for conformance with design before proceeding with additional construction.

6) The construction manager / general contractor is responsible for coordination of all subcontractors, suppliers, and vendors as well as deliveries, off-loading, and handling of all materials and equipment unless otherwise noted. Any substitute in specifications must be submitted to the architect for omissions, ambiguities, or conflicts in any of the construction drawings, or be in doubt as to their meaning, he must bring the question to the attention of the architect prior to the start of construction. The architect shall review the question and where the information sought is not clearly indicated or specified, will issue a clarifying addendum. Neither the owner nor the architect will be responsible for verbal instructions.

7) These drawings are supplemented by separate standard specifications in the project manual which establish the minimum standard of materials and workmanship. If there is any conflict between the drawings and specifications, the most stringent requirement shall apply.

8) Written requests must be submitted for any proposed changes in the scope of work by the construction manager / general contractor to the owner and architect before any work is started. Such requests shall indicate scope of work, cost, and possible delays to the project.

9) The construction manager / general contractor shall be responsible for the protection of all conditions and materials within the proposed construction area. The construction manager / general contractor shall have sole responsibility for any damage or injuries caused by or during the execution of the work.

A) Where demolition is indicated, remove all objects except those specifically designated to remain.

B) The drawings may not show all items or objects existing at the site. The construction manager / general contractor must verify at the site all objects to be preserved and report to the architect any discrepancies or questionable items.

C) Use all means necessary to protect existing objects designated to remain, and in the event of damage, immediately make all repairs and replacements necessary to the approval of the architect at no additional expense to the owner.

D) Prior to commencement, carefully locate and inspect the entire site and all objects designated to be removed and to be preserved, as well as all existing utilities and determine all requirements for disconnecting, capping, or protecting all such work in accordance with the requirements of the utility company, building management, or agency involved.

E) The construction manager / general contractor shall remove, reroute, and / or cap all unused utilities after checking with the architect. The items shall be capped off within existing walls or slabs.

10) Partitions:

A) All outside corners at masonry and drywall partitions shall have metal corner beads. Tape and spackle smooth where required. Three coat spackle finish minimum.

B) All defective plaster and / or drywall on adjacent existing walls shall be chopped out and / or patched free of irregularities and shall match adjacent walls in finish and thickness.

C) Alignment of new wall construction to existing walls and columns shall be done in a manner so as to visible eliminate the point of contact or joint of new and existing materials.

D) Where demolition has occurred, contractor shall fill all holes, patch smooth, and level all remaining surfaces including walls, floors and ceilings. Square all corners and properly prepare all surface to receive finishes.

E) For the removal of all unwanted equipment and debris at the completion of construction, debris storage will only be permitted in the owner's space until contractor's debris removal trucks arrive on site. At that time, as coordinated with building management, it will be permitted to bring the debris down through the building. All removal cost will be born by the contractor.

F) Clean fixtures, equipment, finish hardware, and painted and decorated surfaces and remove marks, stains, paint, dirt, and other soiling resulting from the work of this contract.

11) Temporary power and lighting to be taken from the owner's meter panel. Contractor to coordinate with owner.

12) The owner is responsible for land surveys, topographic surveys, boundary and property surveys.

13) The contractor is responsible for Building and Planning Department inspections and any inspections required for the project by the authorities having jurisdiction.

14) General contractor to relinquish any construction materials, equipment, and fixtures requested by owner.

15) Maintain structure in weather-tight condition at all times.

16) All materials and products shall be installed strictly in accordance with the manufacturer's instructions.

ASBESTOS AND LEAD PAINT REMOVAL NOTES

1) The owner is responsible for the discovery and disclosure of hazardous construction materials / finishes at the site. All work areas must be tested for asbestos and lead paint contamination by a certified inspector before commencing work.

2) New York State laws and regulations (NYS Dept of Labor Code Rule 56) require the owner of a building to have an asbestos survey completed prior to renovations. The building owner shall engage a certified asbestos inspector to sample and test all building construction materials (interior and exterior) that will be disturbed (cut, drilled, removed, or demolished) for renovations. The asbestos inspector will provide a report of the asbestos containing building materials located in the subject building. Then the owner shall have an abatement design (drawings and specifications) prepared by a certified asbestos designer. All asbestos containing building materials shall be abated or enclosed by a NYS licensed asbestos abatement contractor in accordance with all state and federal regulations. The asbestos survey and abatement costs are the responsibility of the owner.

3) The contractor is responsible for the proper protection or removal of hazardous construction materials / finishes during construction, in compliance with all state and federal regulations. Contractor must adhere to EPA standards for lead paint removal. Removal of lead and asbestos may only be undertaken by certified professionals.

4) If lead is present, contractor must be EPA certified to remove lead paint and all employees on site must be trained in lead-safe work practices. Contractor shall provide proof of training and certification.

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Essex County
7551 Court Street P.O. Box 217
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ESSEX COUNTY FARMWORKER HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

G-001

GENERAL NOTES

SEAL | SIGNATURE:

REGISTERED ARCHITECT · DAVID MICHAEL CUNNINGHAM · 029092 · STATE OF NEW YORK

CODE SUMMARY

BARN

General Summary

Project Description
Renovation of existing 2-story 9,485 gross sf migrant farm worker housing for a total of 16 occupants. The building includes farm processing and storage and a kitchen on the 1st floor and sleeping rooms, a common living space, and bathrooms on the 2nd floor.

Applicable Codes
Project State: New York

X	2020 Existing Building Code of New York State		2020 Mechanical Code of New York State
	2020 Residential Code of New York State	X	2020 Energy Conservation Construction Code of New York State
	2020 Building Code of New York State		2010 Americans with Disabilities Act
	2020 Fire Code of New York State		Fair Housing Amendments Act 1988
	2020 Plumbing Code of New York State	X	NYS DOH Sanitary Code Part 15 Migrant Farmworker Housing

Type of Project

	new construction		building addition		alteration - level 3	X	alteration - level 2		alteration - level 1

Zone
Essex Zoning Code
RM: Resource Management

Use & Occupancy Classification
2020 Building Code of New York State
No change of occupancy.
Low-hazard storage Group S-2: fresh fruits and vegetables in nonplastic trays or containers
Residential Group R-3: congregate living facility (non-transient) with 16 or fewer occupancts

Type of Construction
2020 Building Code of New York State
Type V-B: structural elements, exterior walls and interior walls are of any materials permitted by this code

Building Height & Area

Building Height & Area

Occupancy Classification	Construction Type	Sprinkler	Bldg Ht Abv Grade Plane		# Stories Abv Grade Plane		Building Area	
			Allowable		Allowable		Allowable	
			BCNYS	Zoning	BCNYS	Zoning	BCNYS	Zoning
S-2	V-B	NS	40'-0"	35'-0"	2	NR	13,500 sf	NR
Tabular Allowable			most restrictive 35'-0"		most restrictive 2 stories		most restrictive 13,500 sf	
Proposed			13'-11"		1 story		5,952 sf	

Building Height & Area

Occupancy Classification	Construction Type	Sprinkler	Bldg Ht Abv Grade Plane		# Stories Abv Grade Plane		Building Area	
			Allowable		Allowable		Allowable	
			BCNYS	Zoning	BCNYS	Zoning	BCNYS	Zoning
R-2	V-B	NS	40'-0"	35'-0"	2	NR	7,000 sf	NR
Tabular Allowable			most restrictive 35'-0"		most restrictive 2 stories		most restrictive 7,000 sf	
Proposed			30'-11"		2 stories		3,533 sf	

Allowable area for mixed-occupancy, multistory building per 506.2.4
Frontage increase not required.
Allowable area for S-2 (Equation 5-3): 13,500 + (13,500 x 0) = 13,500 sf
Frontage increase not required.
Allowable area for R-2 (Equation 5-3): 7,000 + (7,000 x 0) = 7,000 sf

Building Construction

Fire Resistance Rating Requirements for Building Elements (Hours)
Construction Type: V-B

Building Element	Type I		Type II		Type III		Type IV	Type V	
	A	B	A	B	A	B	HT	A	B
primary structural frame	3	2	1	0	1	0	HT	1	0
bearing walls:									
- exterior	3	2	1	0	2	2	2	1	0
- interior	3	2	1	0	1	0	1 / HT	1	0
non-bearing walls:									
- exterior walls and partitions									
- interior walls and partitions	0	0	0	0	0	0	2304.11.2	0	0
floor construction	2	2	1	0	1	0	HT	1	0
roof construction	1 1/2	1	1	0	1	0	HT	1	0

Fire Separations

X	required separation of occupancies per BCNYS Table 508.4: - 2 hr between S-2 and R occupancies, not sprinklered
X	incidental use area protection per BCNYS Table 509: - 1 hr at furnace room with furnace over 400K BTU - 1 hr at boiler room with boiler over 15 psi and 10 hp
X	unit separation: 1 hr (BCNYS 420.2, 708.3)
X	corridors: 1 hr (BCNYS Table 1020.1)
X	stairwells: not required (EBCNYS 802.2.1 Exception 11)

Mezzanine

	Project does not contain a Mezzanine.
X	Mezzanine is not required to be open to the room in which it is located if the occupant load of the enclosed mezzanine is less than 10 people (BCNYS 505.2.3). This mezzanine is open to the room below.

Foam Plastics

X	foam insulation: flame spread < 75 and smoke developed < 450 (BCNYS 2603.3)
X	thermal barrier separation from interior required at foam insulation (BCNYS 2603.4)
X	NFPA 285 test NOT required for Type V-B exterior walls with foam insulation (BCNYS 2603.5)

Finish Requirements

X	wall / ceiling finish: class C in exit stairways, exit passageways, corridors, and exit access stairways (FCNYS Table 803.3)
X	wall / ceiling finish: class C in rooms and enclosed spaces (FCNYS Table 803.3)
X	floor finish in exit enclosures and corridors to be minimum class II (FCNYS 804.3.3.2)

Building Construction

Sprinkler System		fully sprinklered, NFPA 13R system			above grade only	X	not required (EBCNYS 803.2.2)
Fire Dept Connection		required	X	not required	(BCNYS 912.1)		
Standpipe		required	X	not required	(EBCNYS 803.3)		
Fire Alarm System		required	X	not required	(EBCNYS 803.4.1.6)		
Smoke Alarms	X	required		not required	Smoke alarms installed in individual dwelling and sleeping units (EBCNYS 803.4.3)		

Portable Fire Extinguishers	X	required	not required	(BCNYS 906.1) Light Hazard Table 906.3 (1) minimum 2-A extinguishers within 75'-0" travel distance / 11,250 max sf of area
CO Detection System	X	required	not required	(BCNYS 915.1)

Building Construction

No of Means of Egress	X	(2) means of egress provided
Exit Arrangement	X	exits must be separated by at least 1/2 the diagonal measurement of the area served in an unsprinklered building (BCNYS 1007.1.1)
Travel Distances	X	maximum exit access travel distance (without sprinkler system): 200'-0" (BCNYS Table 1017.2) maximum dead-end corridor (without sprinkler system): 35'-0" (EBCNYS 805.6)
Egress Capacity	X	stair minimum width 0.3" per person or 22" (BCNYS 1005.3.1, EBCNYS 805.3.1.2.2) other components: 0.2" per person or 36" (for corridors) whichever is greater (BCNYS 1005.3.2 and 1020.2)
Direction of Door Swing		pivot or side-hinged swinging doors shall swing in the direction of egress travel when serving a room or area containing an occupant load of 50 or more persons (EBCNYS 805.4.2)

Building Construction

Energy Efficiency Requirements
Climate Zone: 6

equivalent U-Factors (ECCNYS Table R402.1.4)

X	fenestration: 0.30 maximum		mass wall: 0.060 maximum
X	skylight: 0.55 maximum		floor: 0.033 maximum
X	ceiling: 0.026 maximum	X	basement wall: 0.050 maximum
X	frame wall: 0.045 maximum		crawl space wall: 0.055 maximum

Accessibility Reqs

Dwelling & Sleeping Units

X	accessible main entrance, bathroom, and kitchen provided on 1st floor (EBCNYS 305.7)
	2nd floor sleeping units not required to be accessible (BCNYS 1107.6.3, EBCNYS 305.6 Exception 4)

NYS Sanitary Code Pt 15

15.6(d) Sleeping Quarters
(1) 50 sf of floor area per occupant required

Space	Occupants	Area Required	Area Provided
bedroom 200	1	50 sf	120 sf
bedroom 201	1	50 sf	119 sf
bedroom 202	1	50 sf	153 sf
bedroom 203	1	50 sf	137 sf
bedroom 204	1	50 sf	137 sf
bedroom 205	1	50 sf	91 sf
bedroom 206	1	50 sf	89 sf
bedroom 207	1	50 sf	115 sf
bedroom 208	1	50 sf	113 sf
bedroom 209	1	50 sf	92 sf
bedroom 211	1	50 sf	92 sf
bedroom 212	1	50 sf	98 sf
bedroom 213	1	50 sf	147 sf
bedroom 214	1	50 sf	144 sf
bedroom 217	2	100 sf	198 sf

(4) 21 sf of wall storage minimum 12" deep area required per occupant
See furniture plans on A-810, A-820, and A-830.

15.6(h) Fire Extinguishing Equip
A minimum of type 2A rated fire extinguisher shall be provided in a readily accessible location not more than 100'-0" feet from each housing unit. In addition, a minimum of a type 5BC rated extinguisher shall be provided within 30'-0" of all rooms containing cooking facilities. Any extinguisher with an equivalent A:BC rating may be provided.

15.8 Toilet Requirements
minimum 1 toilet required per 15 occupants and 1 urinal per 30 men

Space	Occupants	Toilets Required	Toilets Provided	Urinals Required	Urinals Provided
unit 1	16	2	5	1	0 (extra toilet provided)

15.10 Food Preparation Requirements
minimum 2 stove burners per 5 occupants required

Space	Occupants	Burners Required	Burners Provided
unit 1	16	8	15

15.12 Laundry & Bathing Requirements
(a) 1 shower head required per 15 occupants

Space	Occupants	Heads Required	Heads Provided
unit 1	16	2	5

(b) 1 mechanical washer required per 50 occupants

Space	Occupants	Washers Required	Washers Provided
unit 1	16	1	1 (sink provided)

(c) 1 lavatory required per 15 occupants

Space	Occupants	Lavatories Required	Lavatories Provided
unit 1	16	2	6

ENVELOPE U-VALUES BASED ON ECCNYS TABLE R402.1.4

Assembly	Layer	Structure %	Insulation %	Design U-Value	Req'd for Compliance
ROOF					
Ext air film				R-0.23	
External Mineral Wool	2.5	0%	100%	R-10.50	
5/8" Sheathing	0.675	100%	0%	R-0.95	
11 7/8" TJI @ 16" w/ cellulo	11.875	9%	91%	R-44.72	
5/8" GWB	0.625	100%	0%	R-0.56	
Int air film				R-0.57	
Total R-values:				R-57.53	
Resultant U-value:				U-0.017	<U-0.026
EXTERIOR STUD WALL					
Ext air film				R-0.23	
1" Wood siding	0.750	100%	0%	R-1.05	
External Mineral Wool	5.000	0%	100%	R-21.00	
1/2" Sheathing	0.500	100%	0%	R-0.70	
2x4 Stud Wall, no cavity	3.500	10%	90%	R-0.51	
5/8" GWB	0.625	100%	0%	R-0.56	
Int air film				R-0.74	
Total R-values:				R-24.79	
Resultant U-value:				U-0.04	<U-0.045

SEE A-600 "WINDOW SCHEDULE" AND "DOOR SCHEDULE" FOR OPENING U-VALUES

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
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Brooklyn NY 11215
917.501.7337

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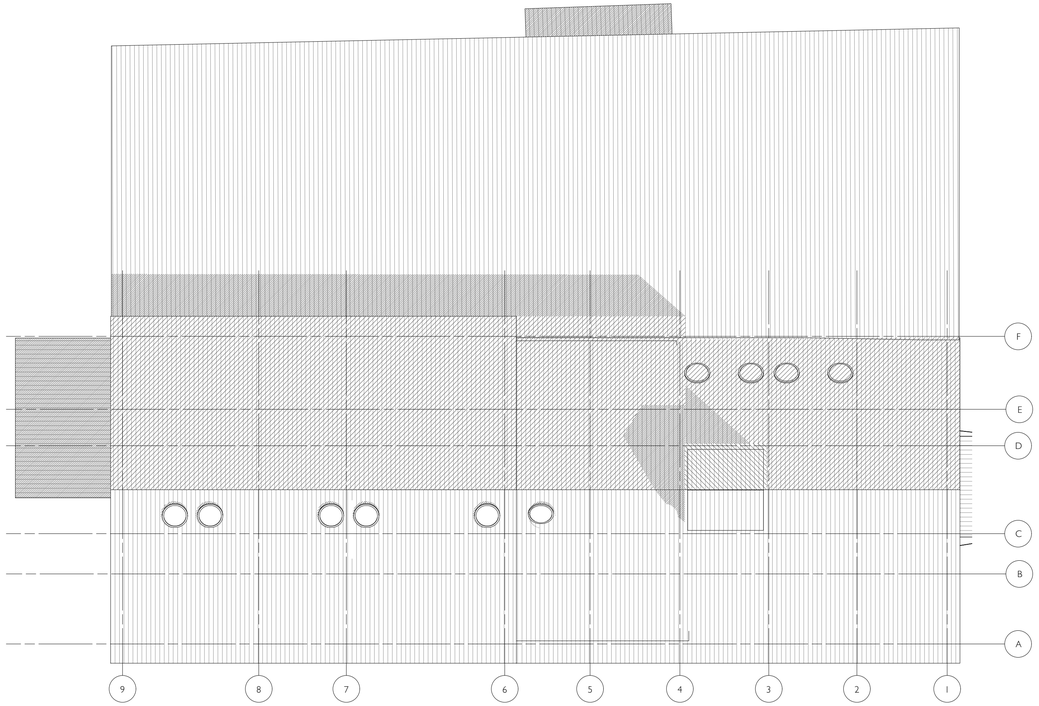
BARN
82 Loukes Lane
Essex NY 12936

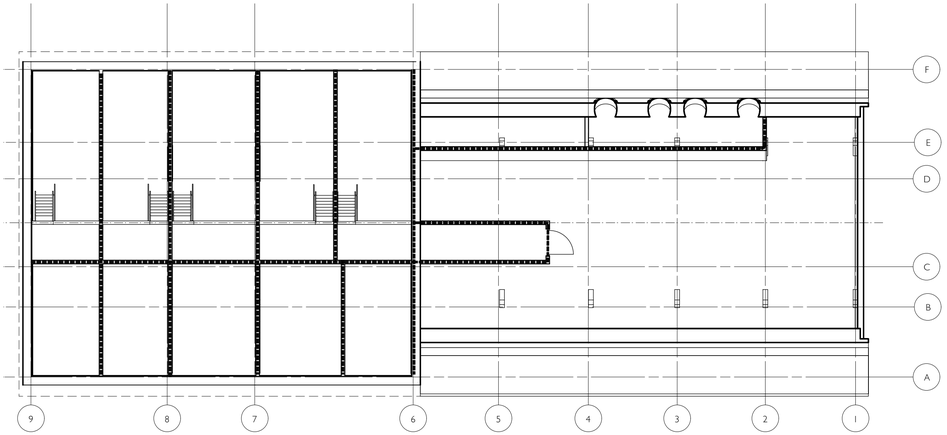
G-002

CODE SUMMARY

SEAL | SIGNATURE:



ROOF PLAN
Scale: 1/8" = 1'-0"
4



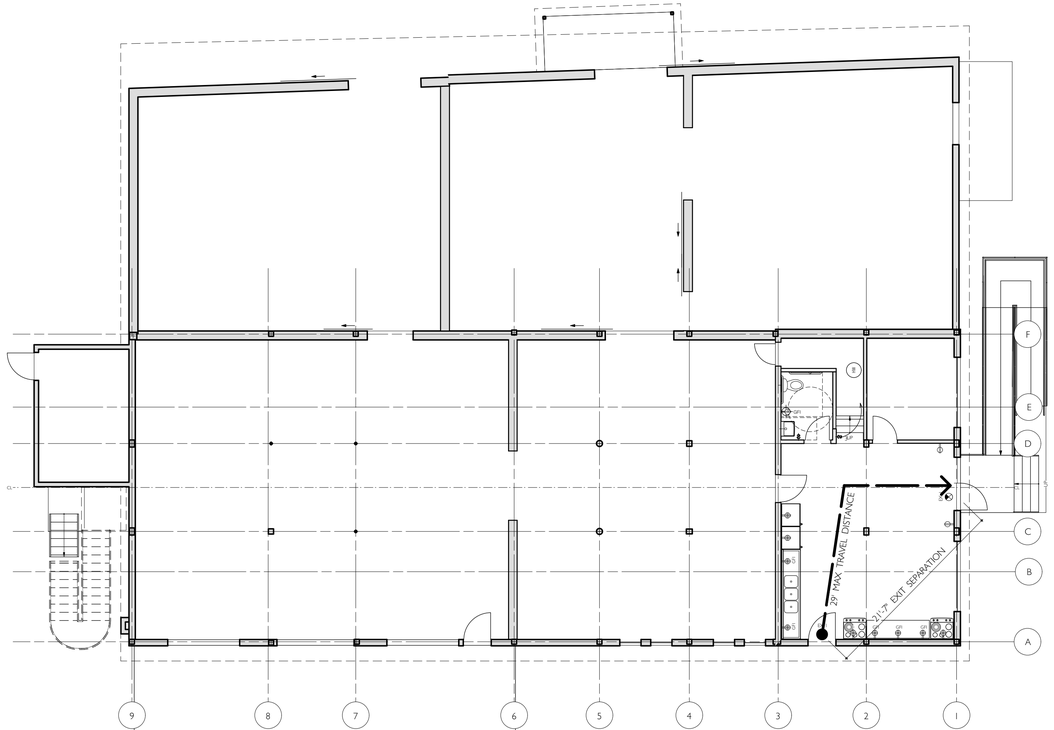
ATTIC REFERENCE PLAN
Scale: 1/8" = 1'-0"
3

KEY

1-HR SEPARATION

EGRESS PATH

SECOND FLOOR REFERENCE PLAN
Scale: 1/8" = 1'-0"
2



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

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
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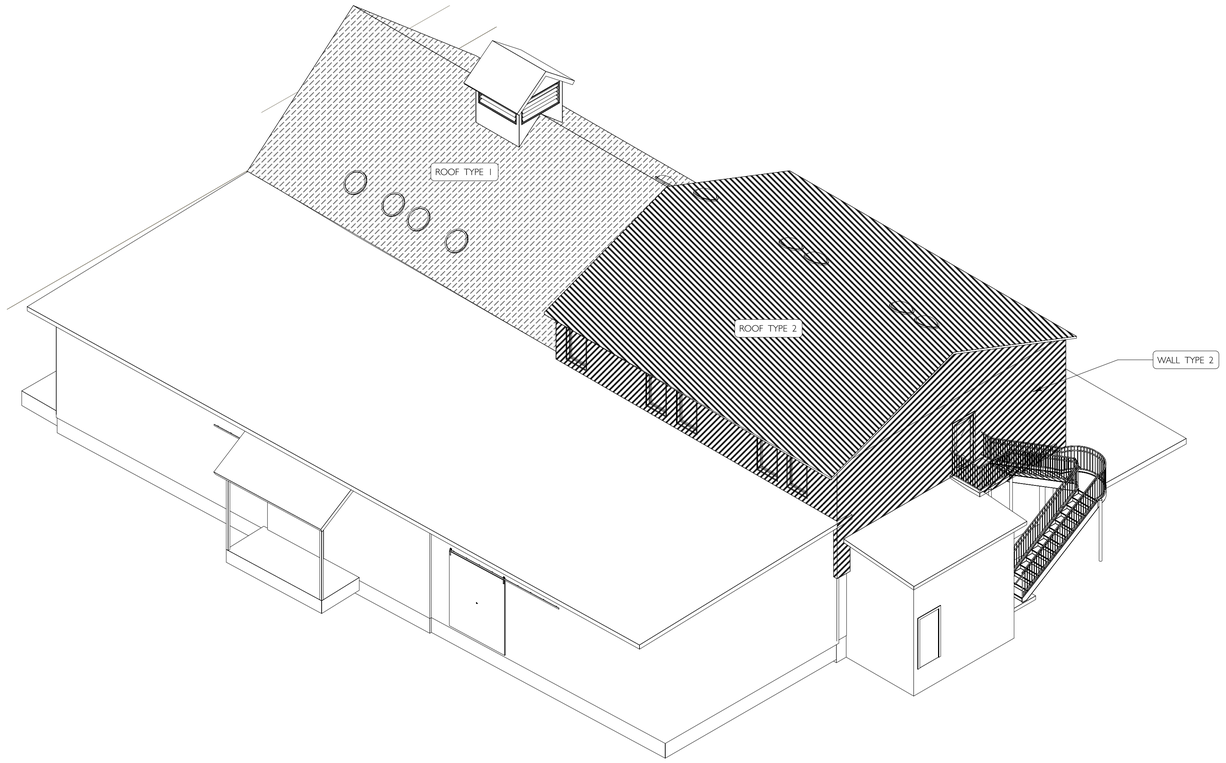
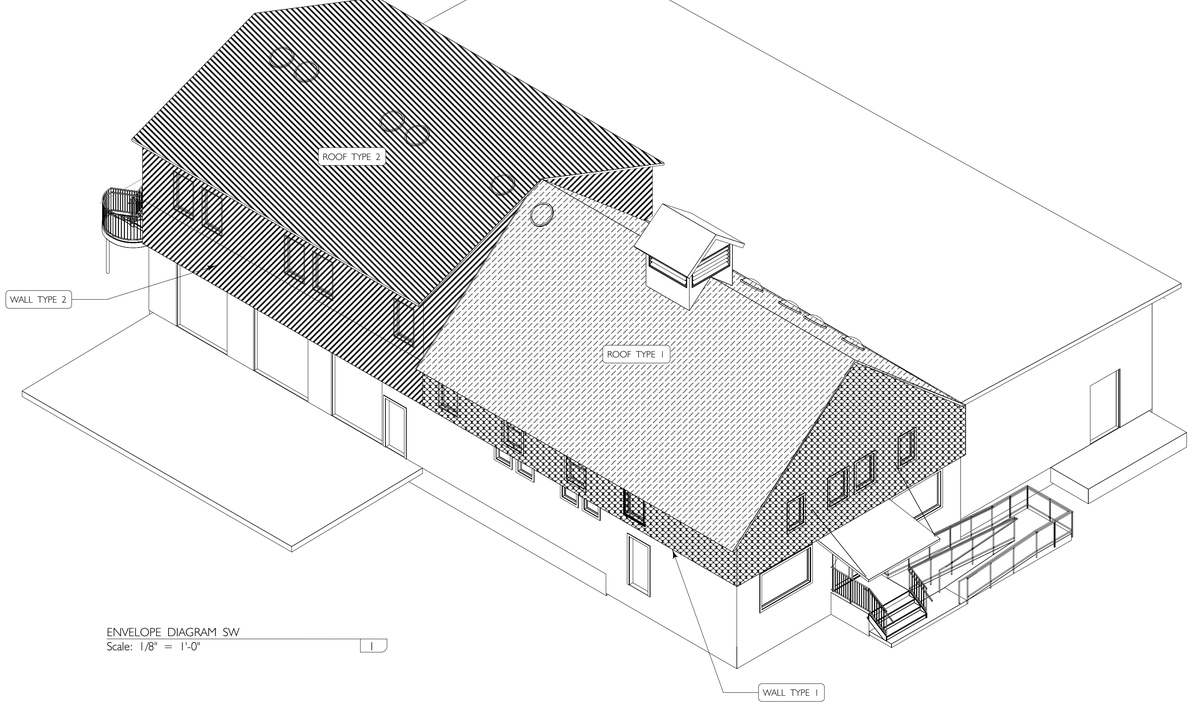
A-001

OVERALL PLANS AND EGRESS

SEAL | SIGNATURE:



ENVELOPE DIAGRAM NE
Scale: 1/8" = 1'-0" 2



ENVELOPE DIAGRAM SW
Scale: 1/8" = 1'-0" 1

KEY

WALL TYPE 1	Existing stud wall and cavity insulation to
	New sheathing and WRB
	5" exterior insulation
	New horizontal wood siding
WALL TYPE 2	New stud wall
	New sheathing and WRB
	5" exterior insulation
	New horizontal wood siding
ROOF TYPE 1	Existing rafters to be reinforced
	Dense-pack cellulose insulation
	New sheathing and WRB
	2 1/2" exterior insulation
	New metal roof
ROOF TYPE 2	New roof structure
	Dense-pack cellulose insulation
	New sheathing and WRB
	2 1/2" exterior insulation
	New metal roof

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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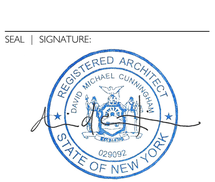
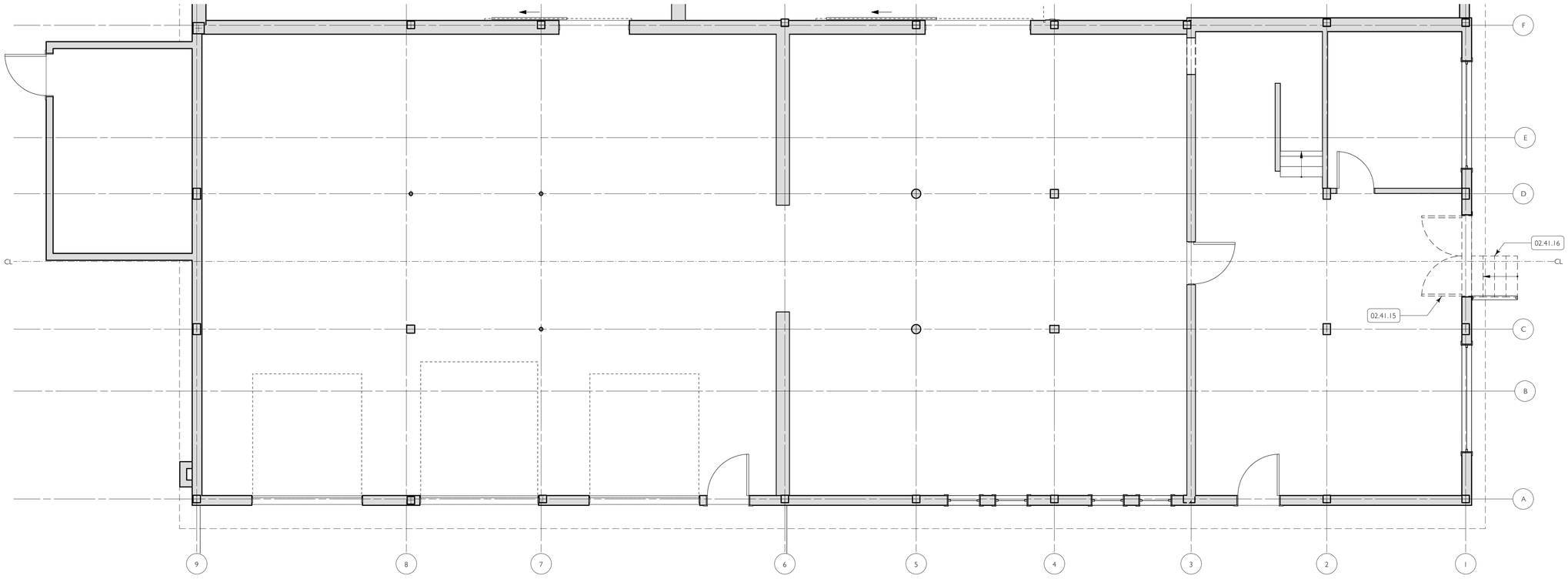
ENVELOPE DIAGRAM

SEAL | SIGNATURE:



KEYNOTES
02.41.15 Remove existing door and framing as needed for proposed plan
02.41.16 Remove existing wood stairs



FIRST FLOOR EXISTING AND REMOVALS PLAN
Scale: 1/4" = 1'-0"

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
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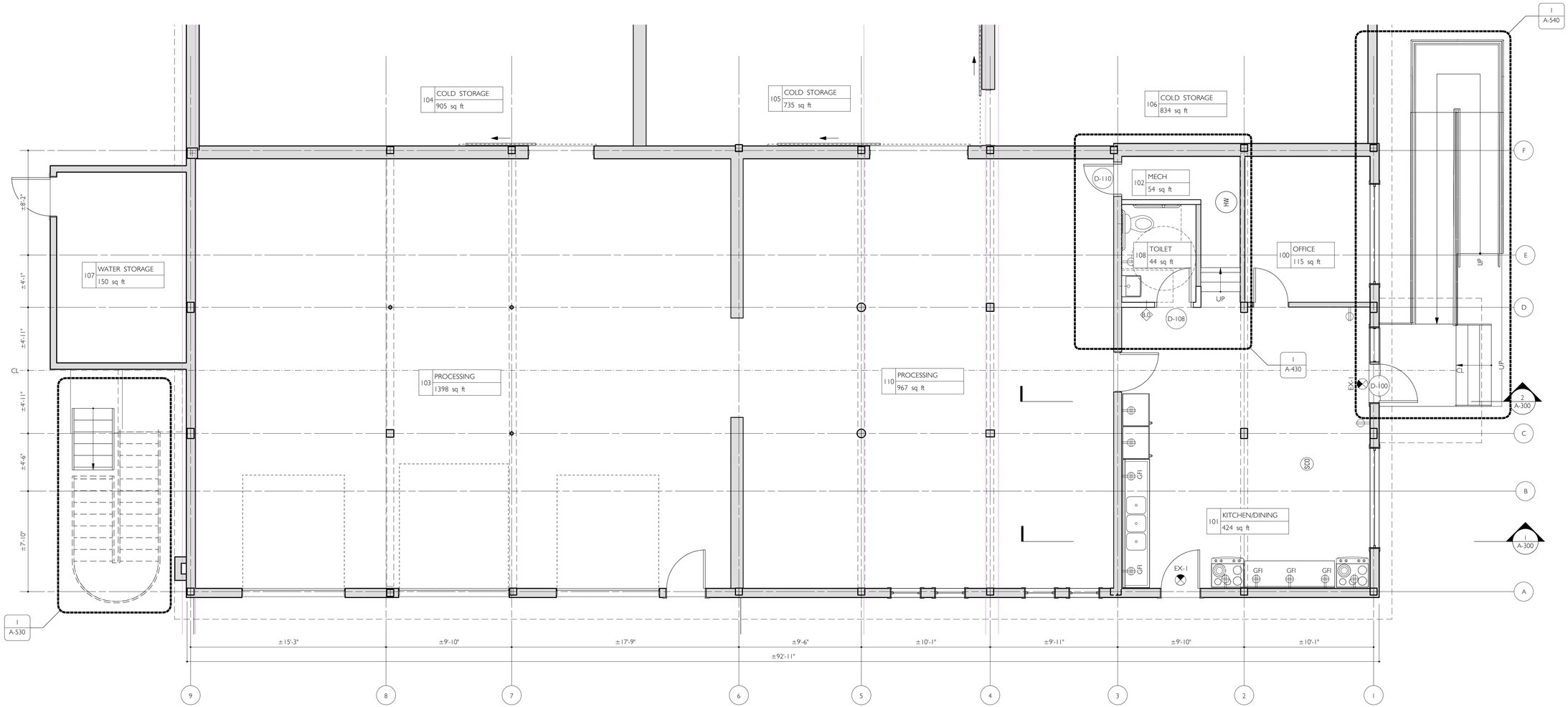
FIRST FLOOR
EXISTING AND
REMOVALS PLAN

SEAL | SIGNATURE:



PROPOSED FIRST FLOOR PLAN
Scale: 1/4" = 1'-0"

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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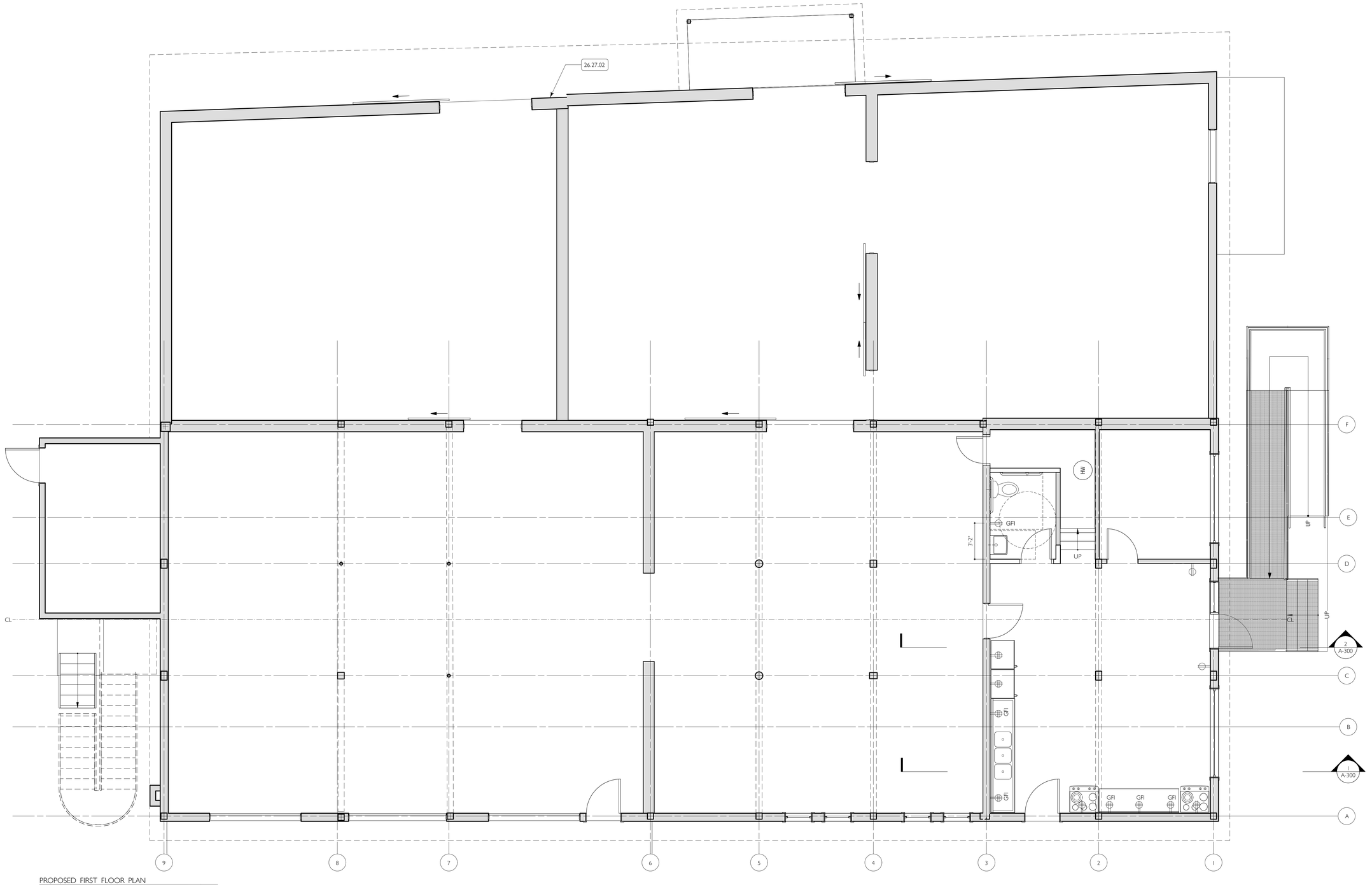
A-115

FIRST FLOOR PROPOSED PLAN

SEAL | SIGNATURE:

KEYNOTES
26.27.02 New 800A service, disconnect and main breaker panel (approx. location of service entry)



PROPOSED FIRST FLOOR PLAN
Scale: 1/4" = 1'-0" 1

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7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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FIRST FLOOR POWER AND FLOOR FINISHES PLAN

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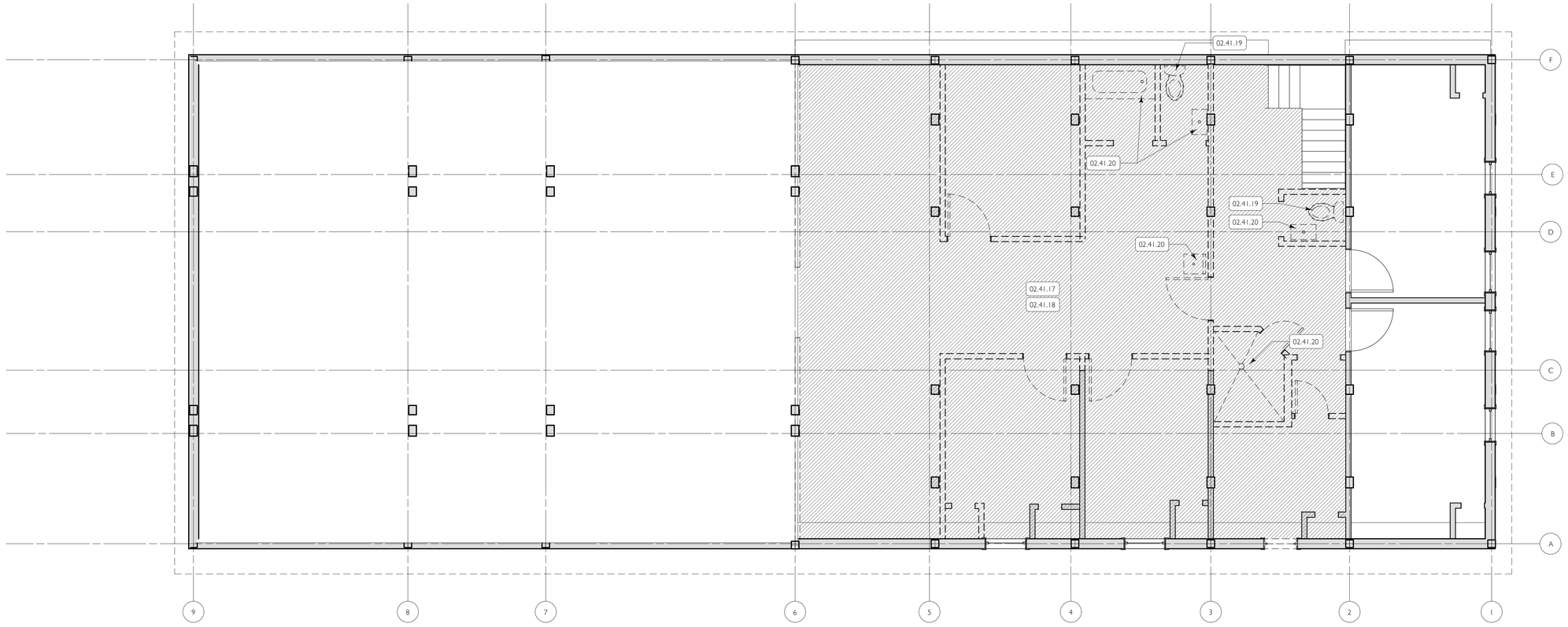

SECOND FLOOR EXISTING AND REMOVALS PLAN
Scale: 1/4" = 1'-0"

KEYNOTES
02.41.17 Remove floor finish to undamaged wood floor or subfloor within hatched area
02.41.18 Remove partitions and doors as indicated
02.41.19 Salvage existing toilet fixtures for re-use
02.41.20 Remove existing plumbing fixtures and cut back and cap waste and supply lines

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Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
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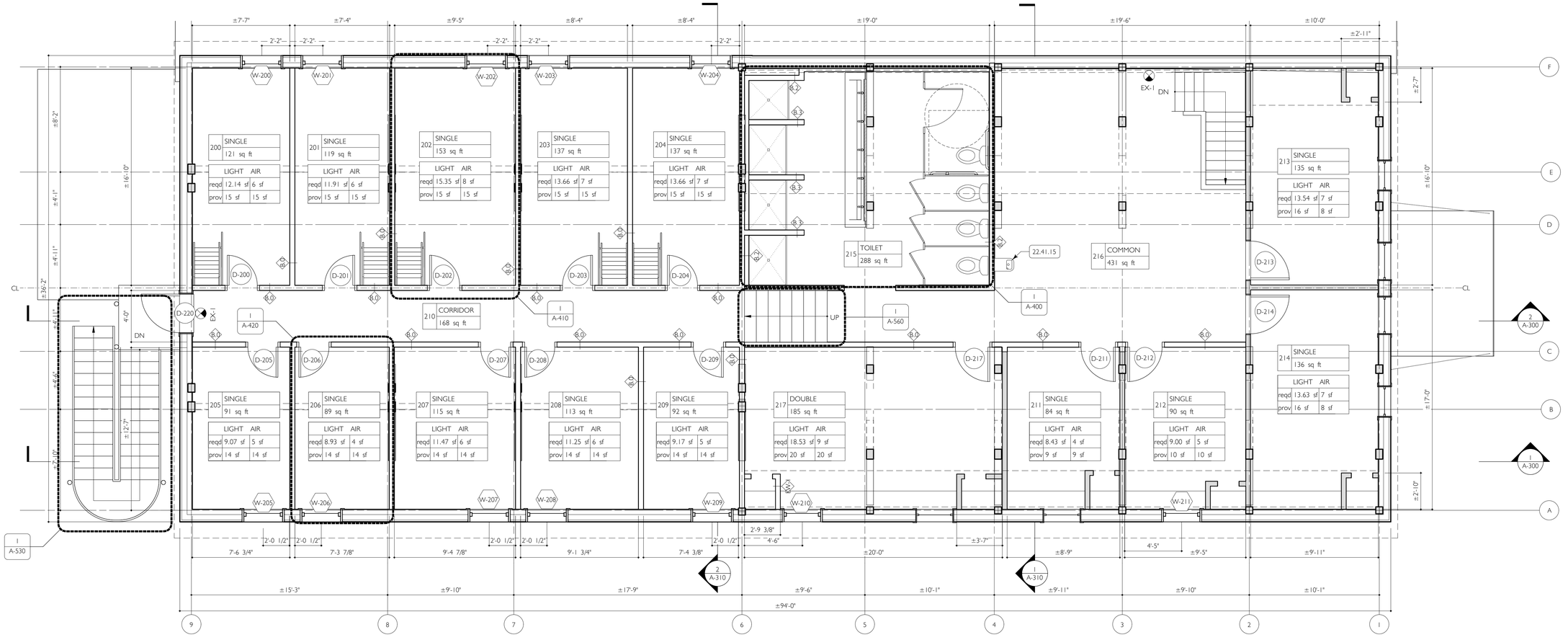
A-120

SECOND FLOOR EXISTING AND REMOVALS PLAN

SEAL | SIGNATURE:

KEYNOTES
22.41.15 Haws 1109MP ADA-compliant water fountain



PROPOSED SECOND FLOOR PLAN
Scale: 1/4" = 1'-0"

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7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
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EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
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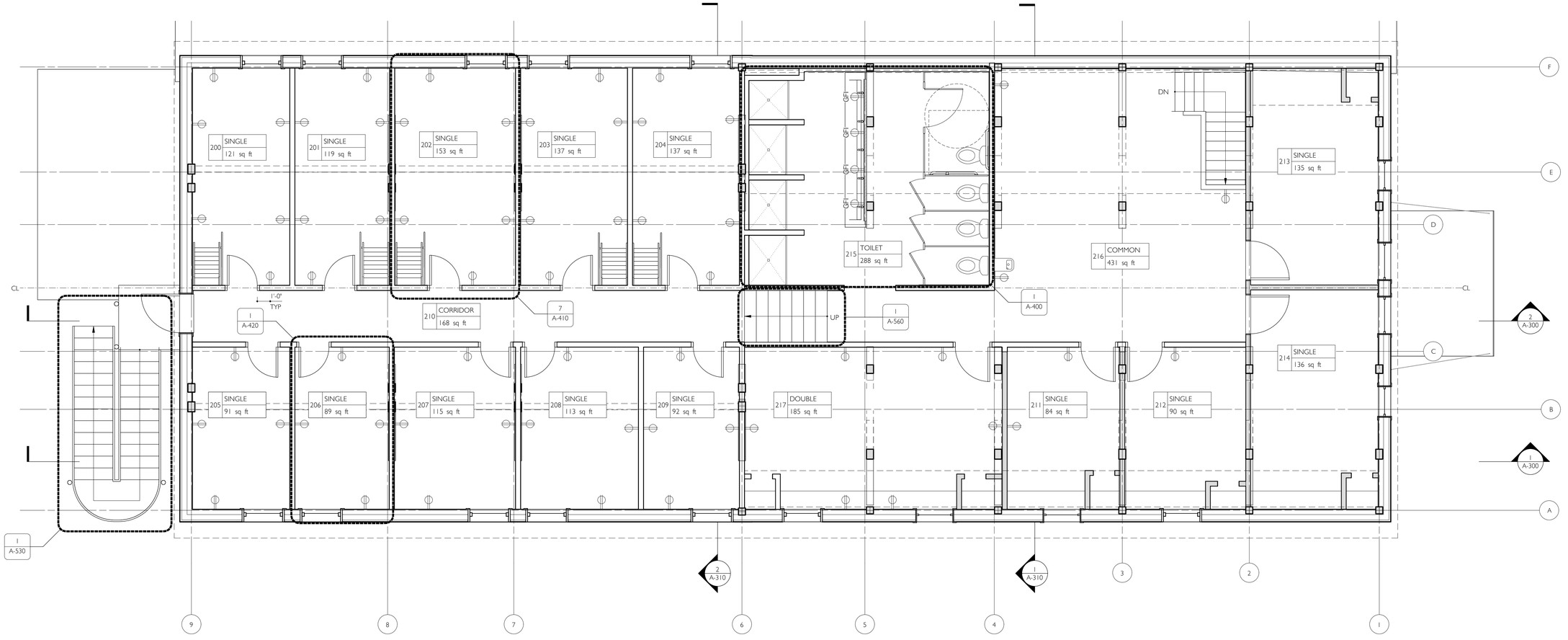
A-125

SECOND FLOOR PROPOSED PLAN

SEAL | SIGNATURE:



PROPOSED SECOND FLOOR PLAN
Scale: 1/4" = 1'-0"

6

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Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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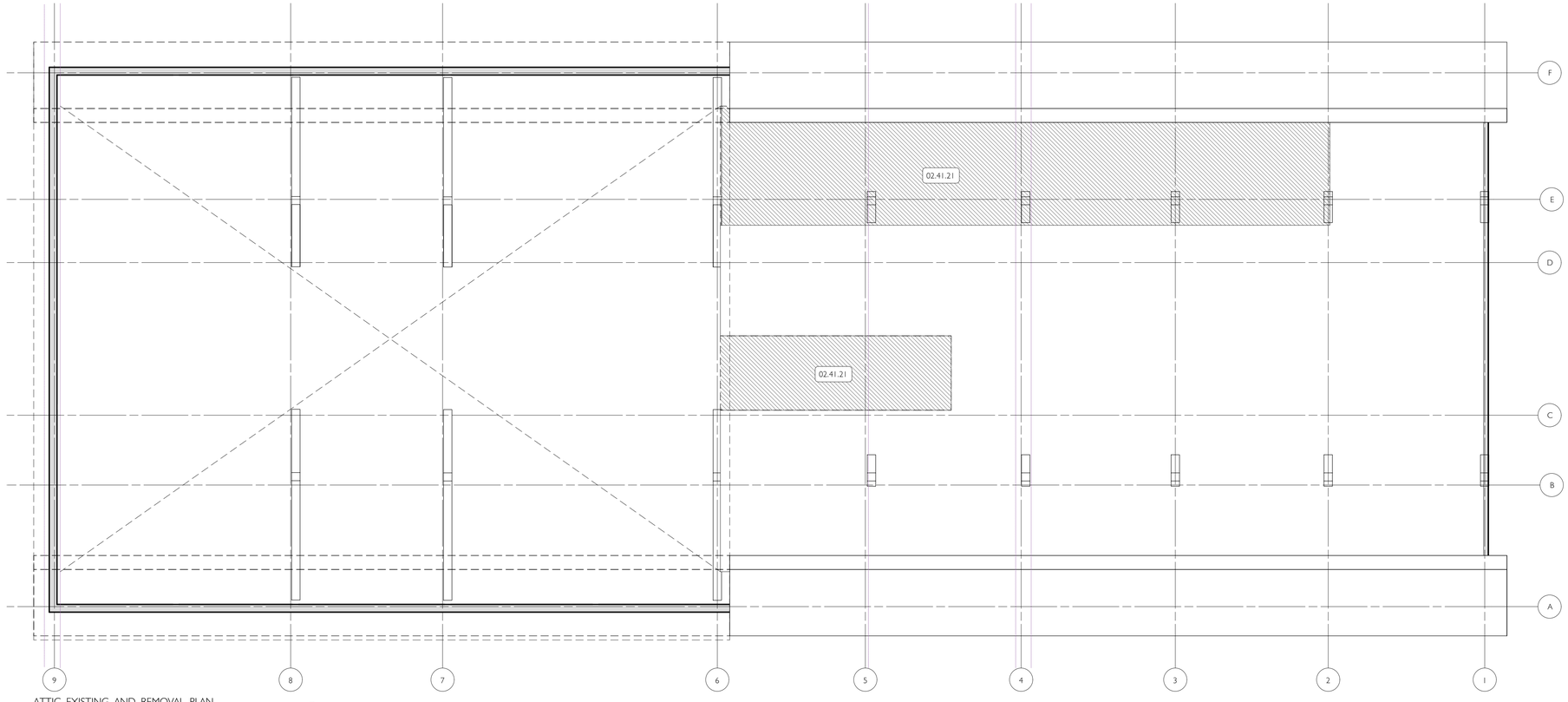
A-127

SECOND FLOOR POWER AND FLOOR FINISH PLAN

SEAL | SIGNATURE:

KEYNOTES
02.41.21 Remove existing floor structure and provide new headers as necessary



ATTIC EXISTING AND REMOVAL PLAN
Scale: 1/4" = 1'-0"

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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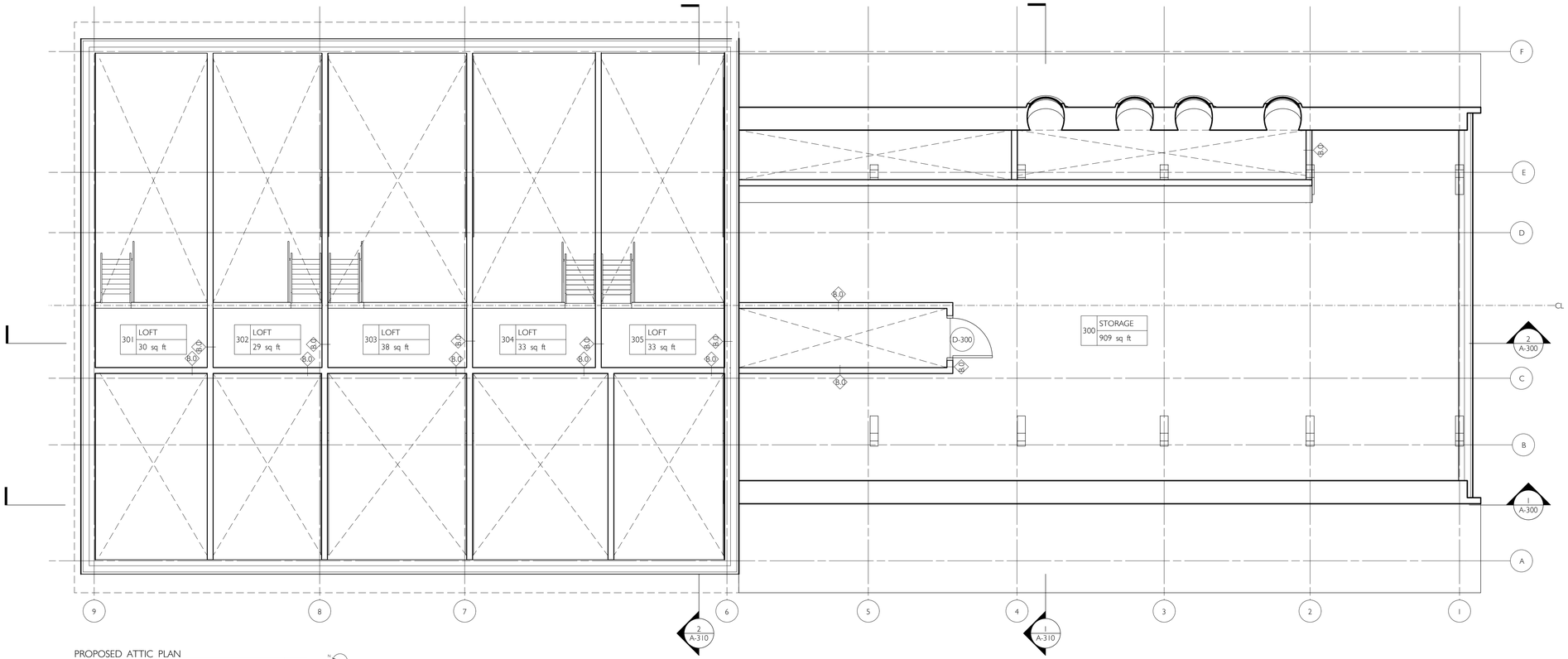
Essex NY 12936

A-130

ATTIC EXISTING AND REMOVALS PLAN

SEAL | SIGNATURE:



PROPOSED ATTIC PLAN
Scale: 1/4" = 1'-0"

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Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
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EP Engineering LLC
110 William Street 32nd Floor
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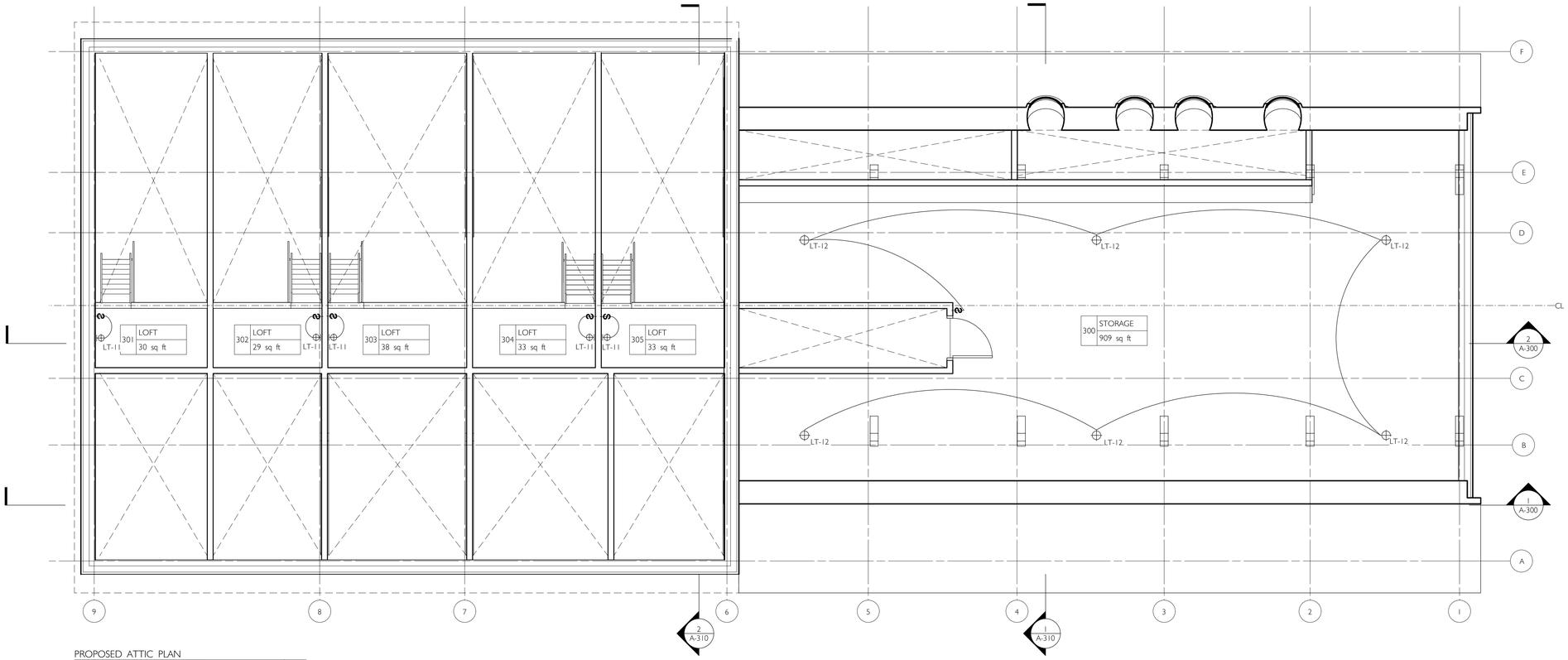
A-135

ATTIC PROPOSED PLAN

SEAL | SIGNATURE:



PROPOSED ATTIC PLAN
Scale: 1/4" = 1'-0"

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Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
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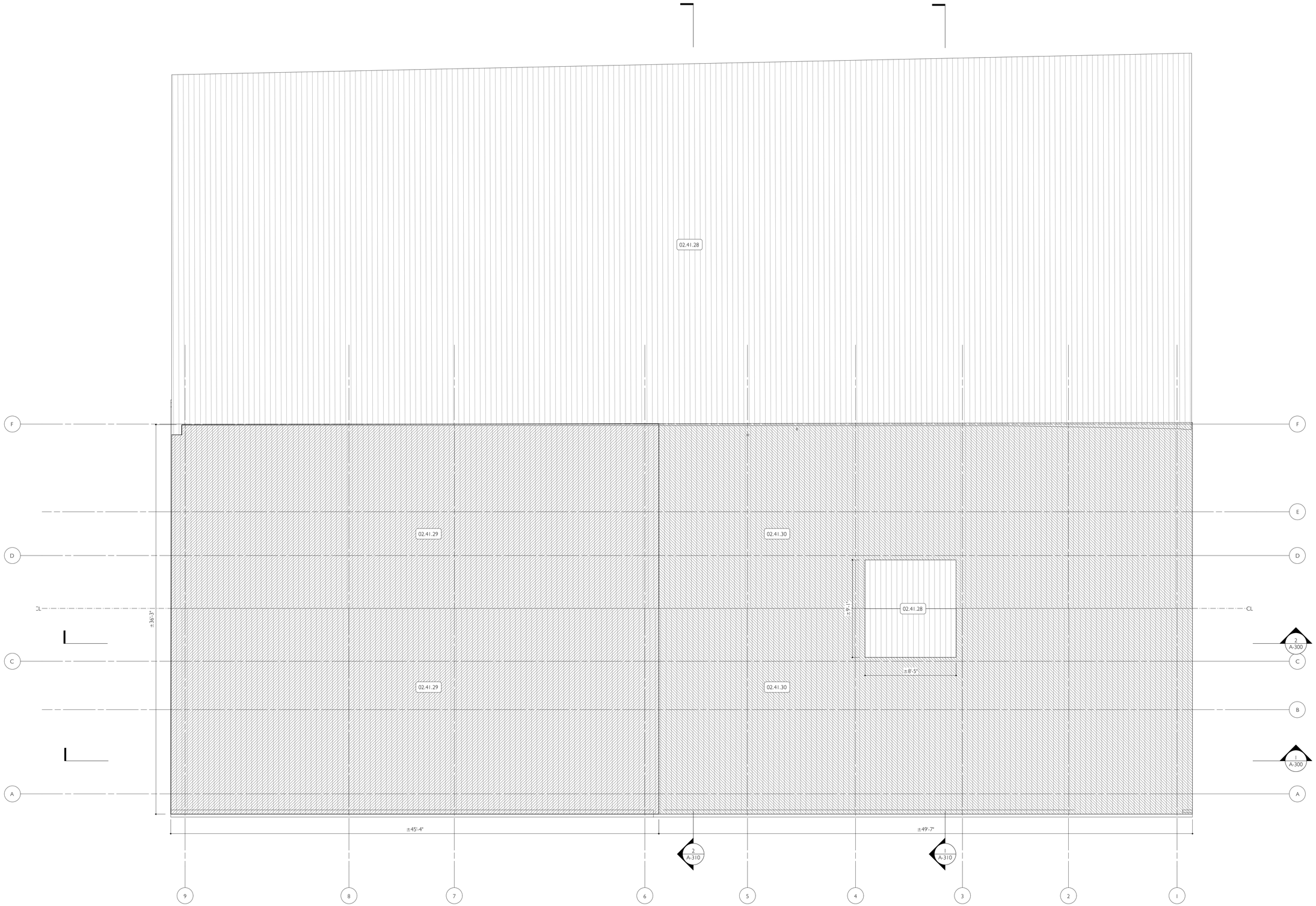
A-137

ATTIC POWER AND FLOOR FINISH PLAN

SEAL | SIGNATURE:

KEYNOTES

02.41.28	Existing metal roof to remain
02.41.29	Remove existing metal roof finish and structure
02.41.30	Remove existing metal roof finish and WRB



ROOF EXISTING AND REMOVALS PLAN
Scale: 1/4" = 1'-0"

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Essex County
7551 Court Street P.O. Box 217
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518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
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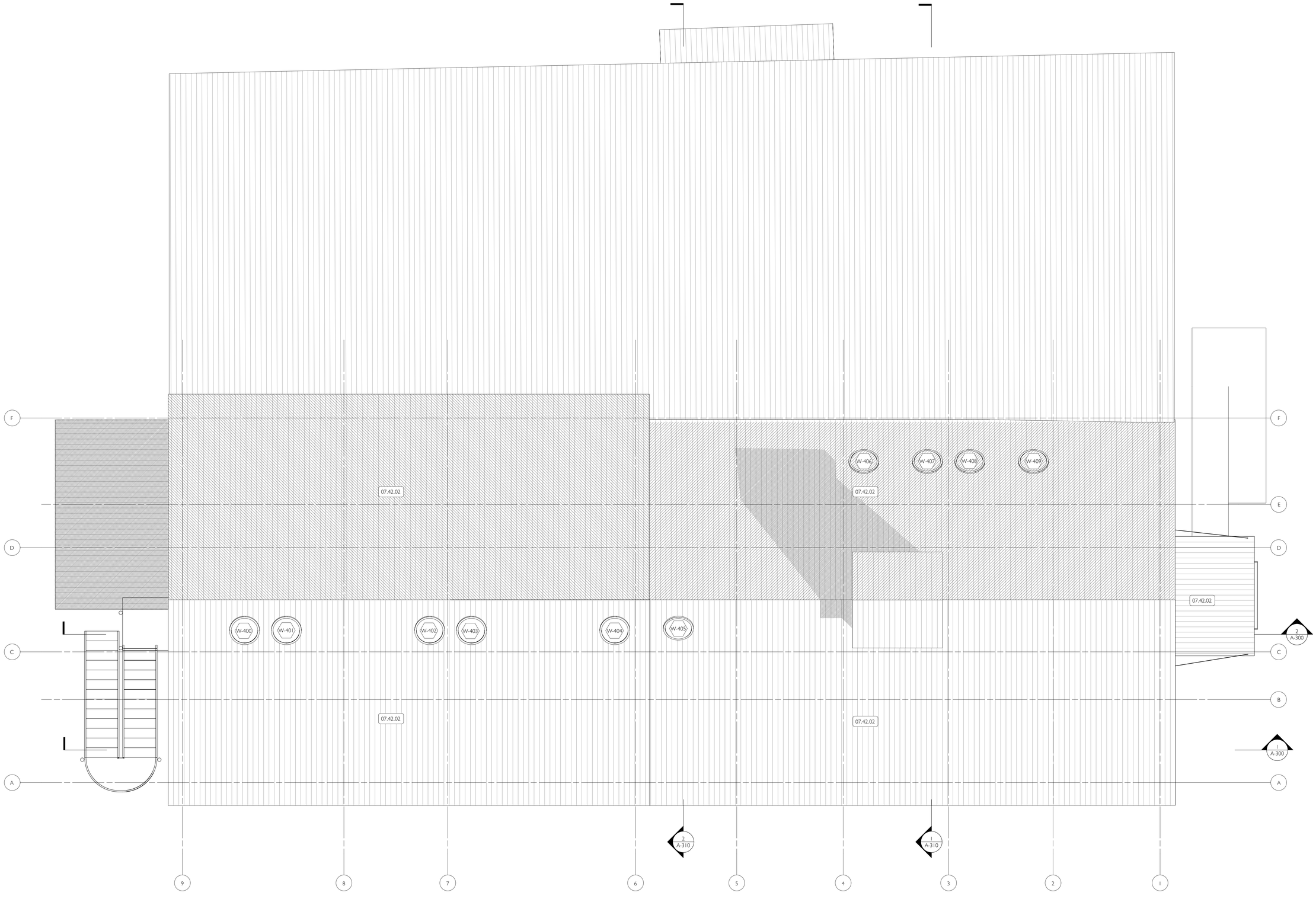
ROOF EXISTING AND REMOVALS PLAN

SEAL | SIGNATURE:

KEYNOTES
07.42.02 PAC-CLAD Kynar-coated steel roof, 7/8" corrugations



PROPOSED ROOF PLAN
Scale: 1/4" = 1'-0"

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Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
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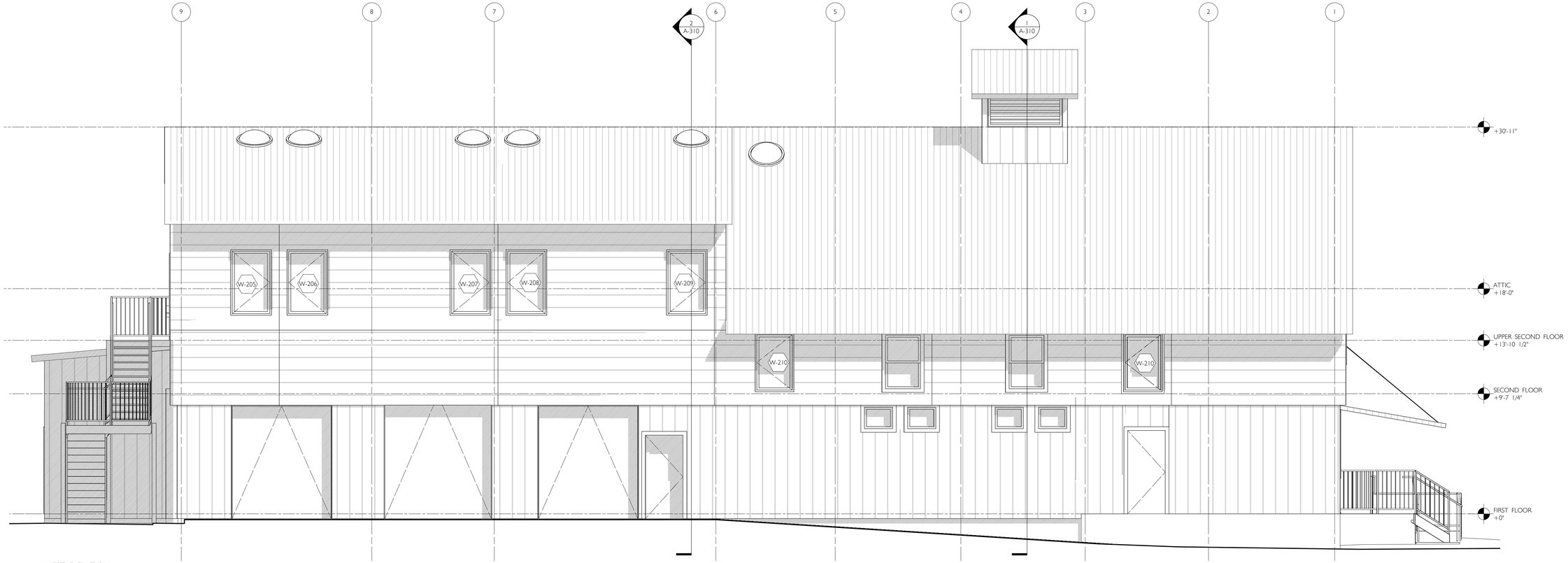
PROPOSED ROOF PLANS

SEAL | SIGNATURE:



WEST ELEVATION
Scale: 1/4" = 1'-0" 2

SOUTH ELEVATION
Scale: 1/4" = 1'-0" 1

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Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
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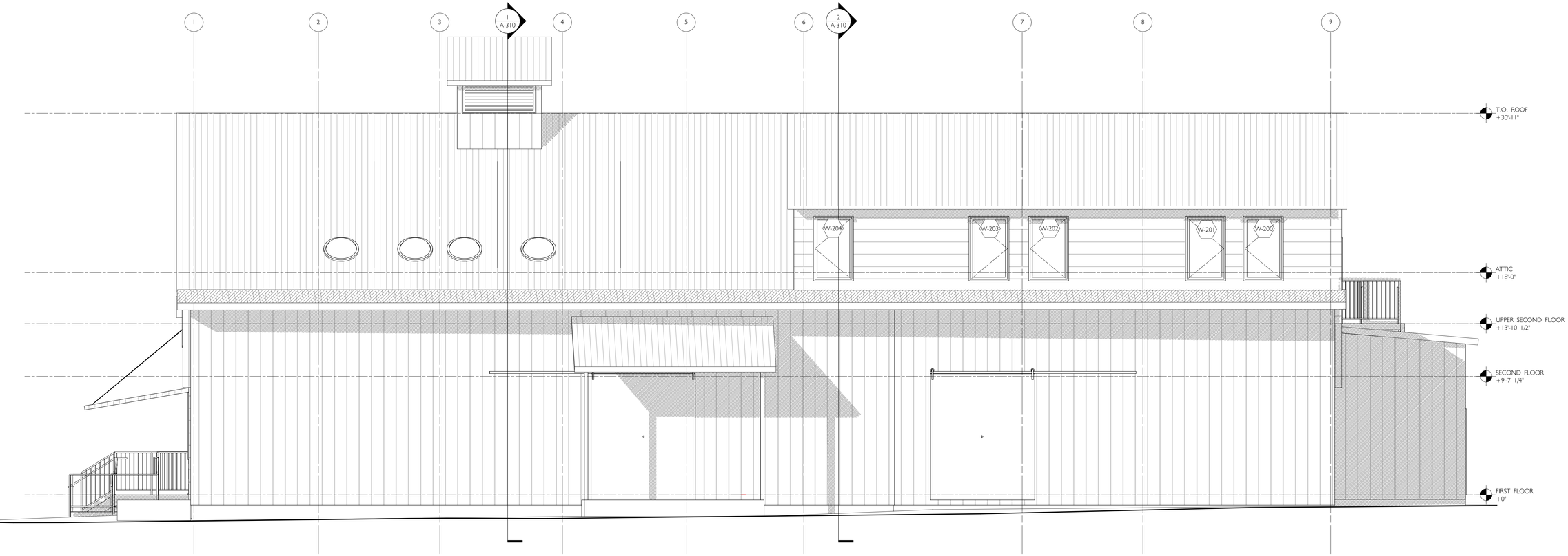
EXTERIOR
ELEVATIONS

SEAL | SIGNATURE:



EAST ELEVATION
Scale: 1/4" = 1'-0" 3

NORTH ELEVATION
Scale: 1/4" = 1'-0" 4

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7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
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EP Engineering LLC
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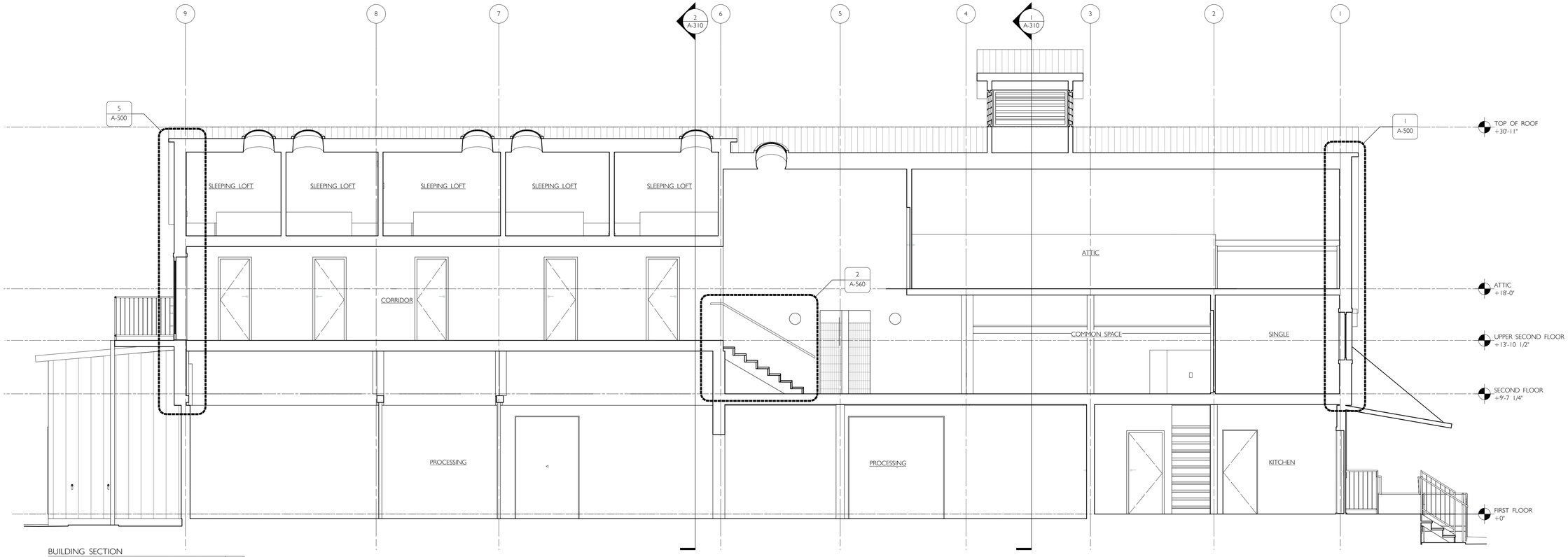
EXTERIOR ELEVATIONS

SEAL | SIGNATURE:



BUILDING SECTION
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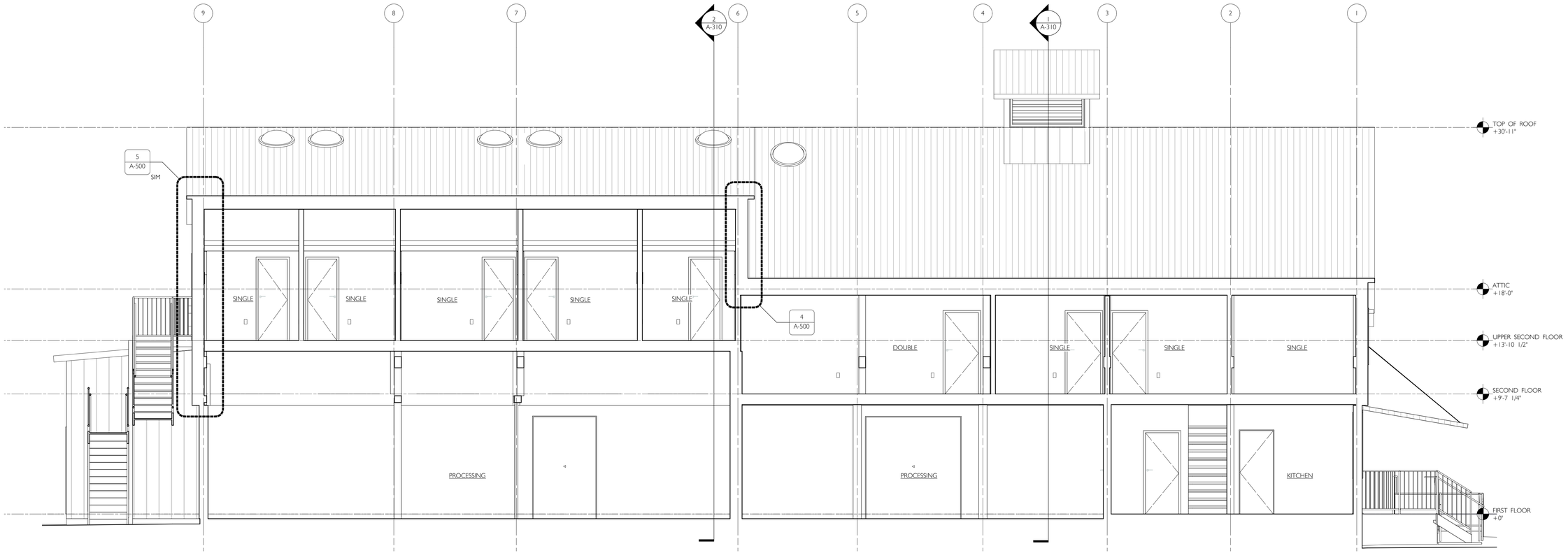

BUILDING SECTION
Scale: 1/4" = 1'-0" 1

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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82 Loukes Lane
Essex NY 12936

A-300

PROPOSED BUILDING SECTION

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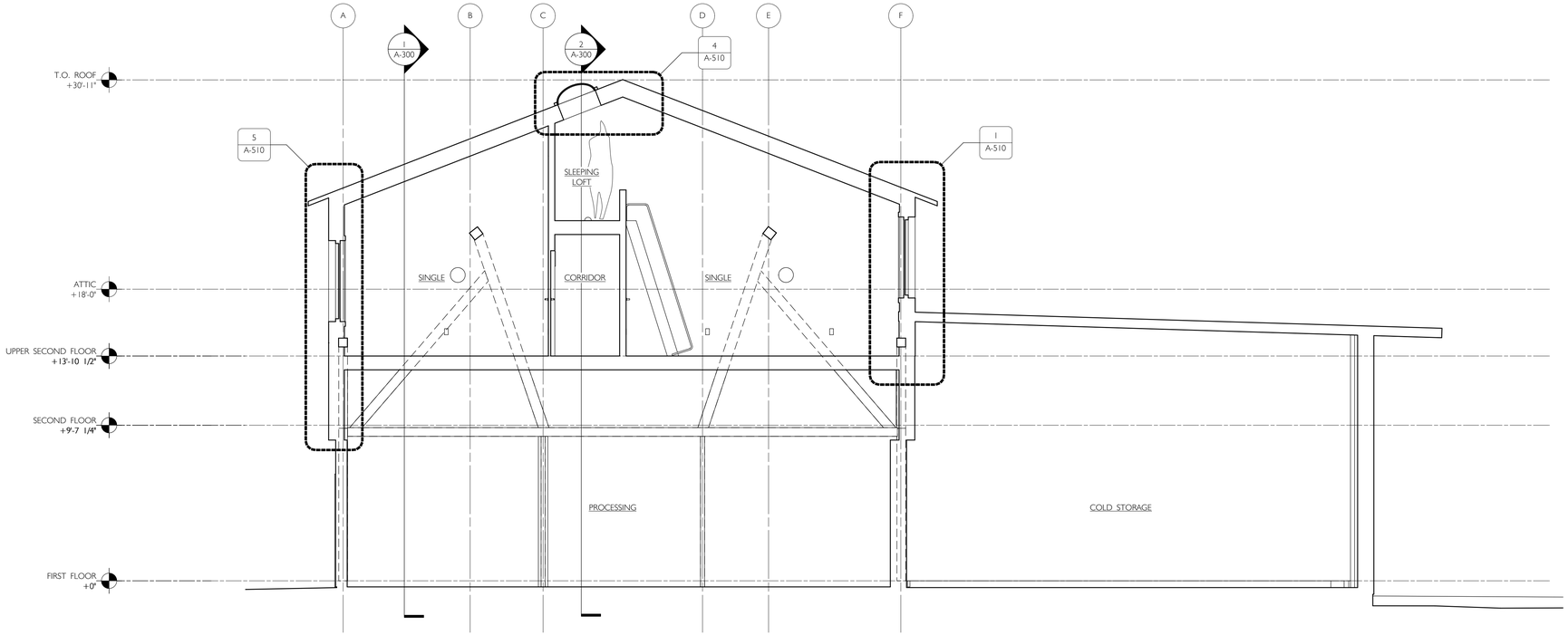

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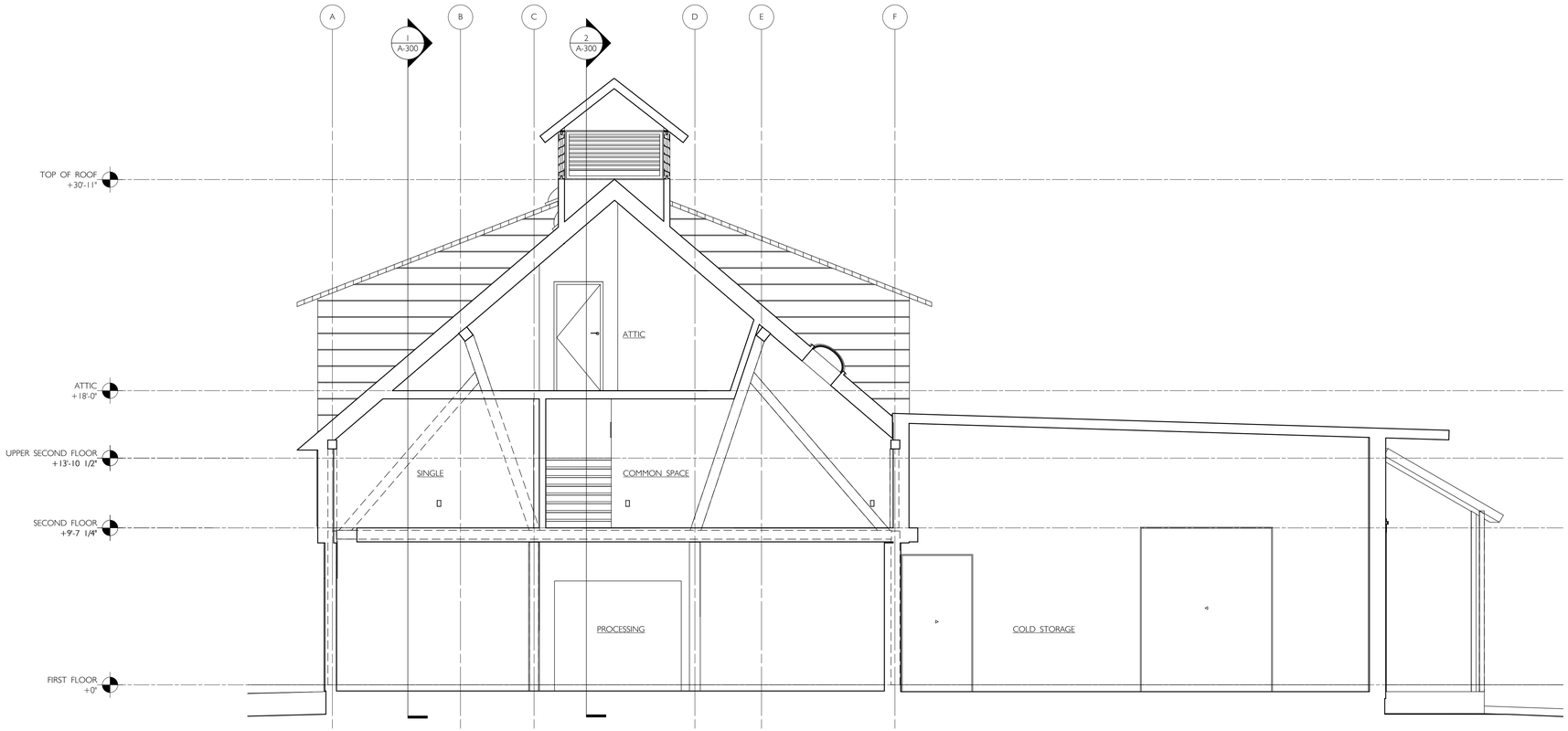

BUILDING SECTION
Scale: 1/4" = 1'-0" 1

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

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EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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ESSEX COUNTY FARMWORKER
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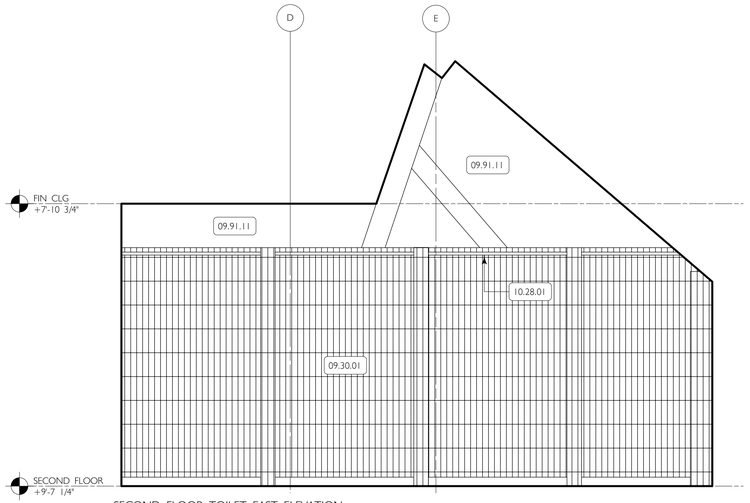
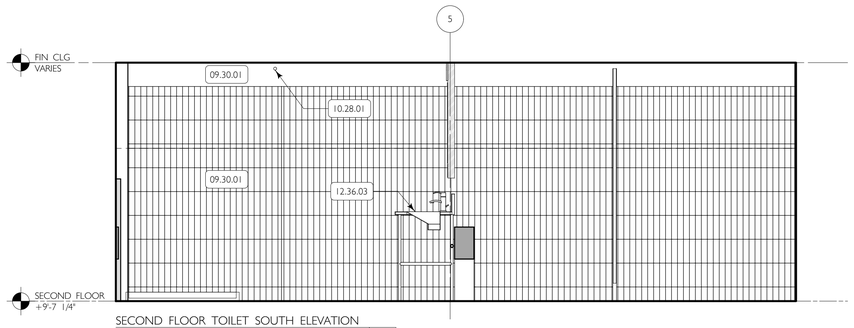
A-310

PROPOSED BUILDING SECTION

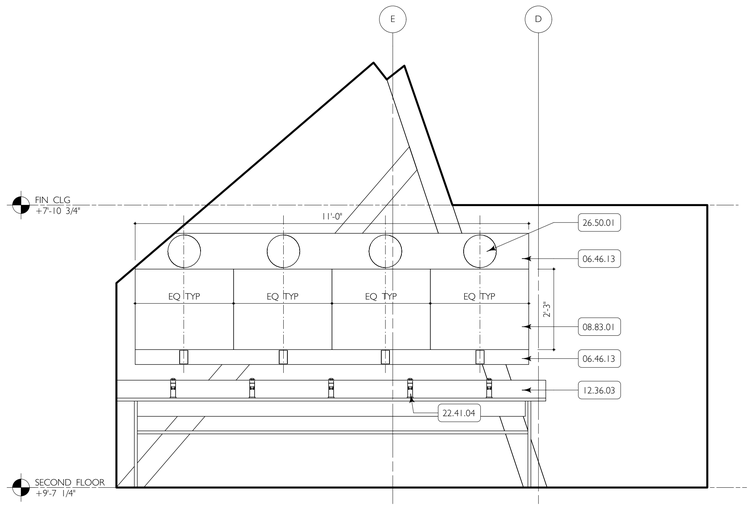
SEAL | SIGNATURE:



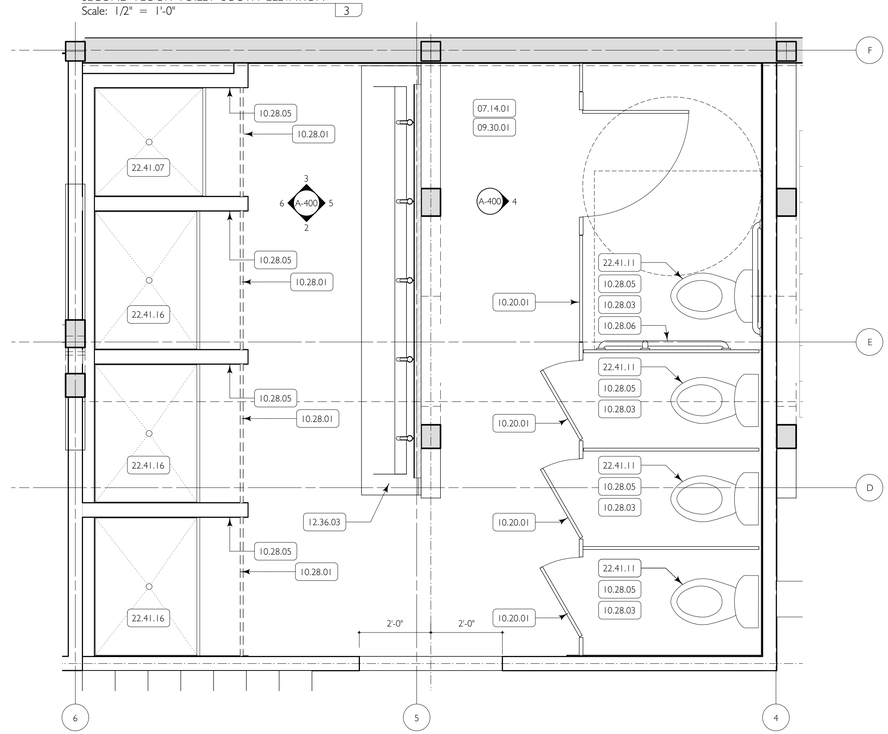
SECOND FLOOR TOILET EAST ELEVATION
Scale: 1/2" = 1'-0" 6



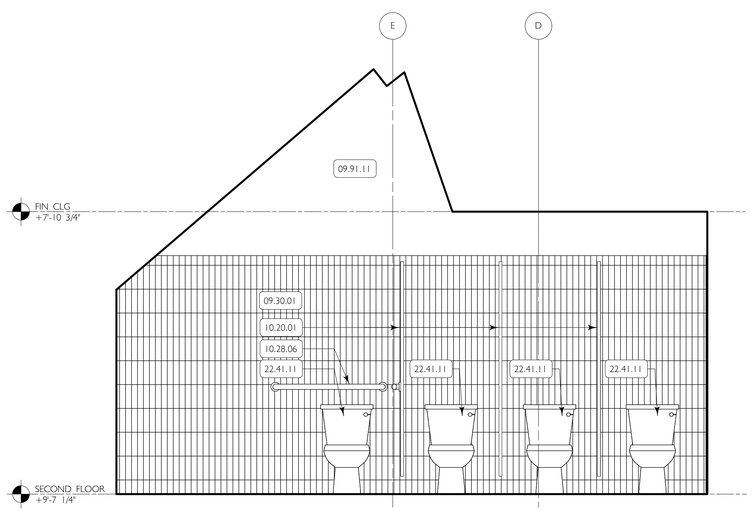
SECOND FLOOR TOILET SOUTH ELEVATION
Scale: 1/2" = 1'-0" 3



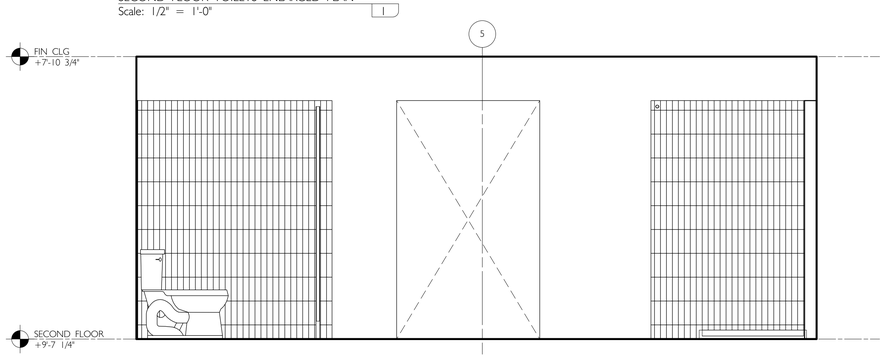
SECOND FLOOR TOILET WEST ELEVATION
Scale: 1/2" = 1'-0" 5



SECOND FLOOR TOILETS ENLARGED PLAN
Scale: 1/2" = 1'-0" 1



SECOND FLOOR TOILET WEST ELEVATION
Scale: 1/2" = 1'-0" 4



SECOND FLOOR TOILET NORTH ELEVATION
Scale: 1/2" = 1'-0" 2

KEYNOTES

06.46.13	1/2" unfinished MDO, two layers sandwiched with two layers 3/4" MDO blocking between
07.14.01	LATICRETE HYDROBAN fluid-applied waterproofing
08.83.01	Surface-mount mirror in dimensions as shown on drawings
09.30.01	Daltile ColorWheel Linear:2x8 ceramic tile
09.91.11	Benjamin Moore Aura: interior paint
10.20.01	Metpar Dur-A-Tex Dorian Max FT700M: floor-mounted toilet partitions
10.28.01	Kohler K-9351-S: polished chrome shower curtain rod
22.41.07	ADA Shower base 38" x 38" (refer to A-600 Plumbing Schedule)
22.41.16	Shower base 48" x 36" (refer to A-600 Plumbing Schedule)
10.28.06	Kohler Contemporary ADA grab bars
12.36.03	Stainless steel countertop with integrated linear sink and drain on stainless steel legs
22.41.04	American Standard 7105121: lavatory faucet (refer to A-600 Plumbing Schedule)
22.41.11	American Standard 2988.101: Tank-type ADA toilet (see A-600 Plumbing Schedule for details)
26.50.01	Light fixture- refer to A-900 Reflected Ceiling Plan for details and location
10.28.03	Kohler Toilet paper holder K-27292-CP
10.28.05	Kohler robe hook K-27290-CP

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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SECOND FLOOR TOILETS ENLARGED PLANS AND INTERIOR ELEVATIONS

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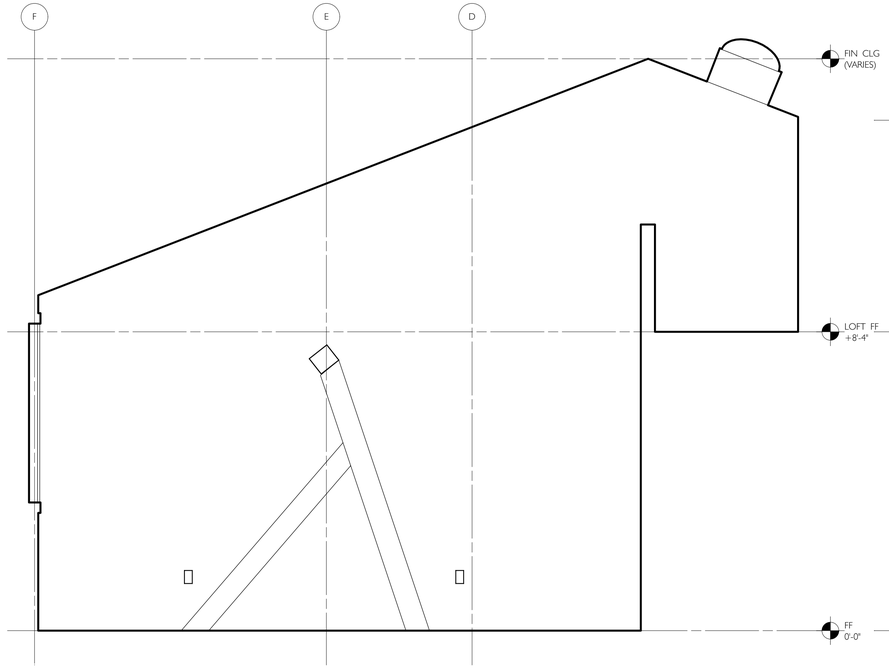
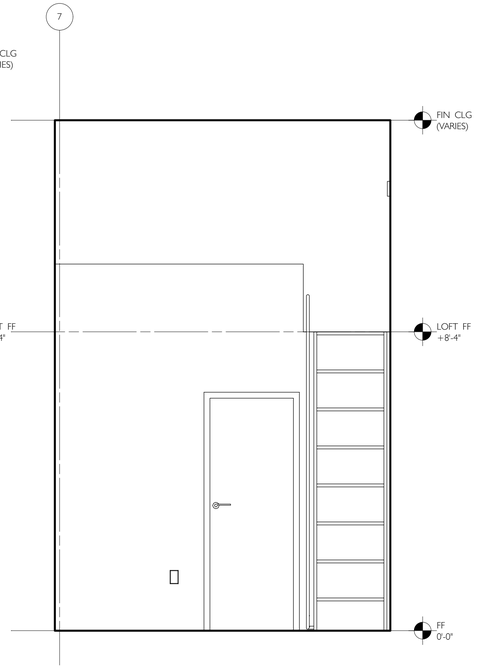
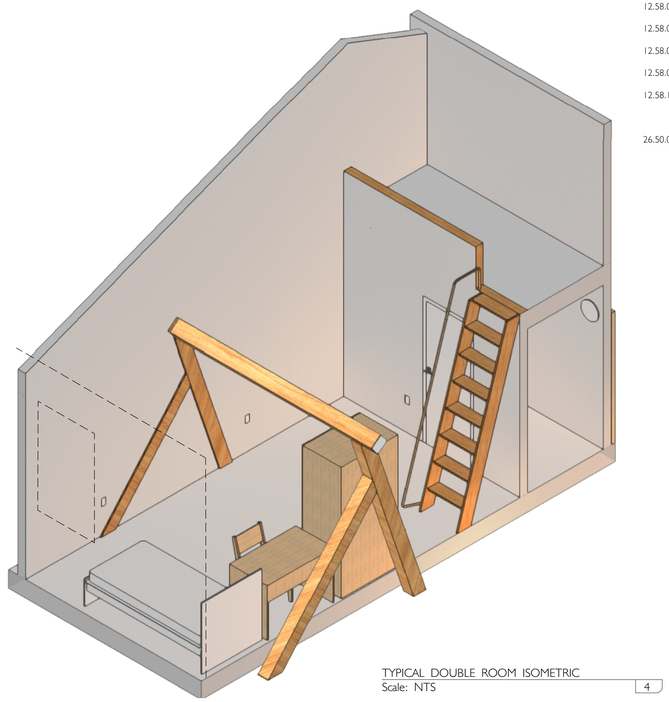


SOUTH ELEVATION
Scale: 1/2" = 1'-0" 6



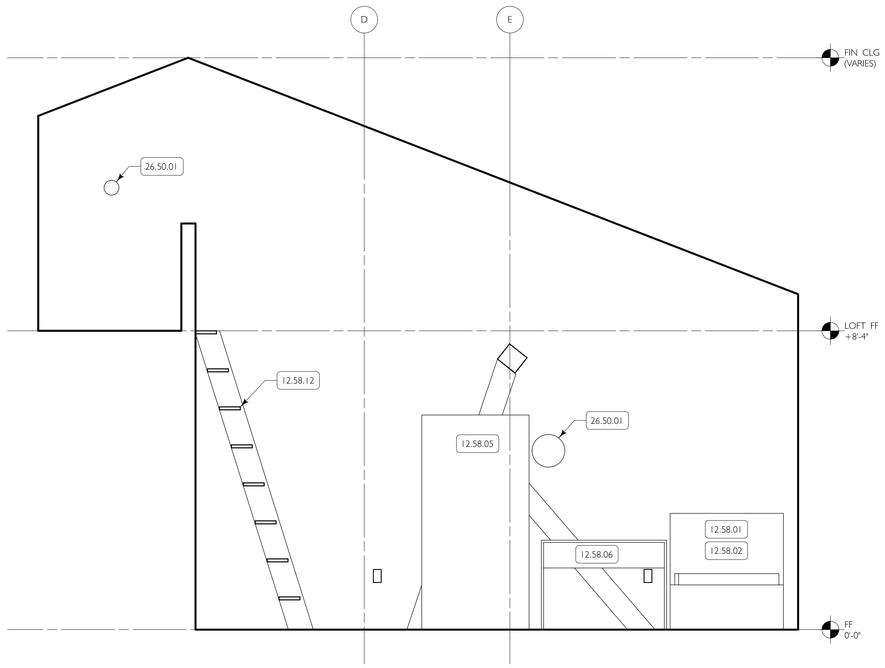
WEST ELEVATION
Scale: 1/2" = 1'-0" 5



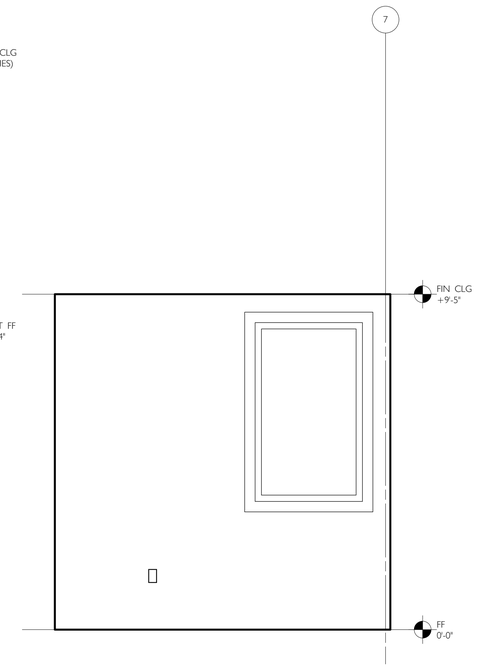
TYPICAL DOUBLE ROOM ISOMETRIC
Scale: NTS 4

KEYNOTES

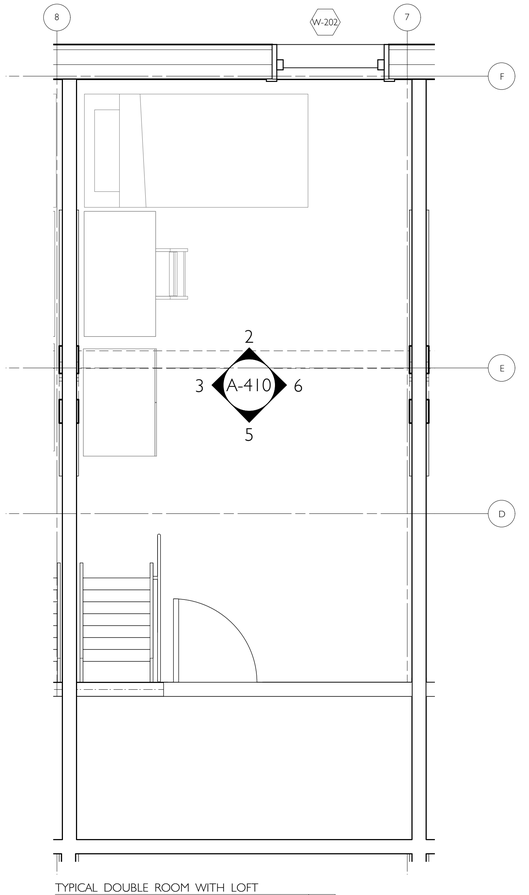
12.58.01	Twin XL bed frame (see A-600 Furniture Schedule for details)
12.58.02	Twin XL Mattress (see A-600 Furniture Schedule for details)
12.58.05	Wardrobe (see A-600 Furniture Schedule for details)
12.58.06	Desk (see A-600 Furniture Schedule for details)
12.58.12	Oak 80-degree ship's ladder with black painted steel railings, clear polyurethane finish (see A-600 Furniture Schedule for details)
26.50.01	Light fixture- refer to A-900 Reflected Ceiling Plan for details and location



NORTH ELEVATION
Scale: 1/2" = 1'-0" 3



EAST ELEVATION
Scale: 1/2" = 1'-0" 2



TYPICAL DOUBLE ROOM WITH LOFT
Scale: 1/2" = 1'-0" 1

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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TYPICAL LOFT ROOM ENLARGED PLANS AND INTERIOR ELEVATIONS

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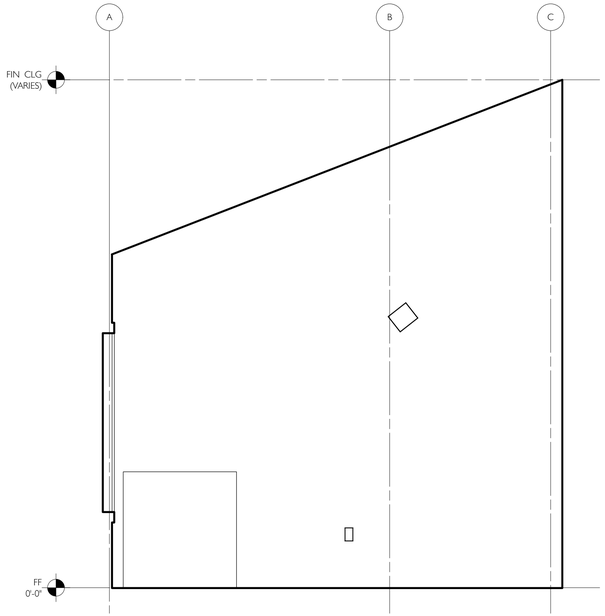
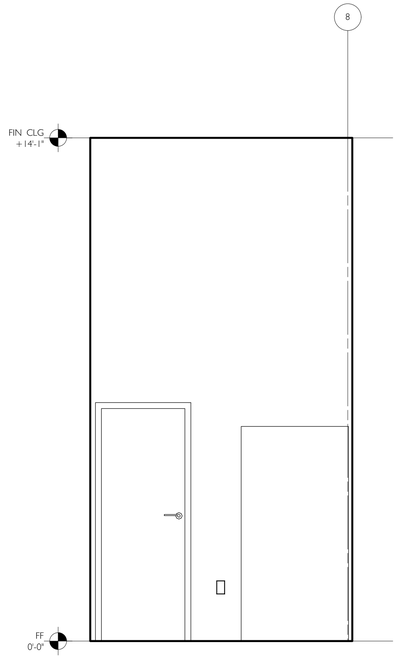


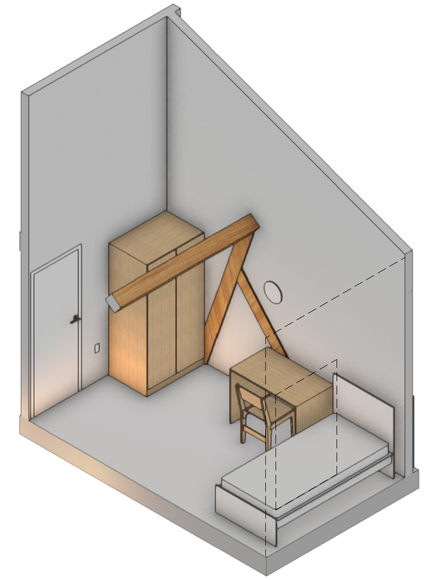
NORTH INTERIOR ELEVATION
Scale: 1/2" = 1'-0" 6



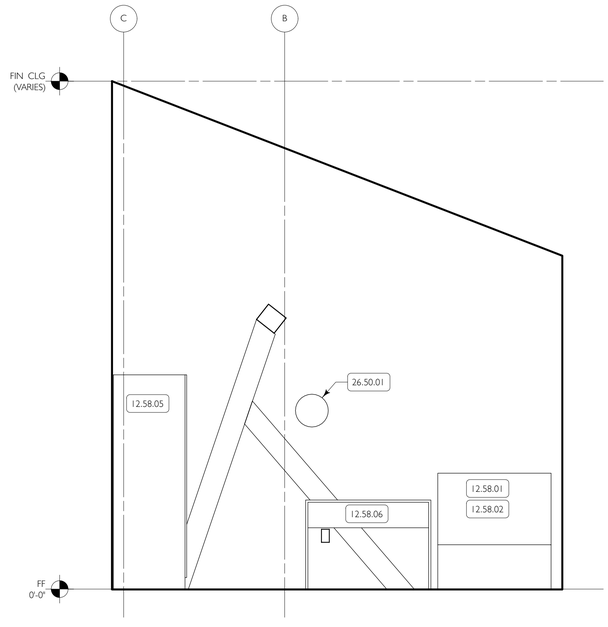
EAST INTERIOR ELEVATION
Scale: 1/2" = 1'-0" 5

KEYNOTES

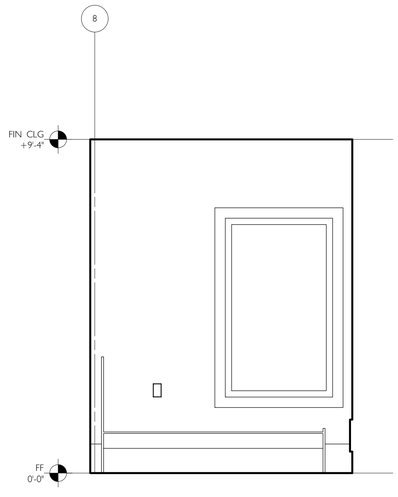
12.58.01	Twin XL bed frame (see A-600 Furniture Schedule for details)
12.58.02	Twin XL Mattress (see A-600 Furniture Schedule for details)
12.58.05	Wardrobe (see A-600 Furniture Schedule for details)
12.58.06	Desk (see A-600 Furniture Schedule for details)
26.50.01	Light fixture- refer to A-900 Reflected Ceiling Plan for details and location



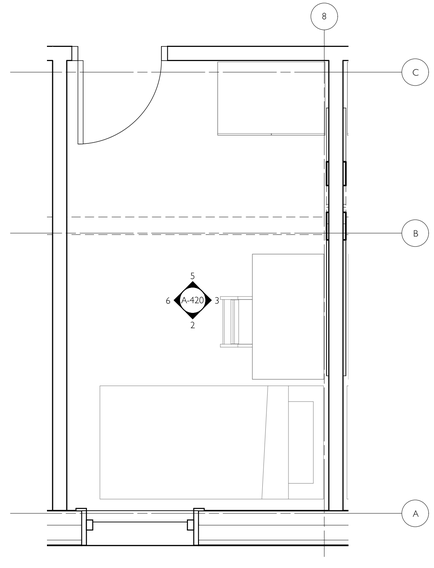
TYPICAL SINGLE ROOM ISOMETRIC
Scale: NTS 4



SOUTH INTERIOR ELEVATION
Scale: 1/2" = 1'-0" 3



WEST INTERIOR ELEVATION
Scale: 1/2" = 1'-0" 2



TYPICAL SINGLE ROOM
Scale: 1/2" = 1'-0" 1

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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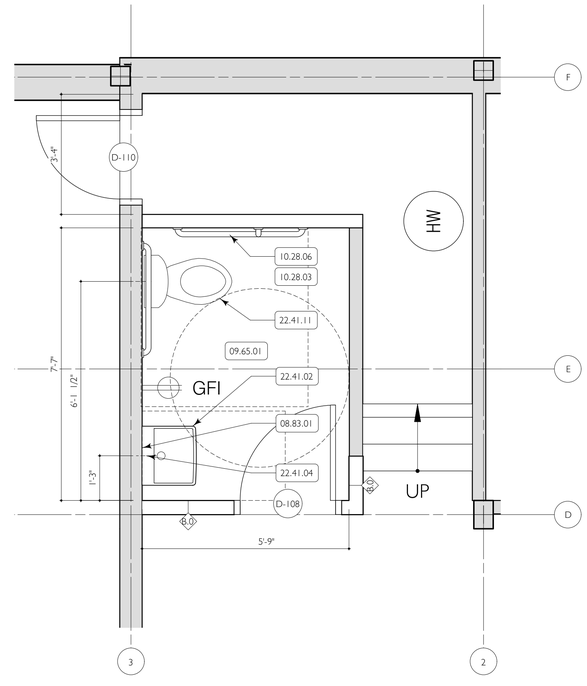
A-420

TYPICAL SINGLE ROOM ENLARGED PLANS AND INTERIOR ELEVATIONS

SEAL | SIGNATURE:

KEYNOTES

08.83.01	Surface-mount mirror in dimensions as shown on drawings
09.65.01	MARMOLEUM linoleum flooring
10.28.03	Kohler Toilet paper holder K-27292-CP
10.28.06	Kohler Contemporary ADA grab bars
22.41.02	ADA lavatory wall-mount sink (see A-600 Plumbing Schedule for details)
22.41.04	Lavatory faucet- refer to A-600 Plumbing Schedule for details
22.41.11	American Standard 2988.101: Tank-type ADA toilet (see A-600 Plumbing Schedule for details)
	N/A



FIRST FLOOR TOILET ENLARGED PLAN
Scale: 1/2" = 1'-0"

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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Essex NY 12936

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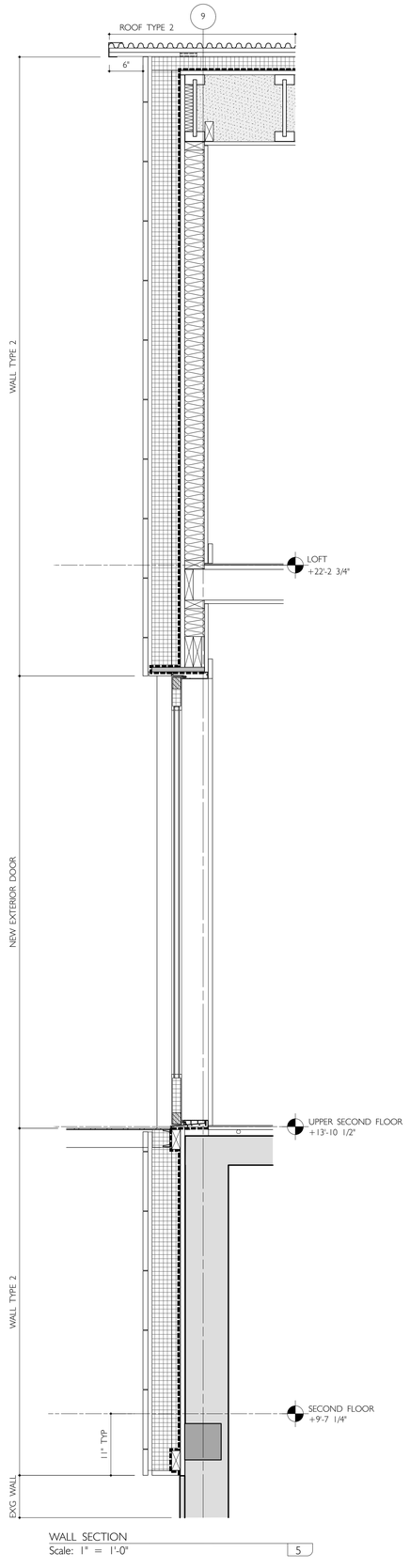
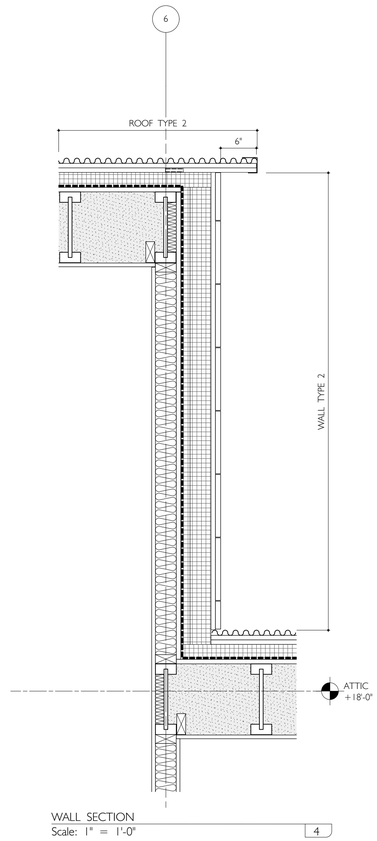
FIRST FLOOR TOILET ENLARGED PLAN

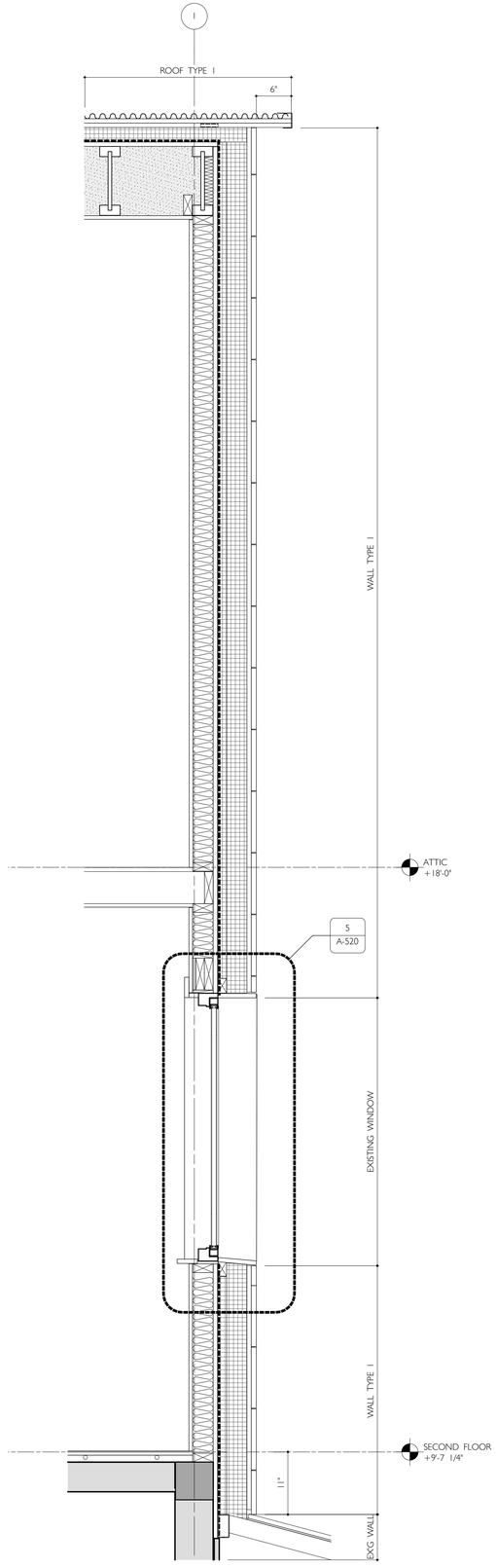
SEAL | SIGNATURE:



WALL SECTION
Scale: 1" = 1'-0" 5



WALL SECTION
Scale: 1" = 1'-0" 4



WALL SECTION
Scale: 1" = 1'-0" 1

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
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ENGINEER: MEP
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EXTERIOR WALL
SECTIONS

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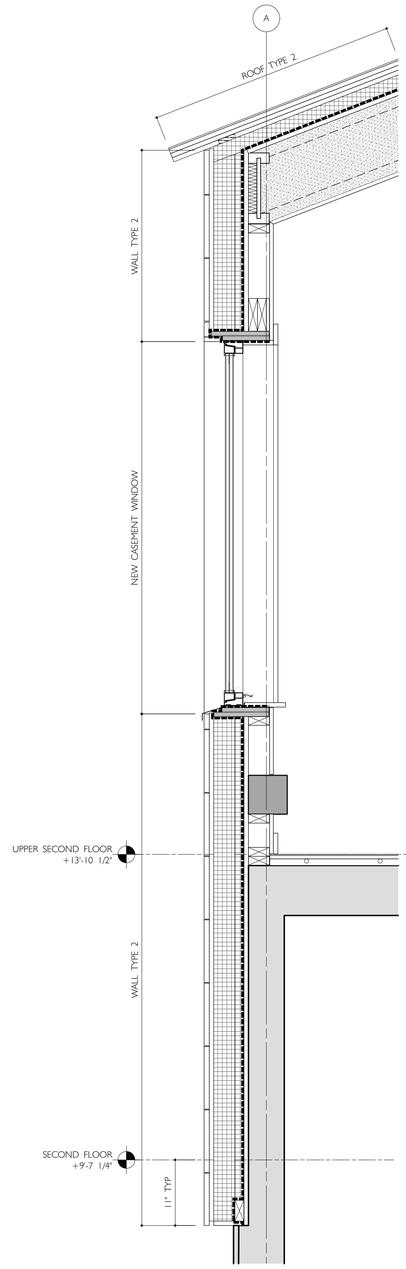

WALL SECTION
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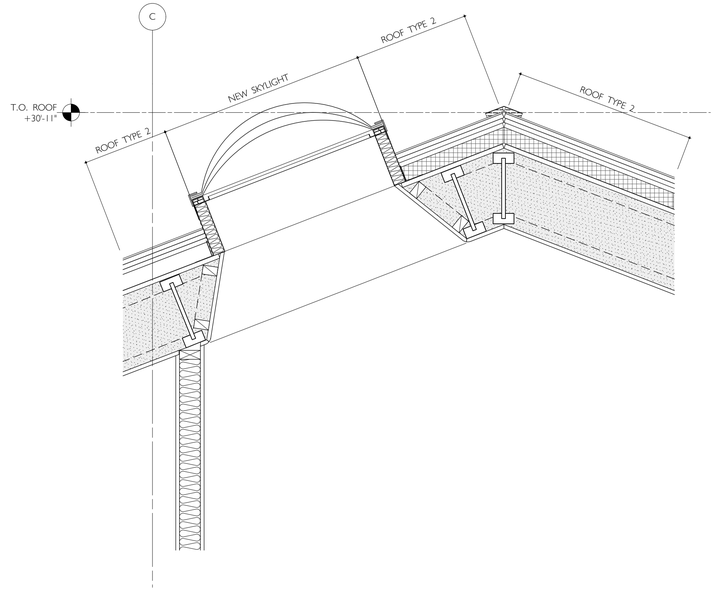

WALL SECTION
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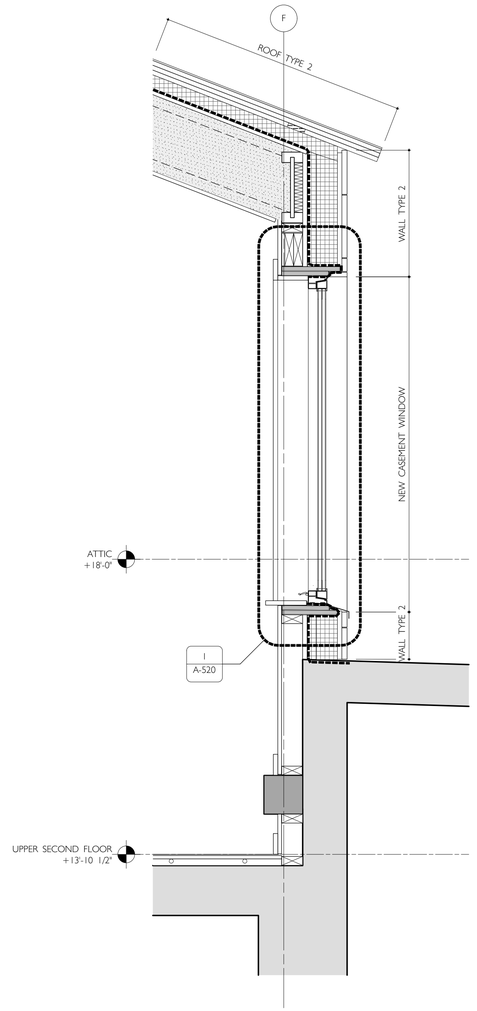

WALL SECTION
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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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EXTERIOR WALL SECTIONS

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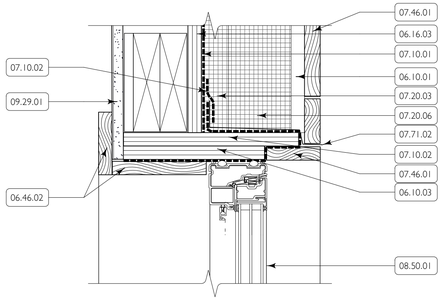
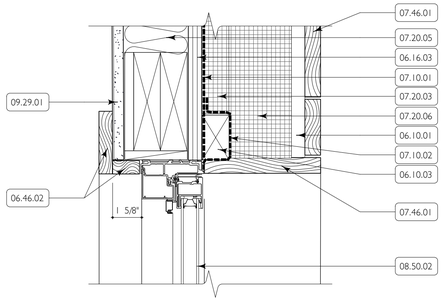
KEYNOTES

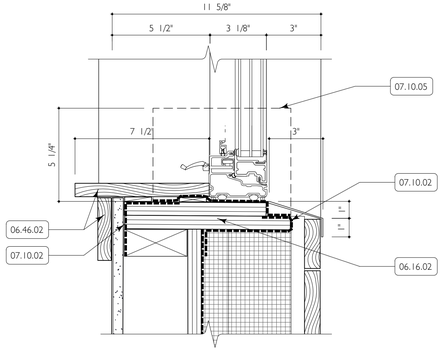
06.10.01	1x3 pressure treated lumber battens securely fastened to structural wall
06.10.03	2x pressure-treated wood blocking
06.16.02	Exterior-grade 3/4" CDX plywood blocking
06.16.03	Exterior-grade 5/8" CDX plywood sheathing
06.46.02	1 x 4 wood casing and trim, clear pine, satin polyurethane finish
07.10.01	PRO CLIMA Intello X: Variable-permiability mesh-reinforced "smart" membrane air barrier/weather barrier
07.10.02	TESCON Vana: Vapor-permeable sealing tape
07.10.05	PRO CLIMA EXTOSEAL Encors: flexible waterproof sill tape
07.20.03	1" ROXUL Comfortboard 80: rock wool dense batts, min R-4.2/in
07.20.05	Existing cavity insulation to remain
07.20.06	ROXUL CavityRock dual-density mineral wool boards with black facing, min R-4.2/in
07.46.01	1x10 pine siding to match existing, 1/8" gap typ
07.71.02	KYNAR painted aluminum drip edges and flashing
08.50.01	Fiberglass foam-filled windows w/ triple-pane IGU (refer to A-600 WINDOW SCHEDULE for specifications)
08.50.02	Existing windows to remain: seal to WRB membrane at top and sides, repair sealant inside and outside
09.29.01	5/8" interior GWB, painted

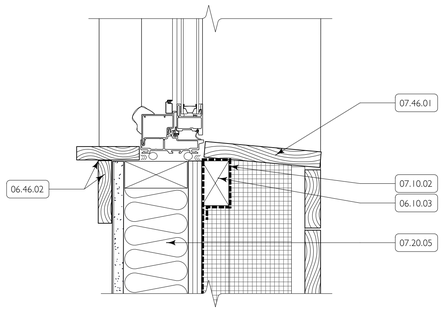


NEW WINDOW SECTION DETAIL
Scale: 3" = 1'-0" 1



EXISTING WINDOW SECTION DETAIL
Scale: 3" = 1'-0" 5





BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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Essex NY 12936

A-520

EXTERIOR DETAILS

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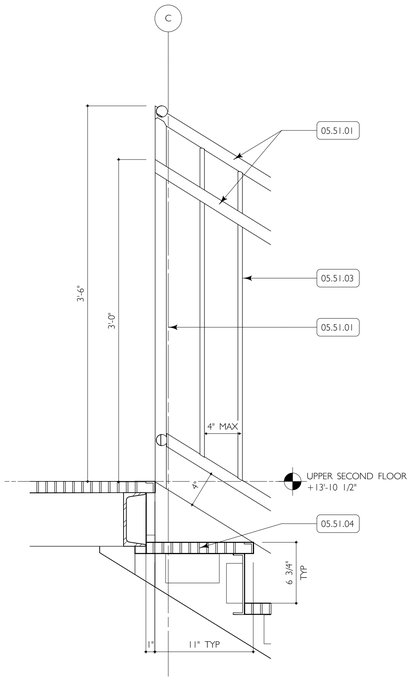
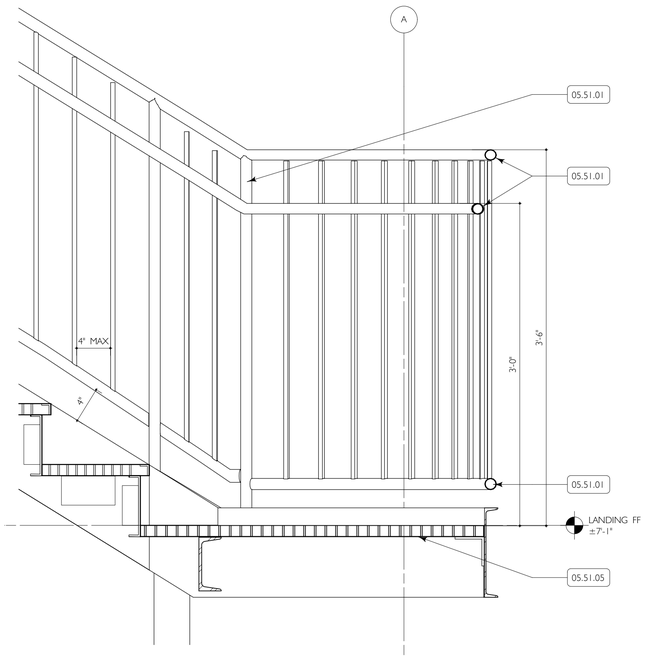
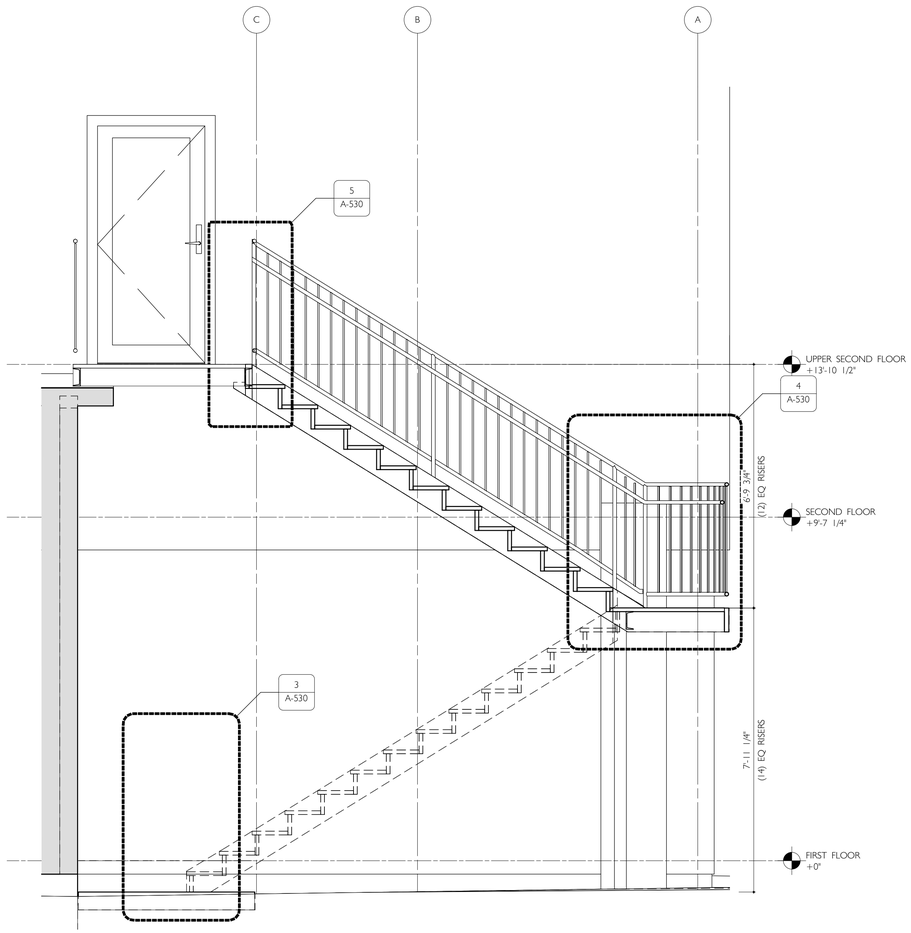


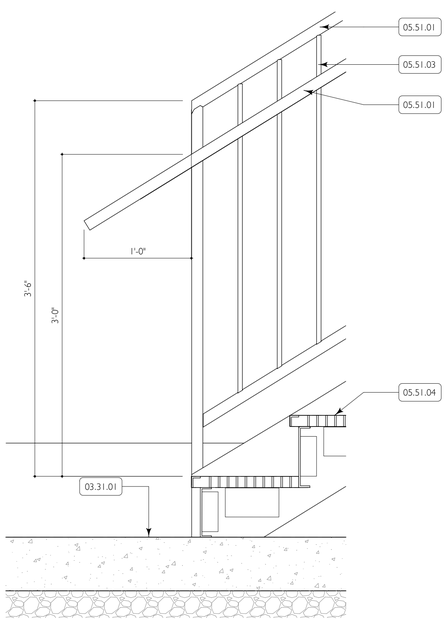
STAIR RAILING @ UPPER SECOND FLOOR
Scale: 1 1/2" = 1'-0" 5



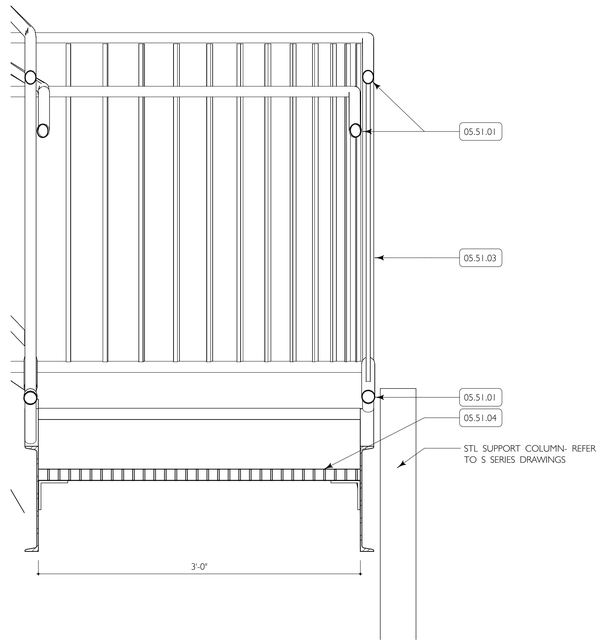
STAIR RAILING DETAIL @ LANDING
Scale: 1 1/2" = 1'-0" 4



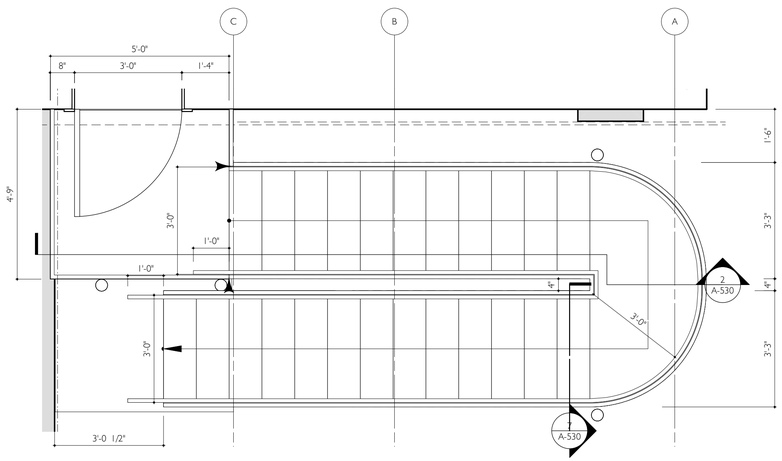
NORTH STAIR SECTION
Scale: 1/2" = 1'-0" 2



STAIR RAILING DETAIL @ BOTTOM
Scale: 1 1/2" = 1'-0" 3



STAIR TYPICAL SECTION DETAIL
Scale: 1 1/2" = 1'-0" 7



NORTH STAIR ENLARGED PLAN @ UPPER SECOND FLOOR
Scale: 1/2" = 1'-0" 1

KEYNOTES

03.31.01	6" cast-in-place concrete slab, broom finish (see S series drawings)
05.51.01	1 1/4" ID Schedule 40 galvanized steel pipe railing
05.51.03	1/2"x1/2" galvanized steel pickets
05.51.04	MCNICHOLS Standard-duty galvanized welded bar grating stair tread
05.51.05	MCNICHOLS Standard-duty galvanized welded bar grating

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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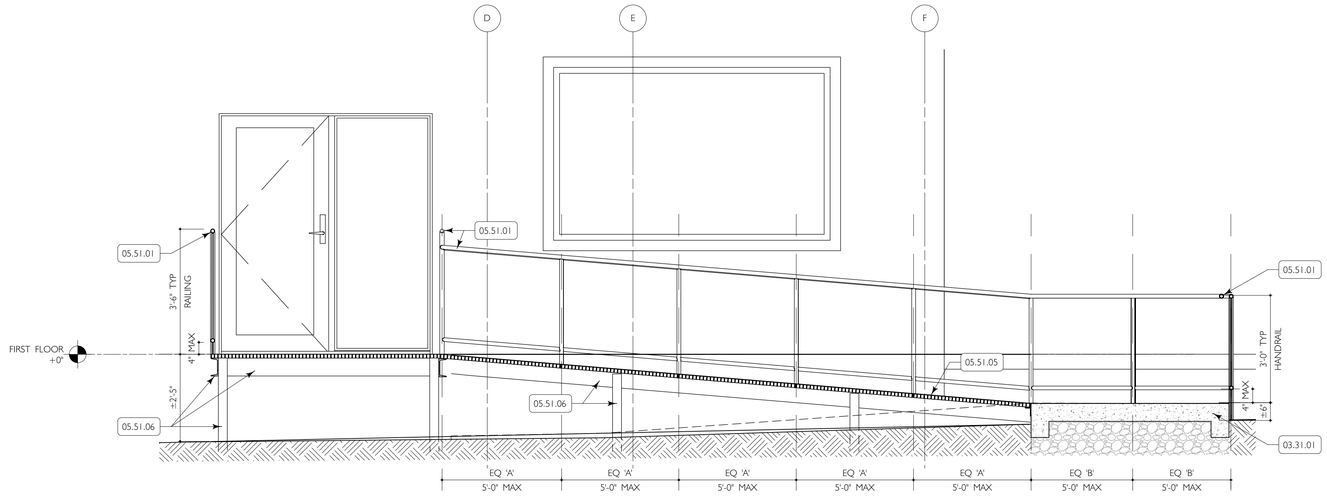
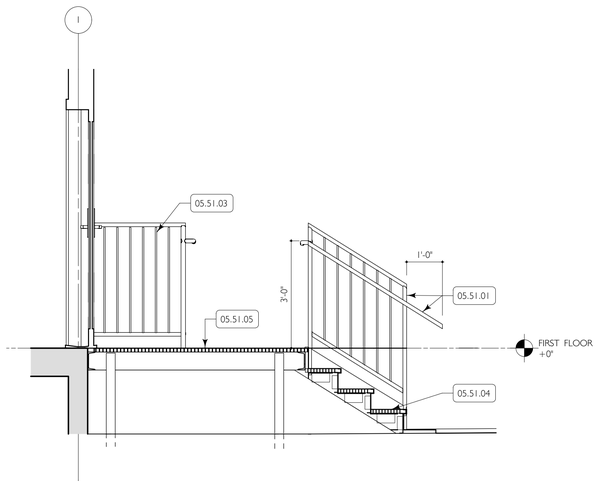
A-530

EXTERIOR STAIR DETAILS

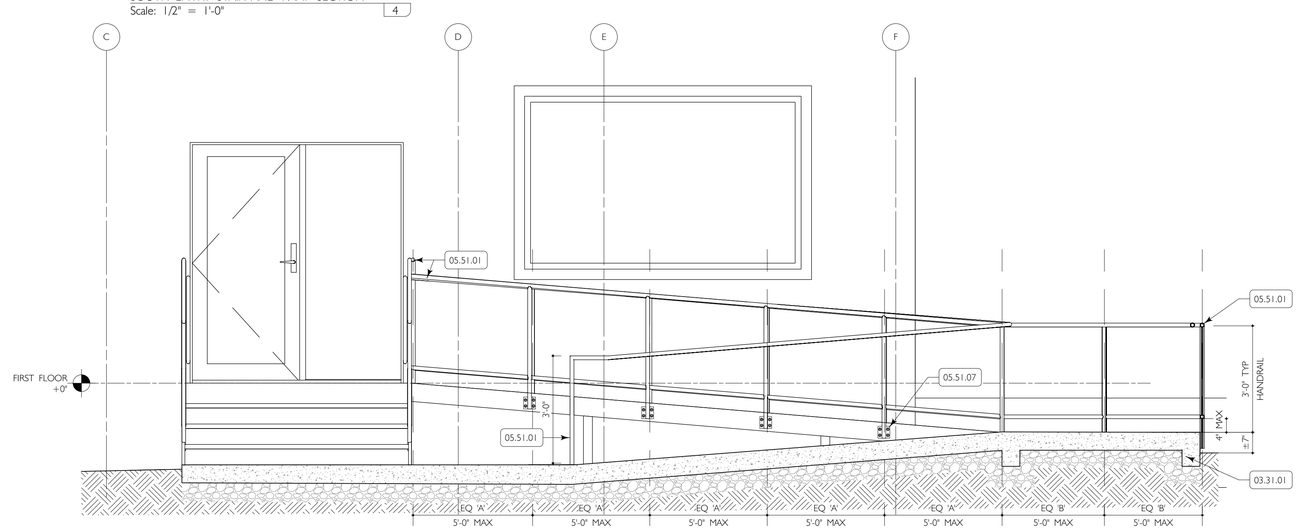
SEAL | SIGNATURE:



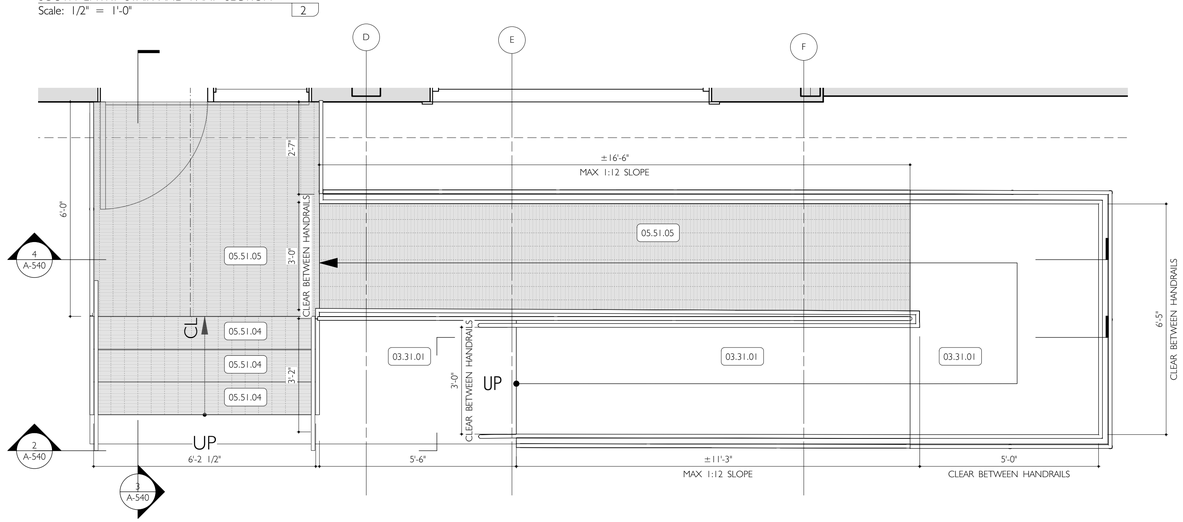
SOUTH ENTRY STAIR AND RAMP SECTION
Scale: 1/2" = 1'-0" 4



SOUTH ENTRY STAIR SECTION
Scale: 1/2" = 1'-0" 3



SOUTH ENTRY STAIR AND RAMP SECTION
Scale: 1/2" = 1'-0" 2



SOUTH ENTRY STAIR AND RAMP ENLARGED PLAN
Scale: 1/2" = 1'-0" 1

KEYNOTES

03.31.01	6" cast-in-place concrete slab, broom finish (see S series drawings)
05.51.01	1 1/4" ID Schedule 40 galvanized steel pipe railing
05.51.03	1/2"x1/2" galvanized steel pickets
05.51.04	MCNICHOLS Standard-duty galvanized welded bar grating stair tread
05.51.05	MCNICHOLS Standard-duty galvanized welded bar grating
05.51.06	Galvanized structural steel member
05.51.07	Galvanized steel bolt-on side-mount flange
	N/A
	N/A

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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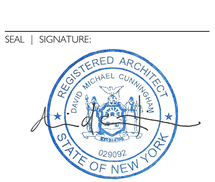
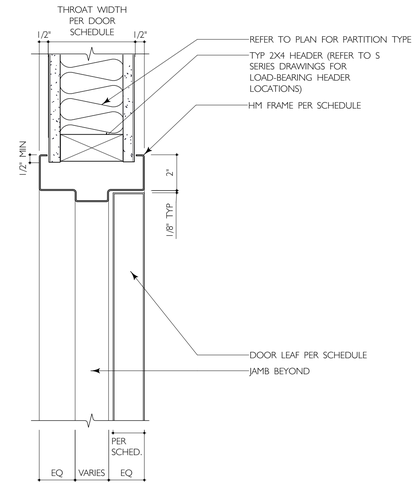
BARN
82 Loukes Lane
Essex NY 12936

A-540

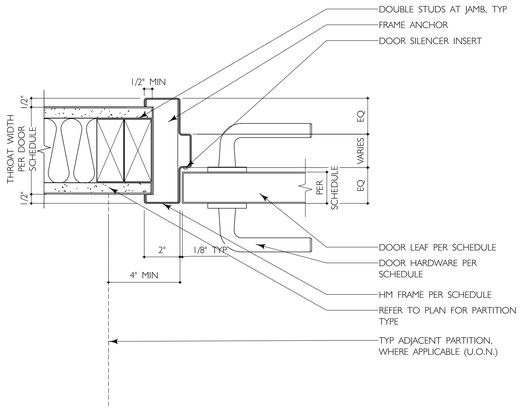
EXTERIOR STAIR DETAILS

SEAL | SIGNATURE:

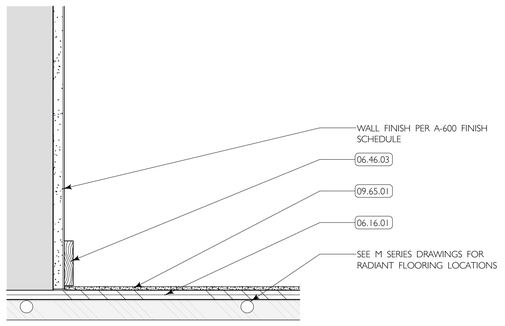




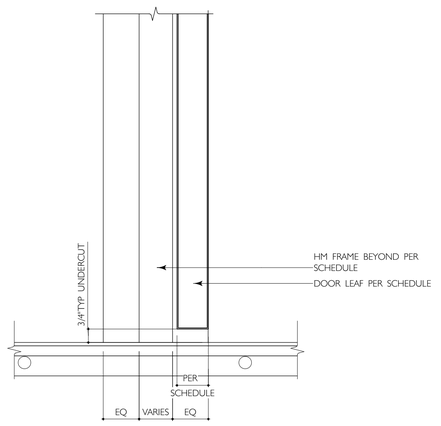
TYPICAL DOOR HEAD DETAIL
Scale: 3" = 1'-0" 3



TYPICAL DOOR JAMB DETAIL
Scale: 3" = 1'-0" 2



TYPICAL BASE DETAIL
Scale: 3" = 1'-0" 4



TYPICAL DOOR THRESHOLD
Scale: 3" = 1'-0" 1

KEYNOTES
06.16.01 1/2" plywood floor underlayment
06.46.03 1/2"x2 1/2" clear pine base, poly finish (refer to A-550 for Casing Details)
09.65.01 MARMOLEUM linoleum flooring

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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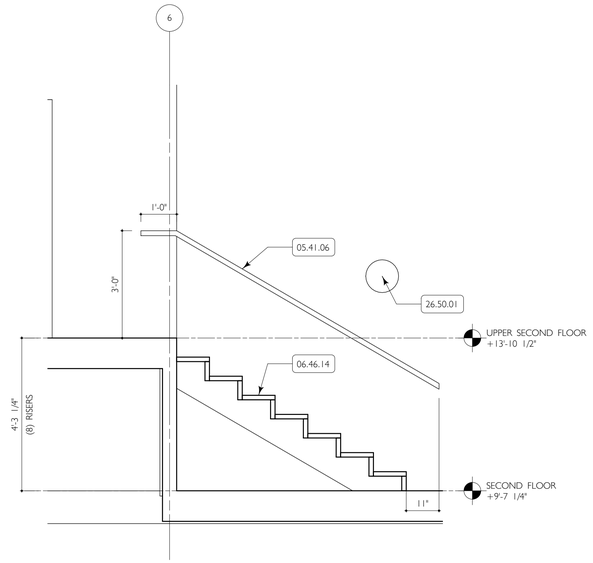
A-550

TYPICAL INTERIOR DETAILS

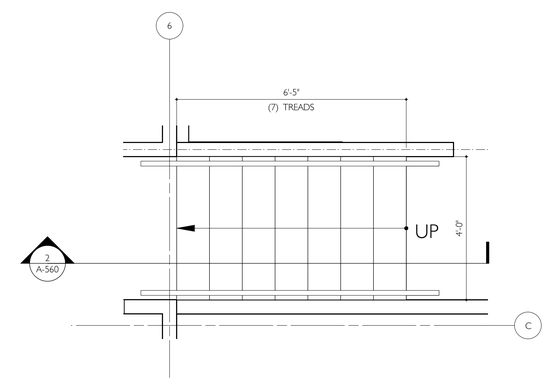
SEAL | SIGNATURE:

KEYNOTES

05.41.06	1 1/4" ID Schedule 40 welded pipe railing
06.46.14	Clear pine stair, clear polyurethane finish
26.50.01	Light fixture- refer to A-900 Reflected Ceiling Plan for details and location



SECOND FLOOR STAIR SECTION
Scale: 1/2" = 1'-0" 2



SECOND FLOOR STAIR PLAN
Scale: 1/2" = 1'-0" 1

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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INTERIOR STAIR DETAILS

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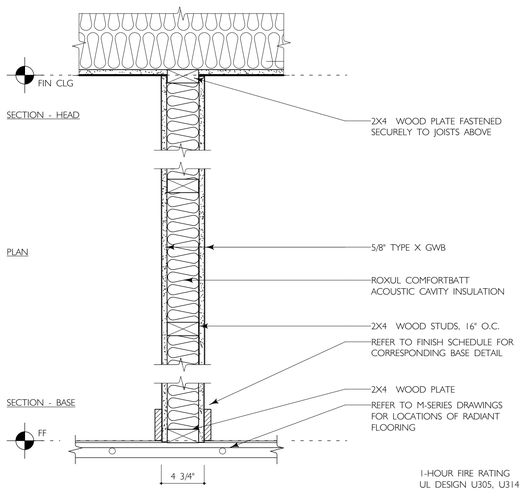
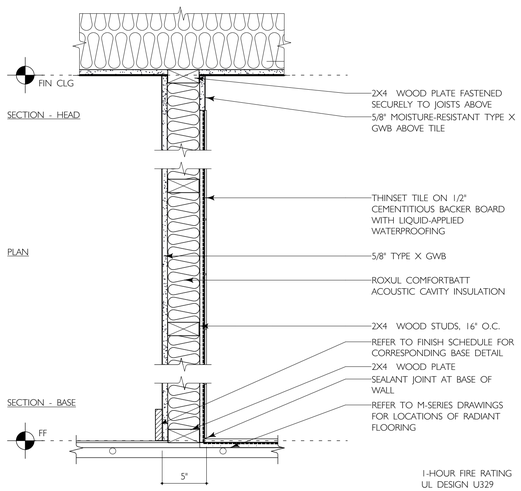
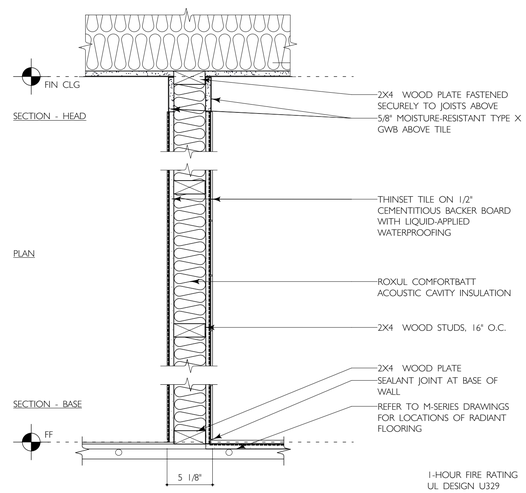


PARTION TYPE B.0: 1-HOUR RATED GWB
Scale: 1 1/2" = 1'-0" B.0



PARTITION TYPE B.2: 1-HOUR RATED TILE ONE SIDE
Scale: 1 1/2" = 1'-0" B.2



PARTITION TYPE B.3: 1-HOUR RATED TILE TWO SIDES
Scale: 1 1/2" = 1'-0" 1

DOOR SCHEDULE

ID	W	H	T	MAT	FRAME	LEAF	HW	MANUFACTURER	ACCESSORIES
100	3'0"	6'8"	1 3/4"	Fiberglass	Fiberglass	FG	1	Fibertec	Max U-value 0.3
108	3'0"	6'8"	1 3/4"	HM	HM	F	2	N/A	
110	2'8"	6'8"	1 3/4"	HM	HM	F	2	N/A	
200	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
201	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
202	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
203	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
204	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
205	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
206	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
207	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
208	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
209	2'8"	6'8"	1 3/4"	HM	HM	F	7	N/A	
211	3'0"	6'8"	1 3/4"	HM	HM	F	7	N/A	
212	3'0"	6'8"	1 3/4"	HM	HM	F	7	N/A	
213	3'0"	6'8"	1 3/4"				DHW-#		
214	3'0"	6'8"	1 3/4"						
217	3'0"	6'8"	1 3/4"	HM	HM	F	7	N/A	
220	3'0"	6'8"	1 3/4"	Fiberglass	Fiberglass	FG	1	Fibertec	Max U-value 0.3
300	3'0"	6'8"	1 3/4"	HM	HM	F	3	N/A	

HARDWARE REFERENCE

ID	TYPE	HINGES	FUNCTION	MANUFACTURER	ACCESSORIES
1	Multipoint Entry Lockset	3	Entry	Fibertec	Satin Chrome
2	Tubular latchse	3	Privacy	Omnia	912 lever Satin Chrome, half-dome floor stop
6	Tubular latchse	3	Passage	Omnia	912 lever Satin Chrome, half-dome floor stop
7	Tubular latchse	3	Dormitory	Omnia	912 lever Satin Chrome, half-dome floor stop, spring hinges
8	Tubular latchse	3	Storeroom	Omnia	912 lever Satin Chrome, spring hinges

WINDOW SCHEDULE

ID	W	H	CONFIG	HEAD	JAMB	SILL	MFR	MODEL	GLAZING	ACCESSORIES
W- 200	3'0"	5'0"	Casement	A-520/1	-	A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 201	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 202	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 203	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 204	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 205	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 206	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 207	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 208	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 209	3'0"	5'0"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 210	2'10"	4'5"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 211	2'10"	4'5"	Casement	A-520/1		A-520/1	FIBERTEC	300 SERIES	U-0.17 Triple-glazed 3 mm(1 5/16")TRI.2XSC.SS.ARG.CL.Ann.	Black finish, black hardware
W- 400	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 401	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 402	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 403	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 404	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 405	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 409	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 407	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 406	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb
W- 408	2'6 1/2"	2'6 1/2"	Fixed Unit Skylight				ARTISTIC	T-C 36	Max U-0.55 Triple-glazed acrylic	Aluminum frame and prefabricated insulated curb

NOTE: ALL SIZES INDICATE SIZE OF SASH OPENING (WINDOWS) OR CLEAR OPENING(SKYLIGHTS

ROOM FINISH SCHEDULE

ROOM	NAME	NET AREA	FLOOR	BASE	CEILING	N WALL	E WALL	S WALL	W WALL
108	TOILET	44 sq ft	09.65.01	06.46.03	09.29.02	09.29.02	09.29.02	09.29.02	09.29.02
200	SINGLE	121 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
201	SINGLE	119 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
202	SINGLE	153 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
203	SINGLE	137 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
204	SINGLE	137 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
205	SINGLE	91 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
206	SINGLE	89 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
207	SINGLE	115 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
208	SINGLE	113 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
209	SINGLE	92 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
210	CORRIDOR	168 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
211	SINGLE	84 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
212	SINGLE	90 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
213	SINGLE	135 sq ft	EXG	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
214	SINGLE	136 sq ft	EXG	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
215	TOILET	288 sq ft	09.30.01	NONE	09.29.02	09.30.02	09.30.02	09.30.02	09.30.02
216	COMMON	431 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
217	DOUBLE	185 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
218	TOILET	313 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
219	DOUBLE	250 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
300	STORAGE	909 sq ft	EXG	NONE	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
301	LOFT	30 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
302	LOFT	29 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
303	LOFT	38 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
304	LOFT	33 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01
305	LOFT	33 sq ft	09.65.01	06.46.03	09.29.01	09.29.01	09.29.01	09.29.01	09.29.01

FINISH REFERENCE

FLOOR
[09.30.01] DALTILE 2" HEXAGON FLOOR TILE
[09.65.01] MARMOLEUM LINOLEUM
[EXG] EXISTING TO REMAIN

WALL BASE
[06.46.03] 1/2"X3.5" CLEAR PINE BAS
[NONE]

CEILING
[09.29.01] PAINTED GWB
[09.29.02] PAINTED MOISTURE-RESISTANT GWB

WALL
[09.29.01] PAINTED GWB
[09.29.02] PTD WATER-RESISTANT GWB, LEVEL '5' FINISH
[09.30.02] DALTILE COLORWHEEL 2X8 CERAMIC WALL TIL

FURNITURE SCHEDULE

TYPE	DESCRIPTION	SIZE	FINISH	MANUFACTURER	MODEL #	ACCESSORIES
10.51.01	Double Tier Ventilated Metal Lockers	5"W x 18"D x 36"H	spray green	schoollockers.com	6215187ZQS3VPP, P701	
12.58.01	Bed Frame - Twin XL	36"W x 80"D	rubberwood, steel	Ecologic: Academy	40-43680	Headboard and Footboard, Steel Tubular Platform
12.58.02	Mattress - Twin XL	36"W x 80"L x 8"H	nylon	Ecologic	99-VF-IS-3680	
12.58.05	Wardrobe	36"W x 24"D x 72"H	Rubberwood, steel	Ecologic	40-83462/2318	(3) drawers, (3) cubbies, hanging space
12.58.06	Desk	42"W x 24"D x 30"H	rubberwood, steel	Ecologic	40-1042	
12.58.10	Dining Table	60"W x 36"D x 30"H	oak	Savoy	5090	
12.58.11	Desk chair	19" x 22" x 33"	oak	Savoy	917WSB	
12.58.12	80 degree fixed ships ladder	drawings	oak, black painted steel handrails			
12.58.16	Maple Bench with Trapezoid Legs	12'-0"L	maple, aluminum	Hallowell	MBT4820	

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	WATTS	COLOR	LAMP	MANUFACTURER	MODEL #	ACCESSORIES
EX-1	Recessed 8" NYC-approved exit light with battery backup	5	RED	LED	THE EXIT LIGHT CO	NYCELSM-RM	Supply integral battery backup
LT-1		32		Fluorescent	LEGION	Series 1500 Mini-Strip	None
LT-4	Recessed 4" diameter downlight with a clear Alzak cone and white overlap trim	11.6	3000k	LED	JUNO	IC1LED-G4-09LM-30K-90CRI-DRIVER	
LT-7	Surface interior wet-location 11"-diameter lensed LED light fixture with a white-painted metal trim.	20	3000k	LED	MAXIM	57664-WT	
LT-10	Surface interior wet-location 7"-diameter lensed LED light fixture with a white-painted metal trim.	15	3000K	LED	MAXIM	57662-WT	
LT-11	Surface interior wet-location 5"-diameter lensed LED light fixture with a white-painted metal trim.	12.5	3000K	LED	MAXIM	57660-WT	

PLUMBING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL #	ACCESSORIES
12.36.03	Stainless steel countertop with integrated linear sink on stainless steel legs			
22.41.07	ADA composite shower base with integral drain and tile flanges three sides	American Standard	A8009D-FCO White	
10.20.01	Toilet partition	Metpar	Dur-A-Tex Dorian Max FT700M	750 finish
22.41.11	ADA tank-type toilet	American Standard	2988.101 White	
22.41.15	ADA compliant water fountain	HAWS	1109 MP	mounting plate
22.41.16	Composite shower base with integral drain and tile flanges three sides	American Standard	A8004L-CO.020 White	

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

ISSUES:

#	DATE	DESCRIPTION
A	4/26/2023	ISSUE FOR PERMITTING

REVISIONS:

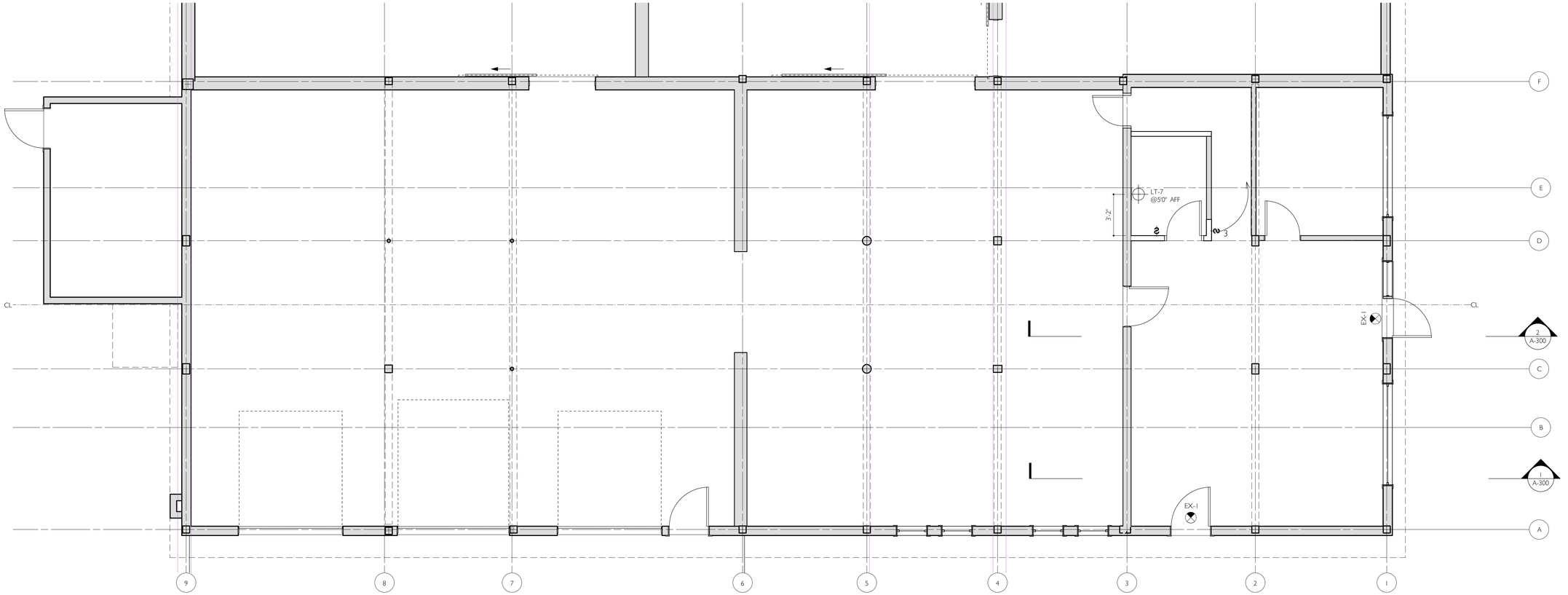
#	DATE	DESCRIPTION

ESSEX COUNTY FARMWORKER HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

A-600

SCHEDULES

SEAL | SIGNATURE:



PROPOSED FIRST FLOOR PLAN
Scale: 1/4" = 1'-0" 1

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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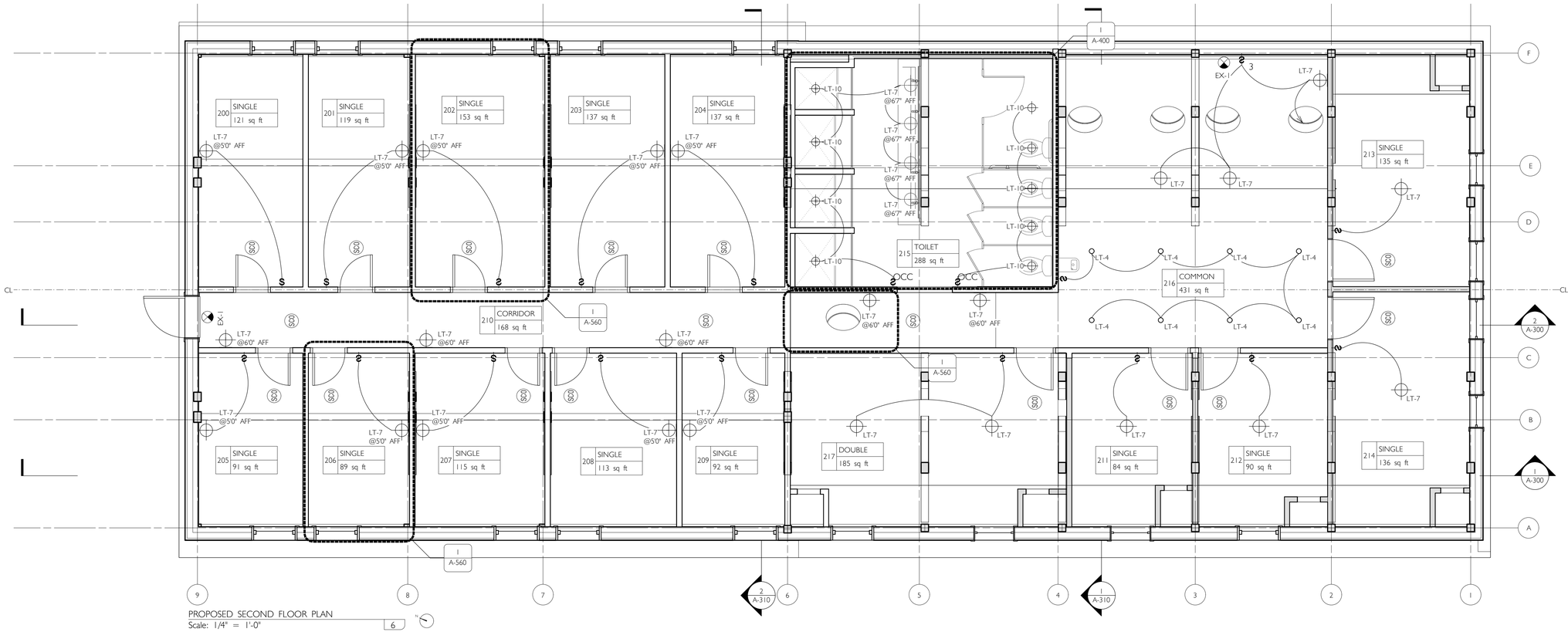
ESSEX COUNTY FARMWORKER HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

A-710

FIRST FLOOR REFLECTED CEILING PLAN

SEAL | SIGNATURE:



PROPOSED SECOND FLOOR PLAN
Scale: 1/4" = 1'-0"

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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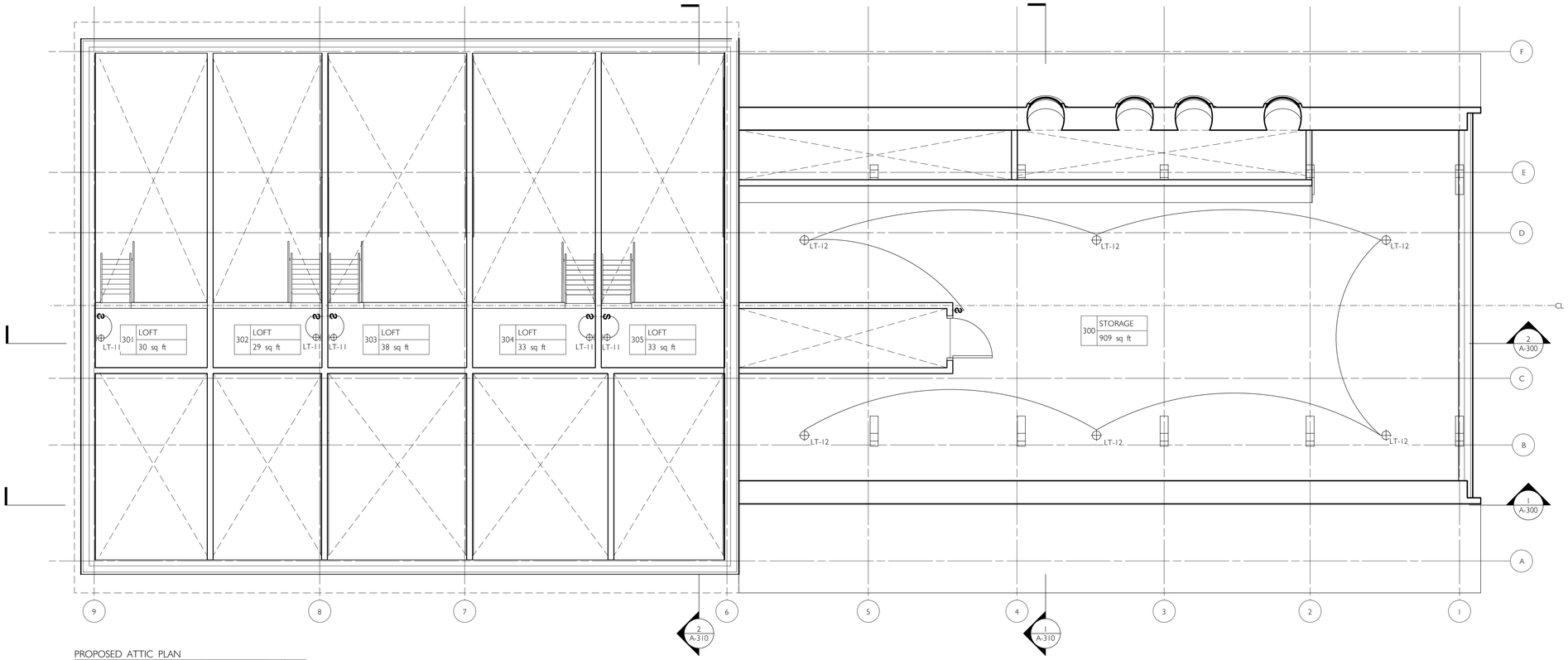
ESSEX COUNTY FARMWORKER HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

A-720

SECOND FLOOR REFLECTED CEILING PLAN

SEAL | SIGNATURE:



PROPOSED ATTIC PLAN
Scale: 1/4" = 1'-0"

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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ESSEX COUNTY FARMWORKER HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

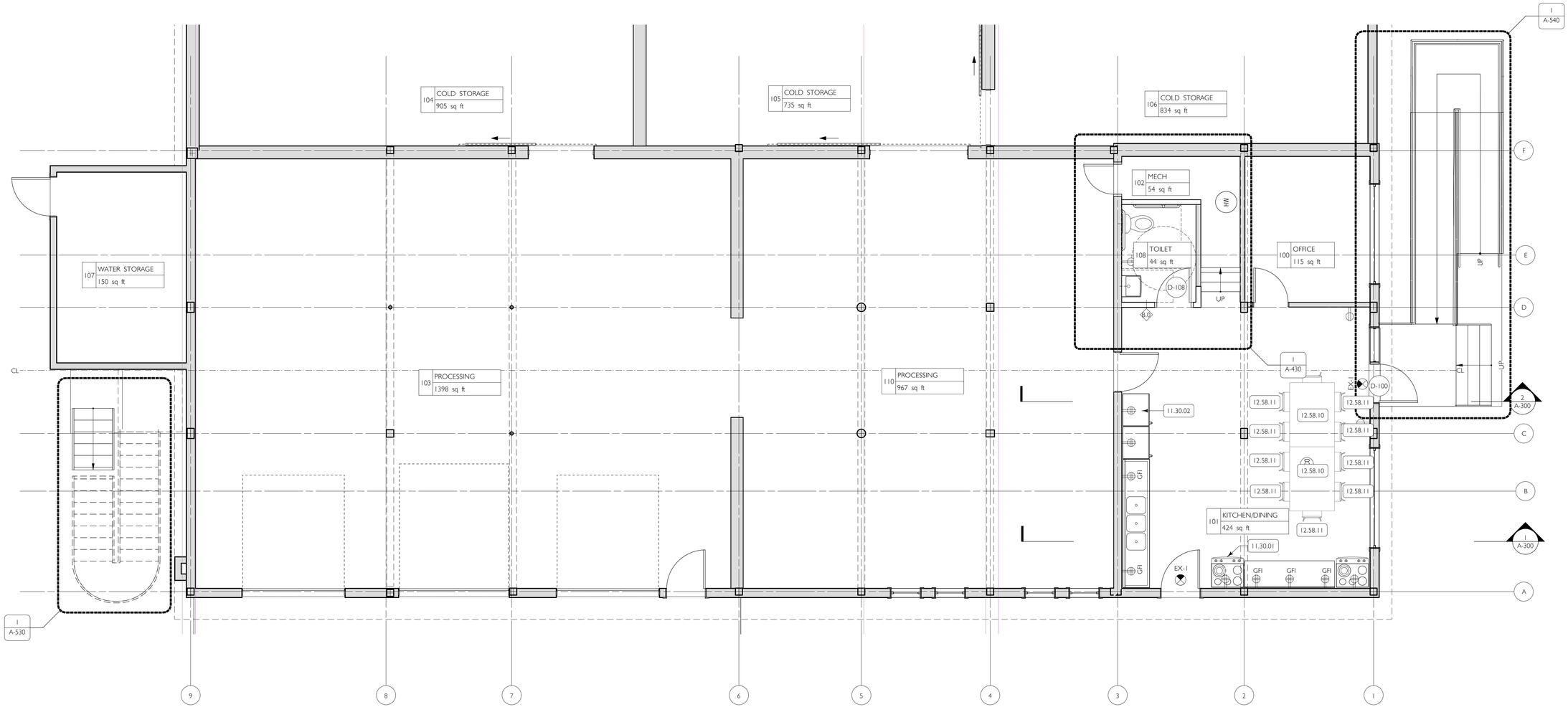
A-730

ATTIC REFLECTED CEILING PLAN

SEAL | SIGNATURE:

KEYNOTES

12.58.10	Dining table (see A-600 Furniture Schedule for details)
12.58.11	Desk chair (see A-600 Furniture Schedule for details)
11.30.01	GE PHS930YPFS slide-in induction range, stainless steel
11.30.02	GE GTE19JSNRSS stainless steel refrigerator



PROPOSED FIRST FLOOR PLAN
Scale: 1/4" = 1'-0"

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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ESSEX COUNTY FARMWORKER HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

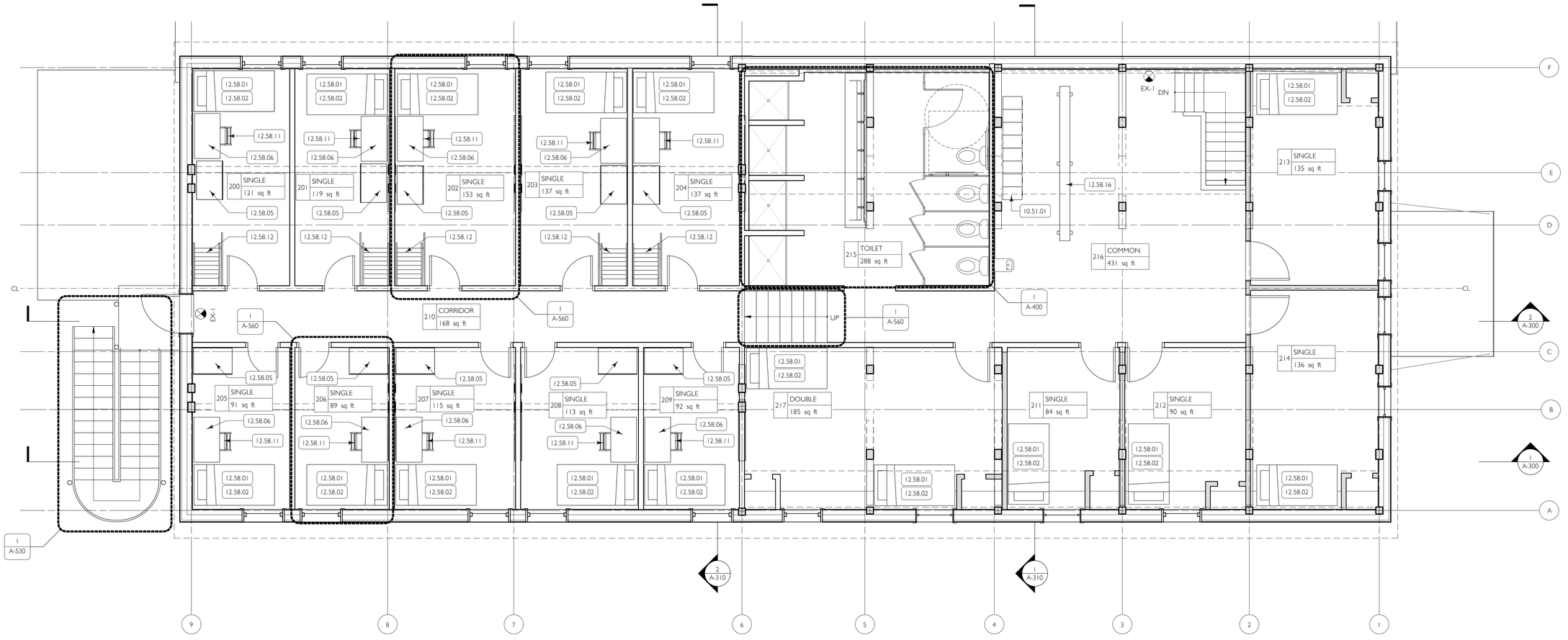
A-810

FIRST FLOOR FURNITURE PLAN

SEAL | SIGNATURE:

KEYNOTES

10.51.01	Double-tier lockers (see A-600 Furniture Schedule for details)
12.58.01	Twin XL bed frame (see A-600 Furniture Schedule for details)
12.58.02	Twin XL Mattress (see A-600 Furniture Schedule for details)
12.58.05	Wardrobe (see A-600 Furniture Schedule for details)
12.58.06	Desk (see A-600 Furniture Schedule for details)
12.58.16	Maple bench (see A-600 Furniture Schedule for details)
12.58.11	Desk chair (see A-600 Furniture Schedule for details)
12.58.12	Oak 80-degree ship's ladder with black painted steel railings, clear polyurethane finish (see A-600 Furniture Schedule for details)



SECOND FLOOR FURNITURE PLAN
Scale: 1/4" = 1'-0"

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

ISSUES:

#	DATE	DESCRIPTION
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REVISIONS:

#	DATE	DESCRIPTION

ESSEX COUNTY FARMWORKER
HOUSING RENOVATION
BARN
82 Loukes Lane
Essex NY 12936

A-820

SECOND FLOOR
FURNITURE PLAN

SEAL | SIGNATURE:

REGISTERED ARCHITECT
DAVID MICHAEL CUNNINGHAM
029092
STATE OF NEW YORK

Essex County Farmworker Housing Renovation

BARN

DRAWING LIST:

T-001 TITLE SHEET & NOTES
DM-101 FIRST FLOOR DEMOLITION PLAN
DM-102 SECOND FLOOR DEMOLITION PLAN
DM-103 ATTIC DEMOLITION PLAN
DM-104 ROOF DEMOLITION PLAN
S-101 FIRST FLOOR PLAN
S-102 SECOND FLOOR FRAMING PLAN
S-103 ATTIC FRAMING PLAN
S-104 ROOF FRAMING PLAN
S-201 PROPOSED SECTION
S-301 TYPICAL DETAILS

SCOPE OF WORK

1. Install new footings for new steel frame in north portion of barn.
2. Install new steel braced frame in north portion of barn.
3. Resupport second-floor joists in north portion of barn on new frame.
4. Reinforce second-floor joists in south portion of barn.
5. Extend wall above second floor in the north portion of the barn.
6. Construct new roof in the north portion of the barn.
7. Reinforce roof rafters in the south portion of barn.
8. Install new steel egress stair on north side of barn.

STATEMENTS

1. The construction documents herein comply with the 2020 Building Code of New York State.

Gravity Load Schedule		
	Floor Level	
Material	1st, 2nd, Attic	Roof
Wood Framing	8 Psf	5 Psf
Wood Sheathing	3 Psf	3 Psf
Floor Finish	4 Psf	-
Roofing	-	2 Psf
Hung Ceiling	10 Psf	-
Dead Load Total	25 Psf	10 Psf
Live Load	40 Psf	-
Snow Load	-	38 Psf
Wind Load	21 Psf	12 Psf
Total Load	86 Psf	60 Psf

Loads and design comply with the provisions of the 2020 Building Code of New York State.

FRAMING LUMBER

1. All framing lumber shall conform to the following governing standards:
   A. American Institute of Timber Construction, "Timber Construction";
   B. National Forest Products Association, "National Design Specification for Wood Construction" latest edition.

2. Framing lumber shall be of the following minimum grade and species for the specified use. All lumber shall be grade-stamped by a recognized grading agency and shall be surface dry.

   Dimension Lumber
   Joists and rafters: Douglas Fir Larch #2
   Studs and plates: Douglas Fir Larch Stud Grade

   Heavy Timber
   Posts and timbers: Douglas Fir Larch #1
   Beams and stringers: Douglas Fir Larch #1

   Manufactured Wood Products
   Parallel-strand-lumber beams: Trus-Joist "Parallam" or approved equivalent.
   Joists: Trus-Joist "TJI" or approved equivalent.

3. Where framing lumber is flush-framed to Parallam, glulam, or steel girders, set the girders 1/4" clear below the top of lumber to allow for shrinkage.

4. Stud walls are to be 2x4 @ 16" o.c. at interior and 2x6 @ 16" o.c. at exterior.

5. All rafters and joists shall align directly with studs below. Install additional studs where required.

6. Use double studs at ends of walls and ends of wall openings.

7. Use double trimmers and headers at floor openings unless otherwise noted.

8. Lap all plates at corners and at intersections of partitions.

9. Unless otherwise noted, provide headers over all openings as follows:
   Interior walls: (2) 2x10s
   Exterior walls: (3) 2x10s

10. Unless otherwise noted, provide a built-up or solid post at the ends of all beams, headers, and girders. Post width shall be at least equal to the width of the member it supports and post depth is 4" at interior walls and 6" at exterior walls.

11. Provide cross-bridging or blocking at maximum 8'-0" o.c. for all joists. No joists shall be cut or notched without approval.

12. Blocking for floors or roofs framed with engineered wood products shall be timberstrand or equivalent framing member.

TIMBER CONNECTORS

1. Joist headers, cross-bridging, and connectors for wood construction shall be galvanized steel manufactured by United Steel Products, Simpson, or approved equivalent. Special nails supplied by manufacturer shall be used for required nailing.

2. Where joists are flush-framed to headers, use approved joist hangers or bridle irons.

3. All bolts shall be A307 grade. Steel plates at connections shall be 1/2" thick A36 steel grade, unless noted otherwise.

4. Hanger and bridging nailing schedule shall be as specified in Simpson strong tie connectors manual.

5. Unless otherwise noted, steel connectors such as those manufactured by Simpson company, shall be used to join rafters, trusses, joists, or beams to other members at flush-framed conditions. Hangers shall be of a size specifically designed for the member supported.

6. Unless otherwise noted, minimum plywood nailing requirements are:

Boundary	8d nails @ 4" on center
Panel edges	8d nails @ 6" on center
Intermediate supports	8d nails @ 12" on center

PLYWOOD

1. Plywood sheathing shall be APA grade stamped for the specified span, made with exterior glue, and be of the following thickness:

   Roof: 5/8" (ext. grade)
   Floors: 3/4"
   Walls: 1/2" (ext. grade if exterior wall)

2. Index stamp shall be visible on all sheets.

3. All plywood shall be glue-nailed to floor joists an elastomeric construction adhesive that conforms to APA specification AFG-01 or ASTM D3498 (B.F. Goodrich PL400 or approved equal).

4. Use plyclips or other edge support as required for plywood sheathing.

5. Leave 1/16" space at all plywood panel end joints and 1/8" space at all panel edge joints.

6. Floor sheathing shall be installed continuous over two or more spans with the long dimension across supports.

FOUNDATIONS

1. Building foundations shall bear on undisturbed soil having minimum bearing capacity of 4000 psf. Adequacy of bearing stratum shall be verified in field prior to placing concrete. Where the elevation of bottom of footings, walls, or piers must be lowered to achieve proper bearing values, the affected walls or piers shall be extended as required or as indicated on the drawings or footing thicknesses may be increased as required.

2. Do not place backfill against basement walls until all floors bracing these walls are in place and have attained their 28-day strength unless proper temporary bracing has been installed in a manner approved by the architect. Bracing shall conform to the requirements of General Note 2.

3. All exterior footings shall be placed a minimum of 4'-0" below final grade.

CONCRETE

1. All concrete work shall conform to the ACI "Building Code Requirements for Reinforced Concrete" (ACI 318), latest edition.

2. All concrete, unless otherwise noted, shall be normal-weight concrete with a minimum ultimate compressive strength of 4000 psi at 28 days.

3. Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60. Reinforcing steel shall be detailed according to the ACI "Manual of Standard Practice" (ACI 315), latest edition.

4. Welded wire fabric (WWF) shall conform to ASTM A185, with a minimum ultimate tensile strength of 70,000 psi.

5. Provide minimum temperature reinforcing, as required by ACI 318, in all slabs and walls where reinforcement is not indicated on drawings.

6. Coordinate locations and dimensions of all openings inserts, weld plates, pipe sleeves, curbs, and other items to be embedded in concrete with architectural and mechanical drawings. Minimum concrete between sleeves shall be 6".

7. Contractor shall submit concrete design mixes to structural engineer for review and approval.

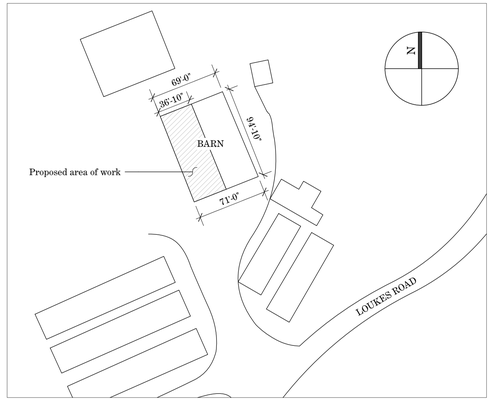
8. All concrete shall be placed monolithically unless otherwise noted.

9. If reinforcement bars are required to be spliced, the splice length shall comply with applicable sections of the ACI 318 for tension splices and development lengths. The location and length of the splices shall be shown on shop drawings submitted to the engineer for review.

10. All grout shall be non-shrink with a minimum compressive strength of 5000 psi.

11. Provide clearance from face of concrete to reinforcement as follows:
    Slabs and interior walls: 3/4"
    Footings and concrete cast against earth: 3"
    Exposed exterior walls: 2" for #6 bars and larger, 1-1/2" for #5 bars or smaller
    Beams: 1-1/2"

BUILDING KEY PLAN
N.T.S.



BARN

STRUCTURAL ENGINEER
Old Structures Engineering, PC
90 Broad Street
15th Floor
New York, NY 10004
tel: 212-244-4546

ARCHITECTS
david cunningham architecture
543 Union Street
Suite 1 C
Brooklyn NY 11215
tel: 718-208-0815

ASSOCIATE ARCHITECTS
Civic Architecture Workshop PLLC
543 Union Street
Suite 1 C
Brooklyn NY 11215
tel: 917-501-7337

CLIENT
Essex County
7551 Court Street
PO Box 217
Elizabethtown, NY 12932
tel: 518-873-3895

MECHANICAL ENGINEER
EP Engineering
110 William Street
32nd Floor
New York, NY 10038
tel: 212-257-6190

Revisions

No.	Date	Description
00	04/07/2023	Preliminary Bid Set
01	05/12/2023	Revised Bid Set

Professional's Seal

[Marie Ennis, P.E.]

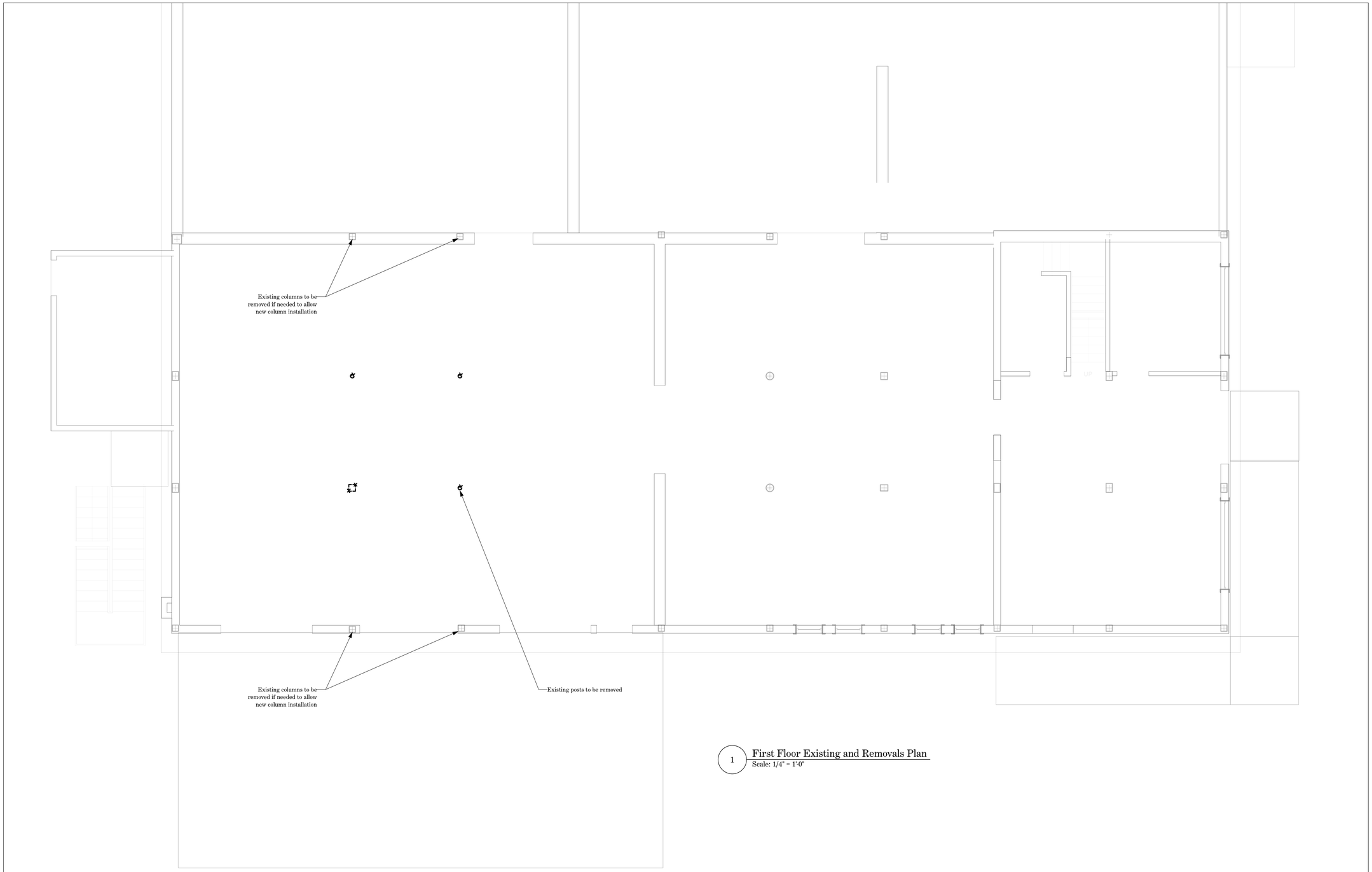
Essex County Farmworker Housing Renovation

Barn
82 Loukes Road
Westport, NY 12993

Title Sheet & General Notes

Scale: No Scale
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.
T-001.00
Sheet 01 of 11



1 First Floor Existing and Removals Plan
Scale: 1/4" = 1'-0"

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STRUCTURAL ENGINEER

Old Structures Engineering, PC

90 Broad Street
15th Floor
New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

tel: 718-208-0815

ASSOCIATE ARCHITECTS

Civic Architecture Workshop PLLC

543 Union Street
Suite 1 C
Brooklyn NY 11215

tel: 917-501-7337

CLIENT

Essex County

7551 Court Street
PO Box 217
Elizabethtown, NY 12932

tel: 518-873-3895

MECHANICAL ENGINEER

EP Engineering

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32nd Floor
New York, NY 10038

tel: 212-257-6190

Revisions

No.	Date	Description
00	04/07/2023	Preliminary Bid Set
01	05/12/2023	Revised Bid Set

Professional's Seal

STATE OF NEW YORK
MARIE THERESA ENNIS
No. 089162-1
LICENSED PROFESSIONAL ENGINEER

[Marie Ennis, P.E.]

Essex County Farmworker Housing Renovation

Barn
82 Loukes Road
Westport, NY 12993

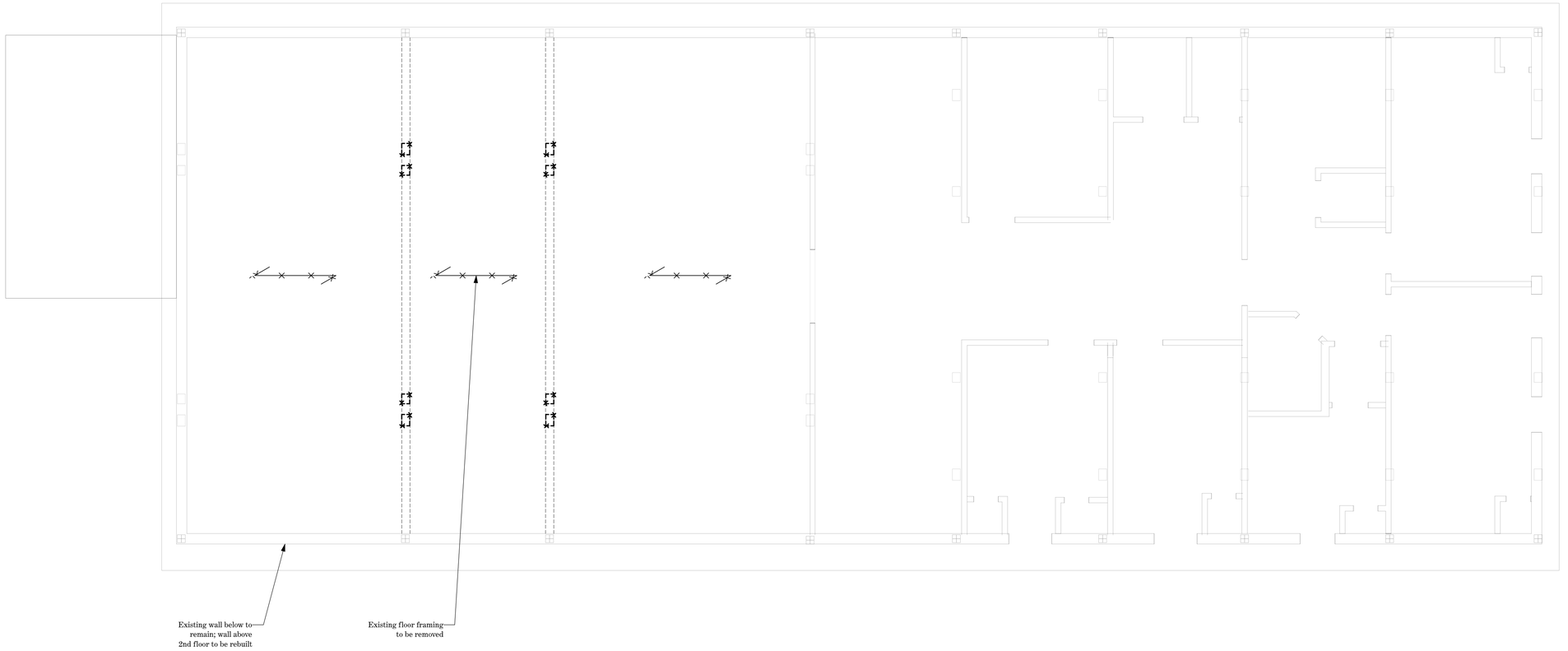
First Floor Existing and Removal Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

DM-101.00

Sheet 02 of 11



1 Second Floor Existing and Removals Plans
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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Old Structures Engineering, PC

90 Broad Street
15th Floor
New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

tel: 718-208-0815

ASSOCIATE ARCHITECTS

Civic Architecture Workshop PLLC

543 Union Street
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Brooklyn NY 11215

tel: 917-501-7337

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[Marie Ennis, P.E.]

Essex County Farmworker Housing Renovation

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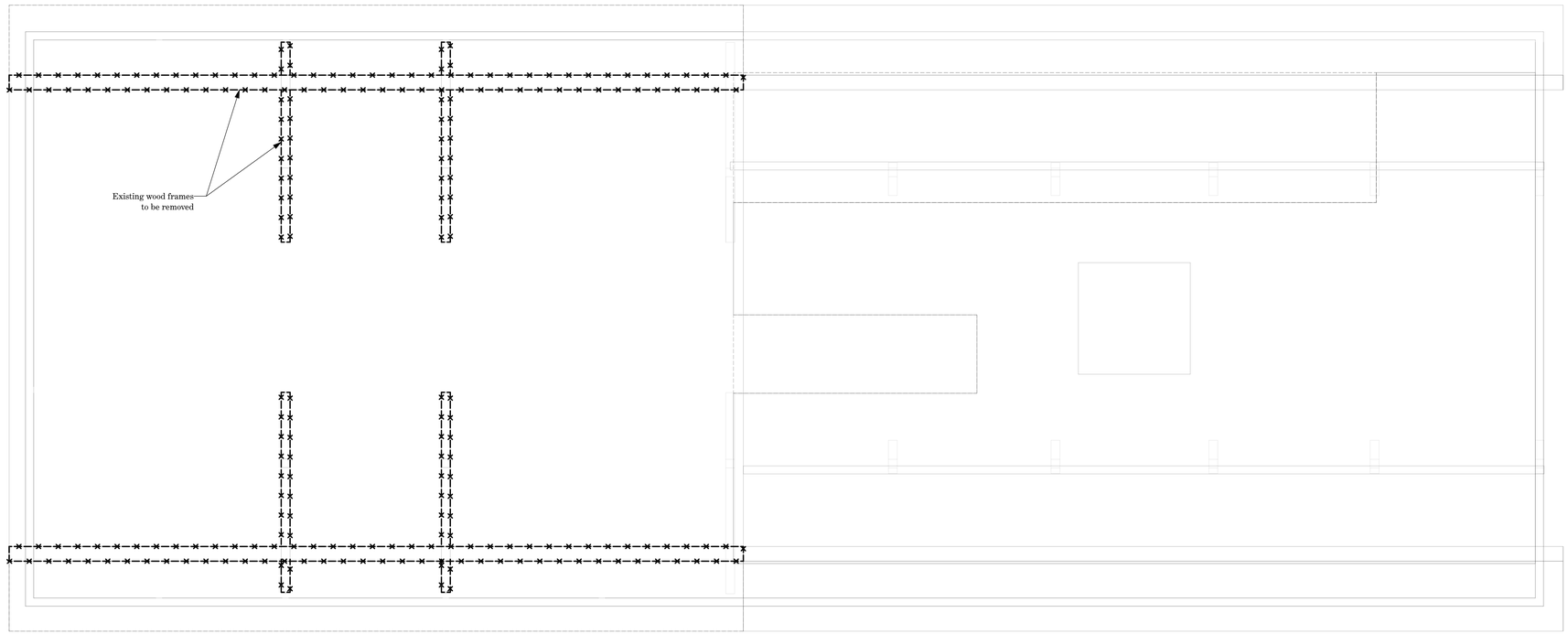
82 Loukes Road
Westport, NY 12993

Second Floor Existing and Removal Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

DM-102.00



1 Attic Existing and Removals Plans
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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Old Structures Engineering, PC

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15th Floor
New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

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Brooklyn NY 11215

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Civic Architecture Workshop PLLC

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Essex County Farmworker Housing Renovation

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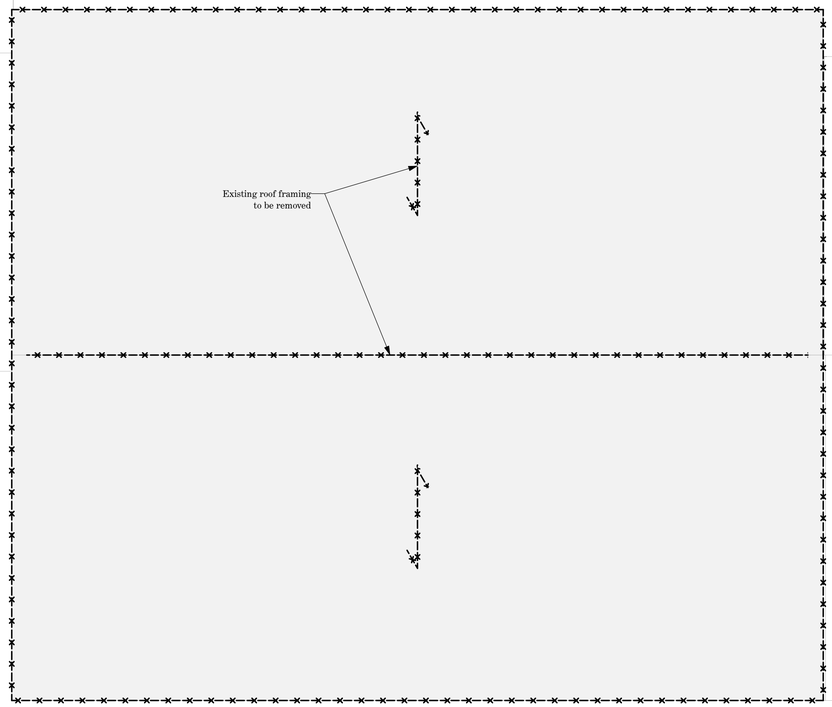
Attic Existing and Removal Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

DM-103.00



1 Demolition Roof Plan
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

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Suite 1 C
Brooklyn NY 11215

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Elizabethtown, NY 12932

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Professional's Seal

STATE OF NEW YORK
MARIE THERESA ENNIS
No. 091622
LICENSED PROFESSIONAL ENGINEER

[Marie Ennis, P.E.]

Essex County Farmworker Housing Renovation

Barn
82 Loukes Road
Westport, NY 12993

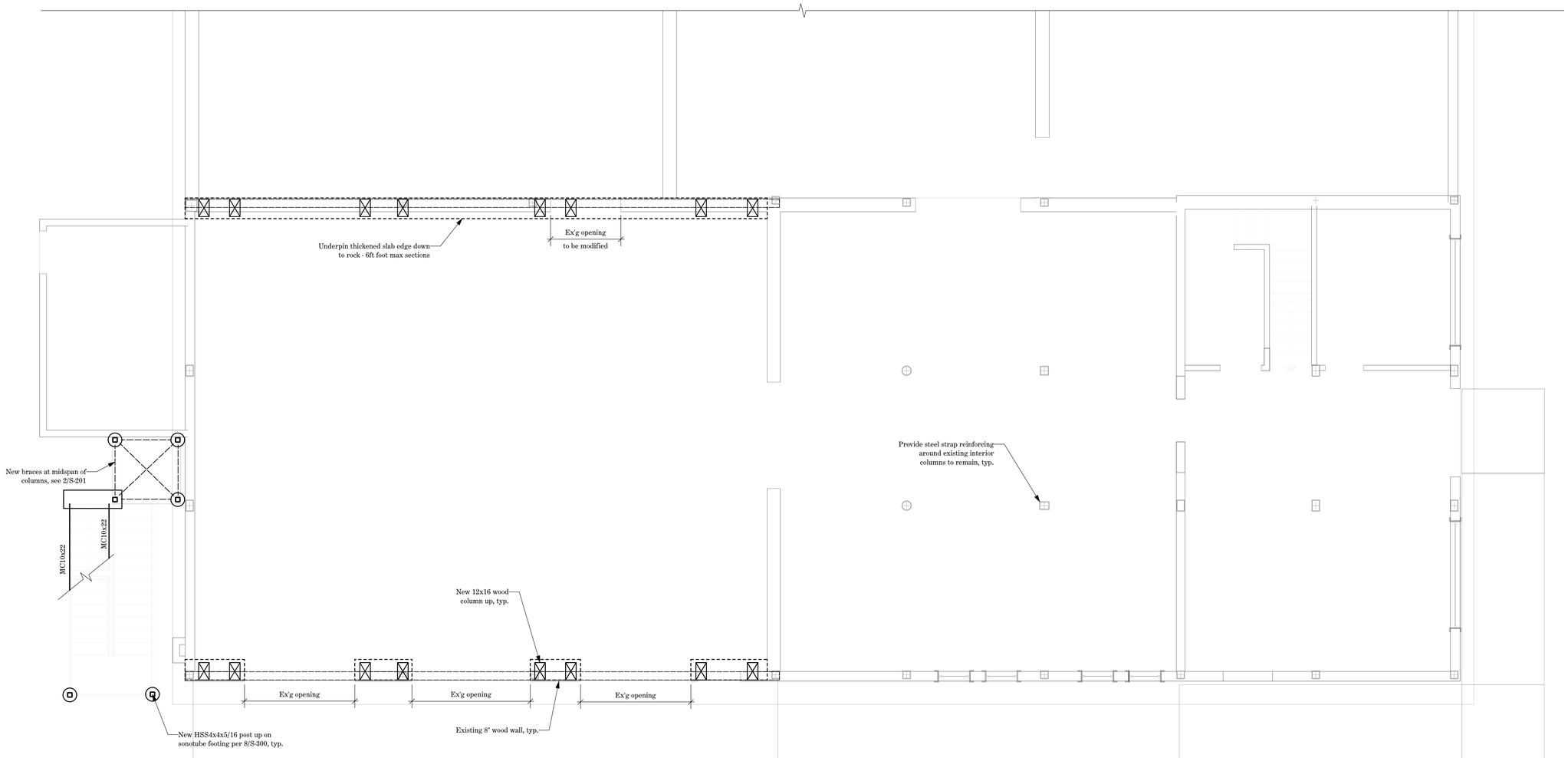
Roof Existing and Removal Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

DM-104.00

Sheet 05 of 11



Notes:
1. Prelimianry footing sizes contingent on verification of soil capacity.

1 **Proposed First Floor Plan**
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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Old Structures Engineering, PC

90 Broad Street
15th Floor
New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

tel: 718-208-0815

ASSOCIATE ARCHITECTS

Civic Architecture Workshop PLLC

543 Union Street
Suite 1 C
Brooklyn NY 11215

tel: 917-501-7337

CLIENT

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Elizabethtown, NY 12932

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Essex County Farmworker Housing Renovation

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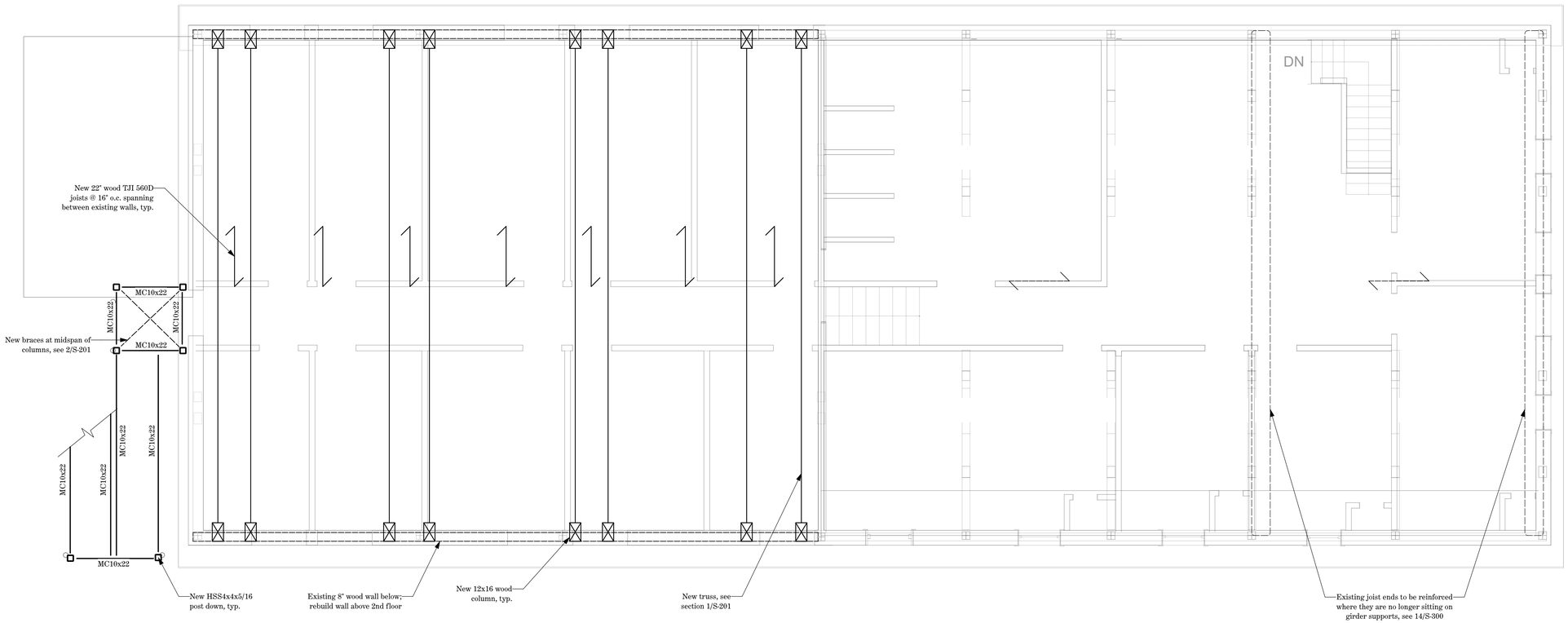
First Floor Framing Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

S-101.00

Sheet 06 of 11



1 Proposed Second Floor Plan
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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New York, NY 10004

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ARCHITECTS

david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

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Civic Architecture Workshop PLLC

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STATE OF NEW YORK
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No. 089182-1
LICENSED PROFESSIONAL ENGINEER

[Marie Ennis, P.E.]

Essex County Farmworker Housing Renovation

Barn
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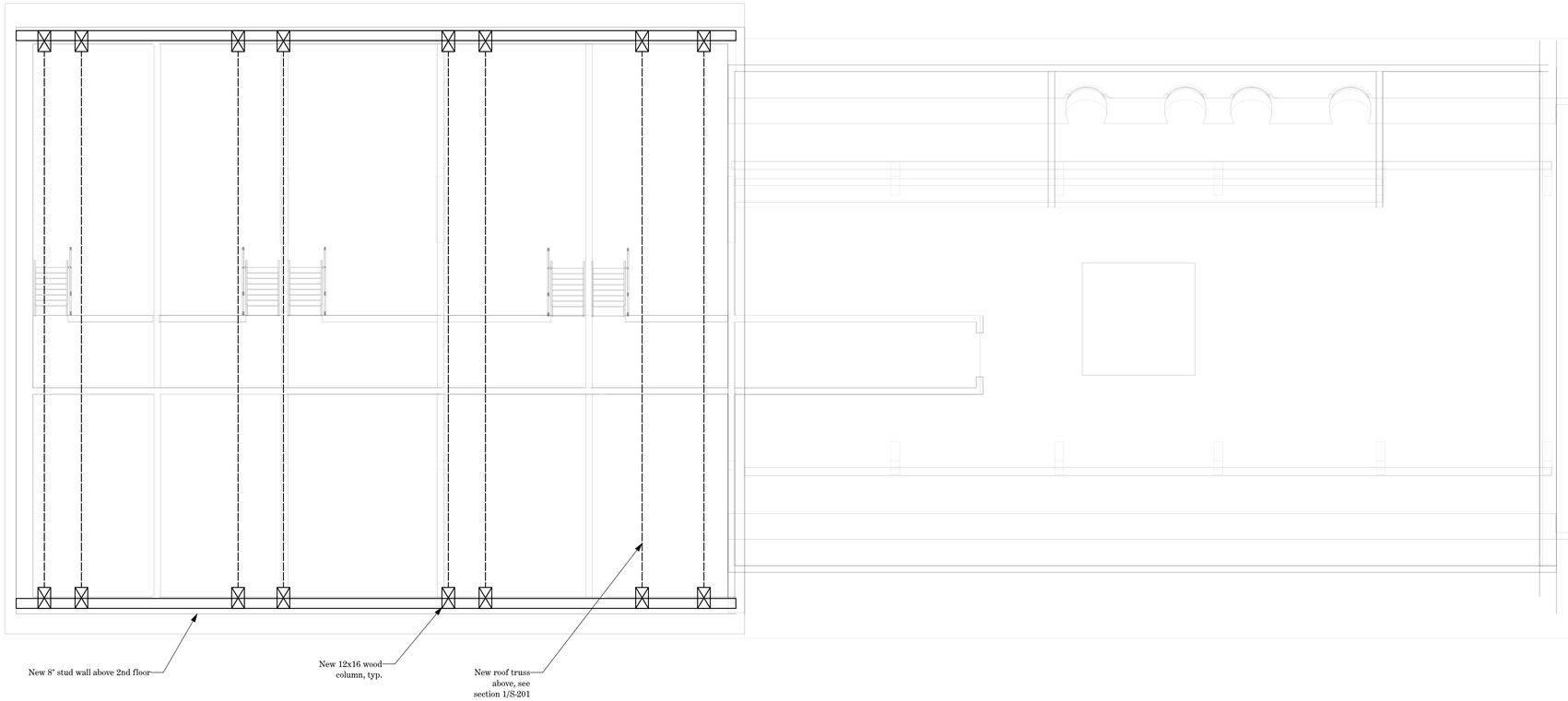
Westport, NY 12993

Second Floor Framing Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

S-102.00



1 Proposed Attic Plan
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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Old Structures Engineering, PC

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New York, NY 10004

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david cunningham architecture

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Suite 1 C
Brooklyn NY 11215

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Attic Framing Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
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Drawing No.

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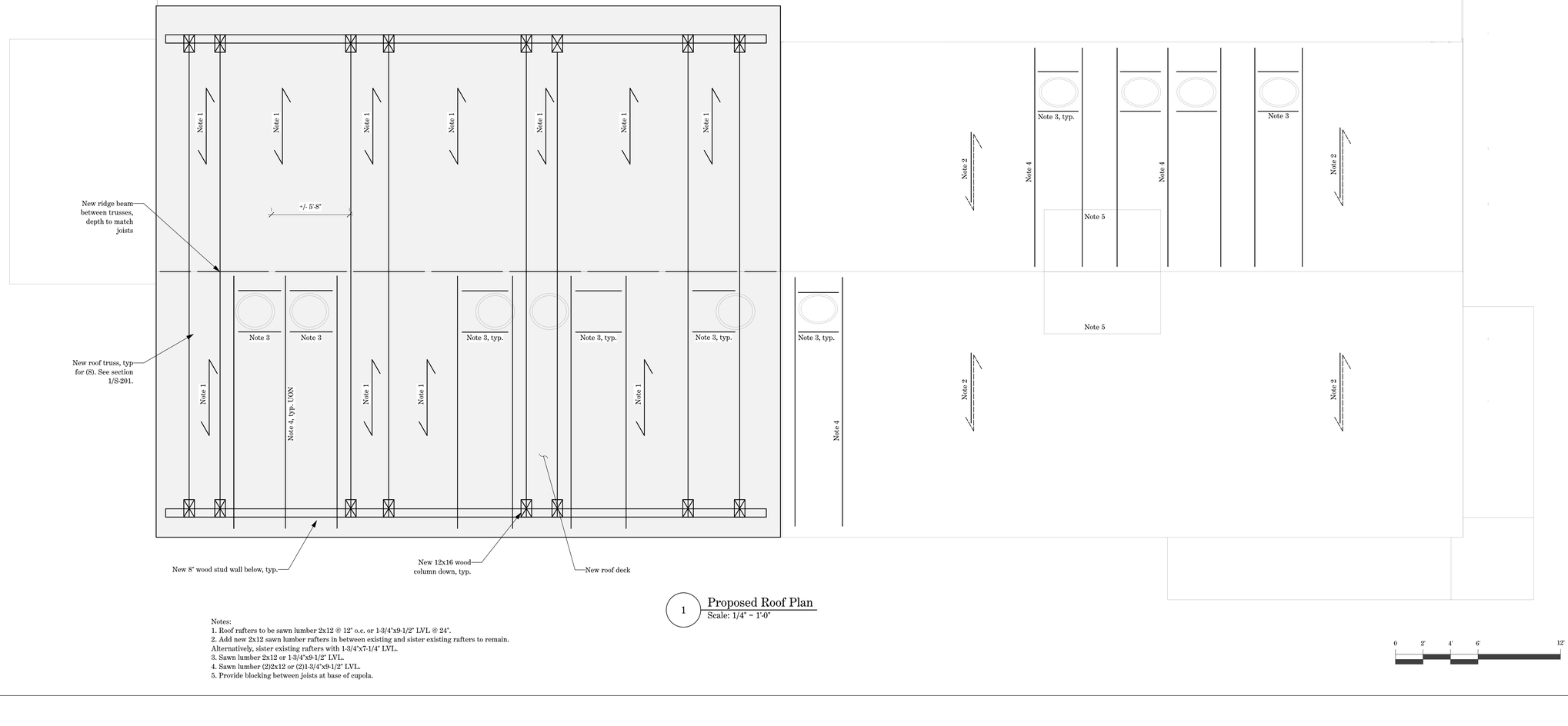

1 Proposed Roof Plan
Scale: 1/4" = 1'-0"

Notes:
1. Roof rafters to be sawn lumber 2x12 @ 12" o.c. or 1-3/4"x9-1/2" LVL @ 24".
2. Add new 2x12 sawn lumber rafters in between existing and sister existing rafters to remain. Alternatively, sister existing rafters with 1-3/4"x7-1/4" LVL.
3. Sawn lumber 2x12 or 1-3/4"x9-1/2" LVL.
4. Sawn lumber (2)2x12 or (2)1-3/4"x9-1/2" LVL.
5. Provide blocking between joists at base of cupola.

0 2' 4' 6' 12'

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Old Structures Engineering, PC

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15th Floor
New York, NY 10004

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david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

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No. 099192-1
LICENSED PROFESSIONAL ENGINEER

[Marie Ennis, P.E.]

Essex County Farmworker Housing Renovation

Barn
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Westport, NY 12993

Roof Framing Plan

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

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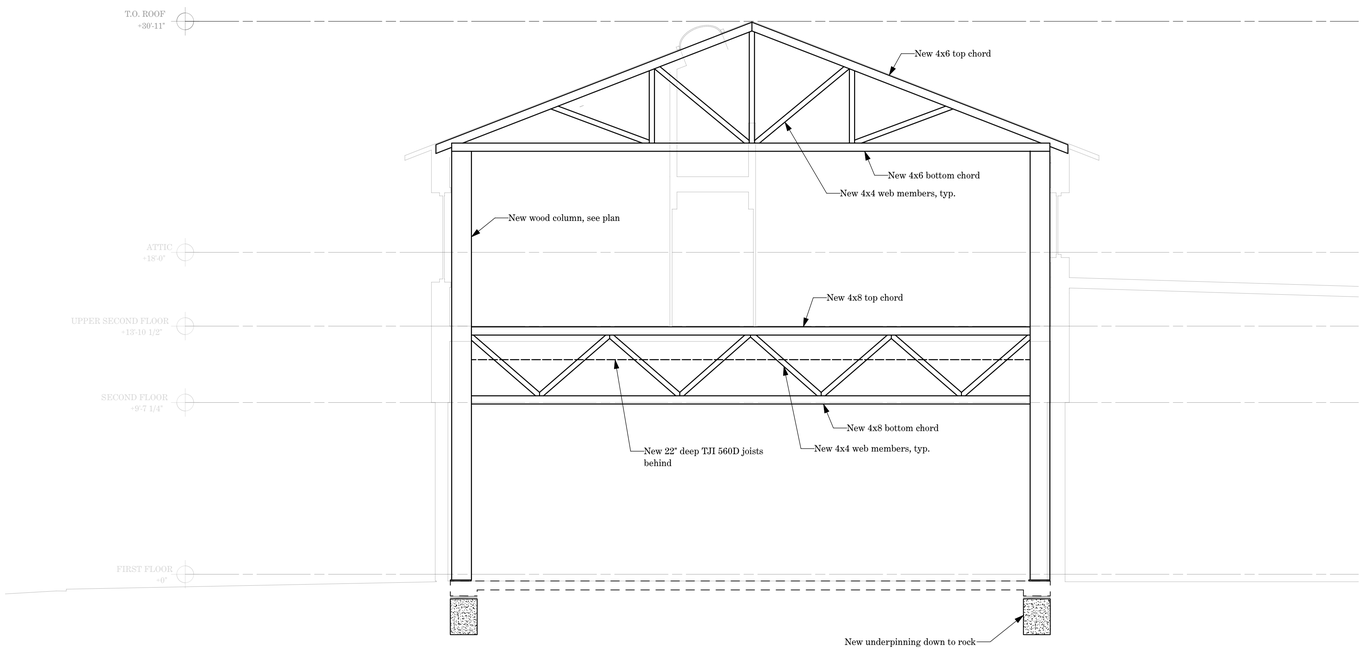
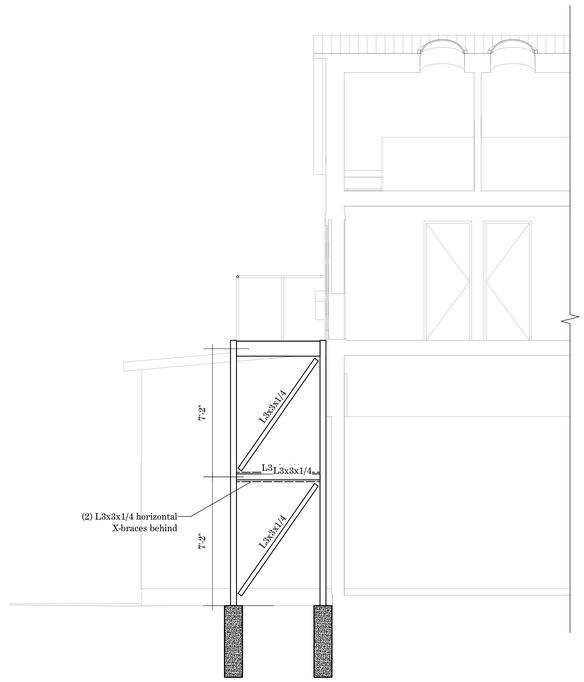


Note:
1. Contractor may submit alternative truss assemblies as designated design item for review and approval by EOR.

1 Section at Typical New Frame
Scale: 1/4" = 1'-0"



2 Section at New Stair Framing
Scale: 1/4" = 1'-0"

0 2' 4' 6' 12'

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Old Structures Engineering, PC

90 Broad Street
15th Floor
New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

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Proposed Sections

Scale: 1/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

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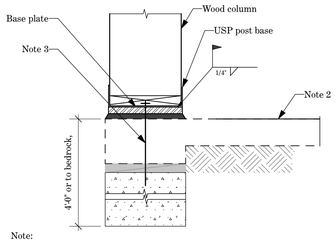
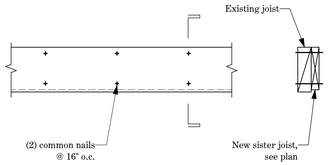


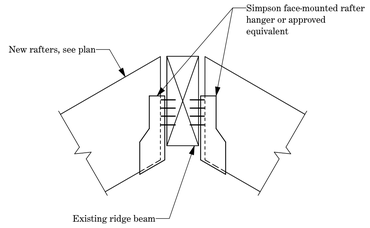
Note:

1. See footing schedule for footing size and reinforcing.
2. Existing slab on grade to remain.
3. 3/4"Ø A307 anchor bolts, embedded 1'-4" into underpinning.
4. 1" nonshrink grout. See column base plate detail.

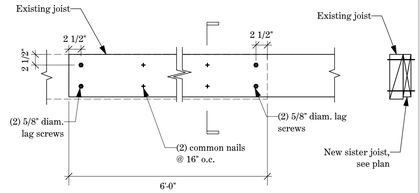
1 Column Base and Footing
Scale: 3/4" = 1'-0"



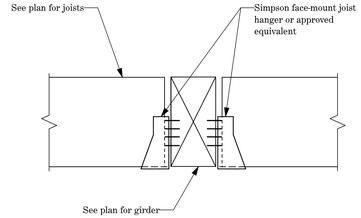
2 Sistered Joists
Scale: 3/4" = 1'-0"



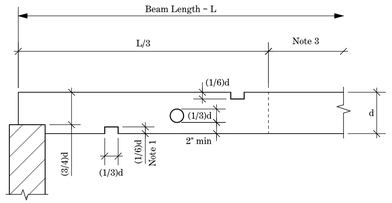
3 Rafter Support at Ridge Beam
Scale: 3/4" = 1'-0"



4 Extended Joists
Scale: 3/4" = 1'-0"



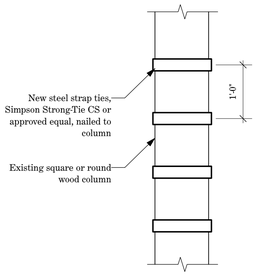
5 Joist Support at Girder
Scale: 3/4" = 1'-0"



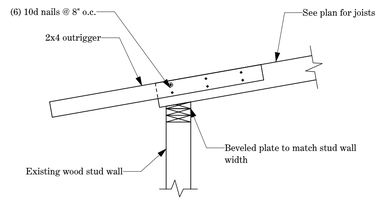
Notes:

1. Notches in tension side allowed only in beams with thickness less than 4" nominal.
2. Notches shown are maximum allowable in end third of beam span.
3. No notches are permitted in middle third of span.

6 Allowable Cuts in Joists
Scale: 3/4" = 1'-0"



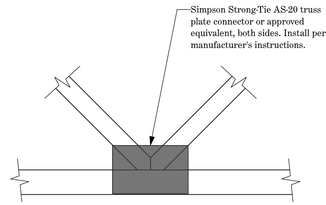
7 Strap Tie Reinforcement for Wood Column
Scale: 3/4" = 1'-0"



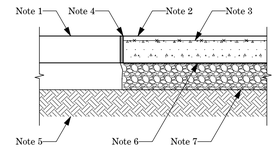
Note:

1. Provide blocking between joists.

8 Roof Overhang
Scale: 3/4" = 1'-0"



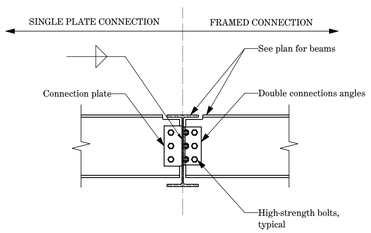
9 Typical Truss Connection
Scale: 3/4" = 1'-0"



Notes:

1. Existing slab on grade.
2. New normal-weight concrete slab to match depth of existing; minimum 4".
3. 6"x6" - W2.1xW2.1 welded wire fabric.
4. 3/4" joint filled with 3/4" asphalt-impregnated premolded joint filler and capped with 3/4"x 1/2" deep elastomeric joint sealant.
5. Undisturbed soil or fill compacted to 95% maximum density at optimum moisture content.
6. 10 mil thick polyethylene vapor barrier.
7. 6" layer of gravel or crushed stone.

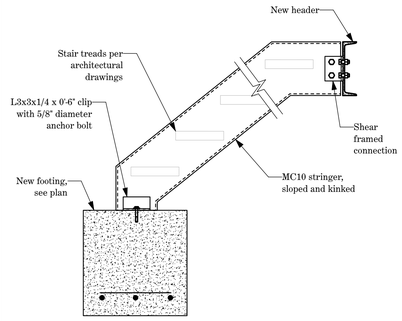
10 New to Existing Slab on Grade
Scale: 3/4" = 1'-0"



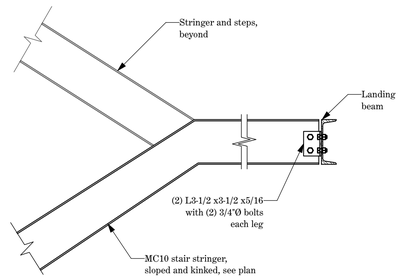
Note:

1. Fireproofing, slab, and metal deck are not shown for clarity.

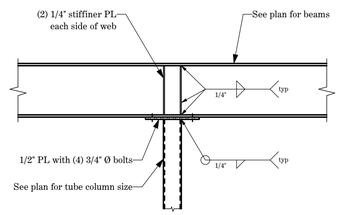
11 Shear Beam Connections
Scale: 3/4" = 1'-0"



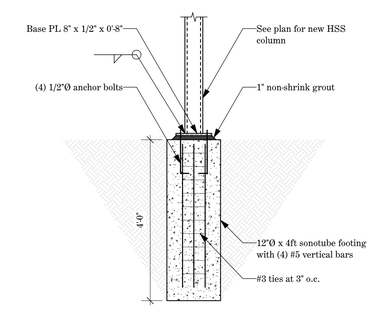
12 Typical Steel-Pan Stair
Scale: 3/4" = 1'-0"



13 Stair Landing Platform
Scale: 3/4" = 1'-0"



14 Steel Beam Overruning Steel Post
Scale: 3/4" = 1'-0"



15 Post Sonotube Footing
Scale: NTS

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STRUCTURAL ENGINEER

Old Structures Engineering, PC

90 Broad Street
15th Floor
New York, NY 10004

tel: 212-244-4546

ARCHITECTS

david cunningham architecture

543 Union Street
Suite 1 C
Brooklyn NY 11215

tel: 718-208-0815

ASSOCIATE ARCHITECTS

Civic Architecture Workshop PLLC

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CLIENT

Essex County

7551 Court Street
PO Box 217
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No.	Date	Description
00	04/07/2023	Preliminary Bid Set
01	05/12/2023	Revised Bid Set

Professional's Seal

[Marie Ennis, P.E.]

Essex County Farmworker Housing Renovation

Barn
82 Loukes Road
Westport, NY 12993

Typical Details

Scale: 3/4" = 1'-0"
Issue Date: May 12, 2023
Drawn by: EK/MA
Project #: J5066.01

Drawing No.

S-301.00

Sheet 11 of 11

LEGEND

SINGLE LINE DUCTWORK – NEW

SINGLE LINE DUCTWORK – EXISTING

EXISTING DUCTWORK – DEMOLISH

EQUIPMENT – NEW

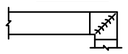
PIPING

CONDENSATE PIPING

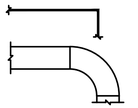
DUCTWORK WITH ACOUSTIC LINING

DUCT UNDER POSITIVE PRESSURE
(SUPPLY AIR OR FAN DISCHARGE)

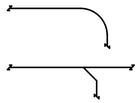
DUCT UNDER NEGATIVE PRESSURE
(RETURN, EXHAUST OR OUTSIDE AIR)



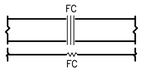
VANED ELBOW (SEE DETAIL)



RADIUS ELBOW



BRANCH DUCT TAKE OFF



DUCT FLEXIBLE CONNECTION

10" BY 6" SUPPLY REGISTER
150 CFM SUPPLY AIR

VOLUME DAMPER

FIRE DAMPER AND ACCESS DOOR

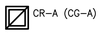
AUTOMATIC DAMPER (ELECTRIC)

COMBINATION SMOKE AND FIRE DAMPER AND ACCESS DOOR

POINT OF CONNECTION

POINT OF DISCONNECTION

TYPE A CEILING DIFFUSER
400 CFM SUPPLY AIR



TYPE A CEILING REGISTER (CEILING GRILLE)

SQUARE DIFFUSER WITH BLANKING PLATE

THERMOSTAT

TEMP SENSOR

SMOKE DETECTOR

STATIC PRESSURE SENSOR

CARBON MONOXIDE DETECTOR

CARBON DIOXIDE DETECTOR

A – EQUIPMENT TYPE
B – FLOOR/LOCATION
C – EQUIPMENT DESIGNATION

ABBREVIATIONS

A/AMP	AMPERE	EQ	EQUAL	PD	PRESSURE DROP
ACCU	AIR COOLED CONDENSING UNIT	(ER)	EXISTING TO BE RELOCATED	PSIG	PSI GAUGE
AD	ACCESS DOOR	EWB	ENTERING WET BULB	(R)	RELOCATED
AHU	AIR HANDLING UNIT	°F	DEGREES FAHRENHEIT	RA	RETURN AIR
BTU	BRITISH THERMAL UNIT	FA	FREE AREA (SQ. FT.)	REF	REFRIGERANT
BTUH	BTU PER HOUR	FC	FLEXIBLE CONNECTION	RG	RETURN GRILLE
CAD	CONDENSER AIR DISCHARGE	FD	FIRE DAMPER	RL	REFRIGERANT LIQUID
CAI	CONDENSER AIR INTAKE	FT	FEET	RLA	RUNNING LOAD AMPS
CD	CEILING DIFFUSER	HD	HEAD	RS	REFRIGERANT SUCTION
CFM	CUBIC FEET PER MINUTE	HR	HOUR	RM	ROOM
CG	CEILING GRILLE	HT	HEIGHT	SA	SUPPLY AIR
CLG	CEILING	IN	INCH OR INCHES	SP	STATIC PRESSURE
COD	CABLE OPERATED DAMPER	KW	KILOWATT	SPEC	SPECIFICATION
COND	CONDENSATE	LAT	LEAVING AIR TEMPERATURE	TEMP	TEMPERATURE
CP	CONDENSATE PUMP	LBS	POUNDS	TD	TRANSFER DUCT
CR	CEILING REGISTER	LD	LINEAR DIFFUSER	TG	TRANSFER GRILLE
CU FT	CUBIC FEET	LDB	LEAVING DRY BULB TEMPERATURE	TV	TURNING VANES
DB	DRY BULB	MBH	THOUSAND BTU PER HOUR	TYP	TYPICAL
(DE)	EXISTING TO BE REMOVED	MIN	MINIMUM	V	VOLTS
DIAM	DIAMETER	NFA	NET FREE AREA (SQ. FT.)	W	WIDTH
DWG	DRAWING	NO.	NUMBER	W/	WITH
(E)	EXISTING TO REMAIN	NTS	NOT TO SCALE	W/O	WITHOUT
EXH	EXHAUST AIR	OA	OUTSIDE AIR	WB	WET BULB
EAT	ENTERING AIR TEMPERATURE	OAI	OUTSIDE AIR INTAKE	WMS	WIRE MESH SCREEN
EDB	ENTERING DRY BULB TEMPERATURE	P	PUMP		
ELEC	ELECTRIC	PC	PUMPED CONDENSATE		

HEATING/COOLING LOAD CALCULATION AND EQUIPMENT SIZING NOTE:

ALL THE MECHANICAL EQUIPMENT SPECIFIED IN THIS DRAWING SET HAS BEEN DESIGNED TO SUFFICIENTLY HEAT AND COOL THE OCCUPIABLE AREAS OF THE BUILDING. REQUIRED HEATING AND COOLING DEMANDS HAVE BEEN CALCULATED IN ACCORDANCE WITH ASHRAE/ACCA 183, AND TAKE INTO ACCOUNT ALL BUILDING ENVELOPE, LIGHTING, VENTILATION & OCCUPANCY LOADS BASED ON THE PROJECT DESIGN. EQUIPMENT SELECTIONS WERE MADE TO MEET THE SYSTEM PEAK LOADS (HEATING OR COOLING).

SCOPE OF WORK

MECHANICAL MODIFICATIONS TO INCLUDE HVAC REPLACEMENT AND REPLACEMENT OF ASSOCIATED DUCTWORK. NO CHANGE OF USE, OCCUPANCY OR EGRESS UNDER THIS APPLICATION.

ENERGY COMPLIANCE STATEMENT

THE PROPOSED MECHANICAL DESIGN REPRESENTED IN THIS DOCUMENT IS CONSISTENT WITH THE BUILDING PLANS, SPECIFICATIONS AND OTHER CALCULATIONS SUBMITTED WITH THIS PERMIT APPLICATION. THE PROPOSED MECHANICAL SYSTEMS HAVE BEEN DESIGNED TO MEET THE 2020 ECCCNYS AND TO COMPLY WITH THE MANDATORY REQUIREMENTS SET FORTH.

TABLE M1505.4.3(1)
CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS

DWELLING UNIT FLOOR AREA (square feet)	NUMBER OF BEDROOMS				
	0 – 1	2 – 3	4 – 5	6 – 7	> 7
	Airflow in CFM				
< 1,500	30	45	60	75	90
1,501 – 3,000	45	60	75	90	105
3,001 – 4,500	60	75	90	105	120
4,501 – 6,000	75	90	105	120	135
6,001 – 7,500	90	105	120	135	150
> 7,500	105	120	135	150	165

5,000 SQFT HABITABLE AREA
15 BEDROOMS
150 CFM OF CONTINUOUS
AIRFLOW PROVIDED

EP ENGINEERING SHALL NOT HAVE CONTROL OVER, CHARGE OF, OR RESPONSIBILITY FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, NOR SHALL THE CONSULTANT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO PERFORM THE WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. EP ENGINEERING HAS NO DUTY TO SPECIFY IN ITS DESIGN COVID 19 MEASURES, AND NO DUTY TO INVESTIGATE, OBSERVE, MONITOR OR REPORT ANY FAILURE OF ANY CONTRACTOR OR OTHER THIRD PARTY TO FOLLOW ALL COVID 19 GUIDELINES OR REQUIREMENTS ASSOCIATED WITH THE PROJECT.

DRAWING LIST

M-100.00 MECHANICAL SYMBOLS, NOTES & ABBREVIATIONS
M-300.00 MECHANICAL CONSTRUCTION PLAN - 1ST FLOOR
M-301.00 MECHANICAL CONSTRUCTION PLAN - 2ND FLOOR
M-302.00 MECHANICAL CONSTRUCTION PLAN - 2ND FLOOR MEZZANINE
M-303.00 MECHANICAL CONSTRUCTION PLAN - ROOF
M-600.00 MECHANICAL SCHEDULES
M-700.00 MECHANICAL DETAILS
M-800.00 MECHANICAL SPECIFICATIONS (1 OF 3)
M-801.00 MECHANICAL SPECIFICATIONS (2 OF 3)
M-802.00 MECHANICAL SPECIFICATIONS (3 OF 3)

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

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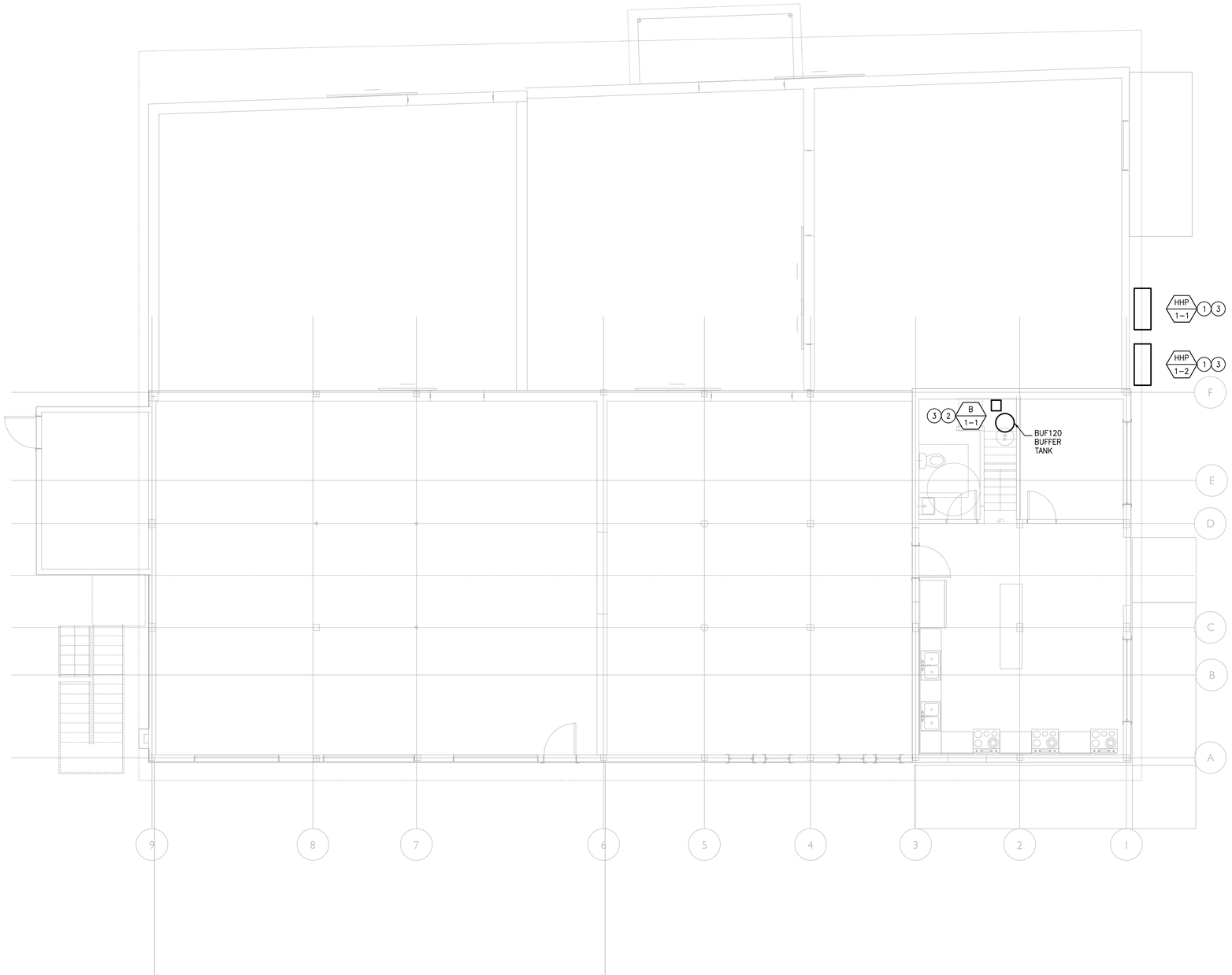
ESSEX COUNTY FARMWORKER HOUSING RENOVATION
Barn
82 Loukes RD
Westport NY 12993

M-100.00

MECHANICAL SYMBOLS, NOTES & ABBREVIATIONS

SEAL | SIGNATURE:

THE SCALE OF THIS DRAWING IS CORRECT WHEN PRINTED ON 24x36 SIZE PAPER. ALL OTHER PAPER SIZES WILL NOT SHOW THE CORRECT SCALE.



FIRST FLOOR REFERENCE PLAN
Scale: 1/8" = 1'-0" | 1

MECHANICAL CONSTRUCTION PLAN - 1ST FLOOR

1 SCALE: 3/16"=1'–0"

PLAN NOTES

1. GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL HVAC/MECHANICAL DRAWINGS.
2. DRAWINGS ARE DIAGRAMMATIC. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. RELOCATE EXISTING WORK THAT INTERFERES WITH WORK OF THIS CONTRACT.
3. COORDINATE THIS WORK WITH THAT OF OTHER TRADES.
4. NEITHER ACCURACY NOR COMPLETION OF SERVICES AND UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING SERVICES AND UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.
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8. PROVIDE HANGERS, INSERTS, ANCHORS, SUPPLEMENTAL STEEL & SUPPORTS AS REQUIRED TO SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM STRUCTURE.
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11. RUN DUCTS AND PIPING CONCEALED, UNLESS OTHERWISE SPECIFIED AND CLEAR OF CEILING INSERTS.
12. INSTALL THERMOSTATS 4'–0" ABOVE FINISHED FLOOR OR ABOVE LIGHT SWITCH WHEN IN ENCLOSED ROOMS. COORDINATE FINAL LOCATION WITH ARCHITECT.
13. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR DEVICES.
14. ALL EXPOSED DUCTWORK SHALL BE SPIRAL OVAL WITH 1.5" INTERNAL INSULATION. COORDINATE FINISH WITH ARCHITECT.
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KEY NOTES

1. HYDRONIC HEAT PUMPS SHALL BE INSTALLED AND HAVE CLEARANCES MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. UNITS SHALL BE MOUNTED ON STEEL DUNNAGE OR EQUIPMENT RAILS, WITH SPRING ISOLATORS SIMILAR TO MASON INDUSTRIES SLR (1" DEFLECTION SPRING MOUNTS). SEE STRUCTURAL PLANS FOR MORE INFORMATION. UNITS SHALL BE INSTALLED ABOVE SNOW LINE.
2. BOILER SHALL BE INSTALLED AND HAVE CLEARANCES MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. EQUIPMENT INSTALLATION IS TO BE COORDINATED WITH DESIGN OF RADIANT FLOOR SYSTEM TO ENSURE COMPATIBILITY WITH SITE CONDITIONS.

BARN

CLIENT
Essex County
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ARCHITECT
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Brooklyn NY 11215
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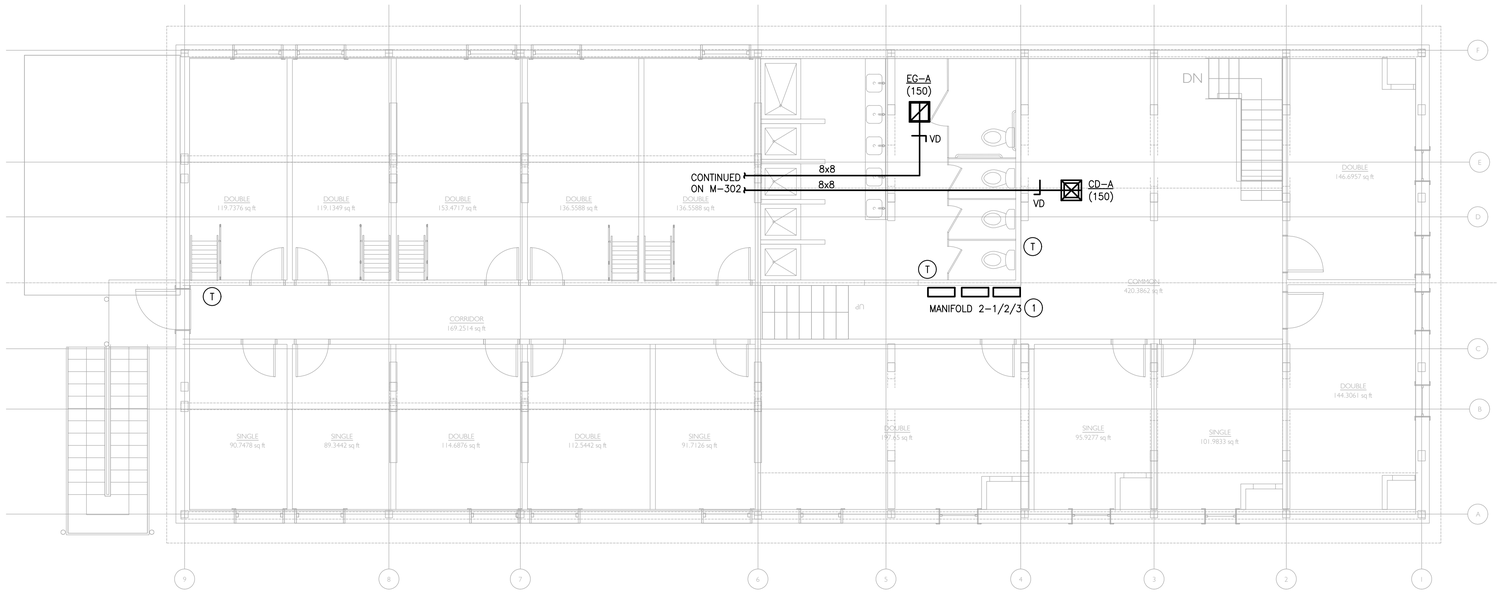
Barn
82 Loukes RD
Westport NY 12993

M-300.00

MECHANICAL CONSTRUCTION PLAN - 1ST FLOOR

SEAL | SIGNATURE:



MECHANICAL CONSTRUCTION PLAN - 2ND FLOOR

1 SCALE: 3/16"=1'–0"

PLAN NOTES

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KEY NOTES

(1) CONNECT HOT WATER PIPING TO RADIANT FLOOR MANIFOLD. COORDINATE MOUNTING OF MANIFOLD WITH ARCHITECT.

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
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ARCHITECT
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Brooklyn NY 11215
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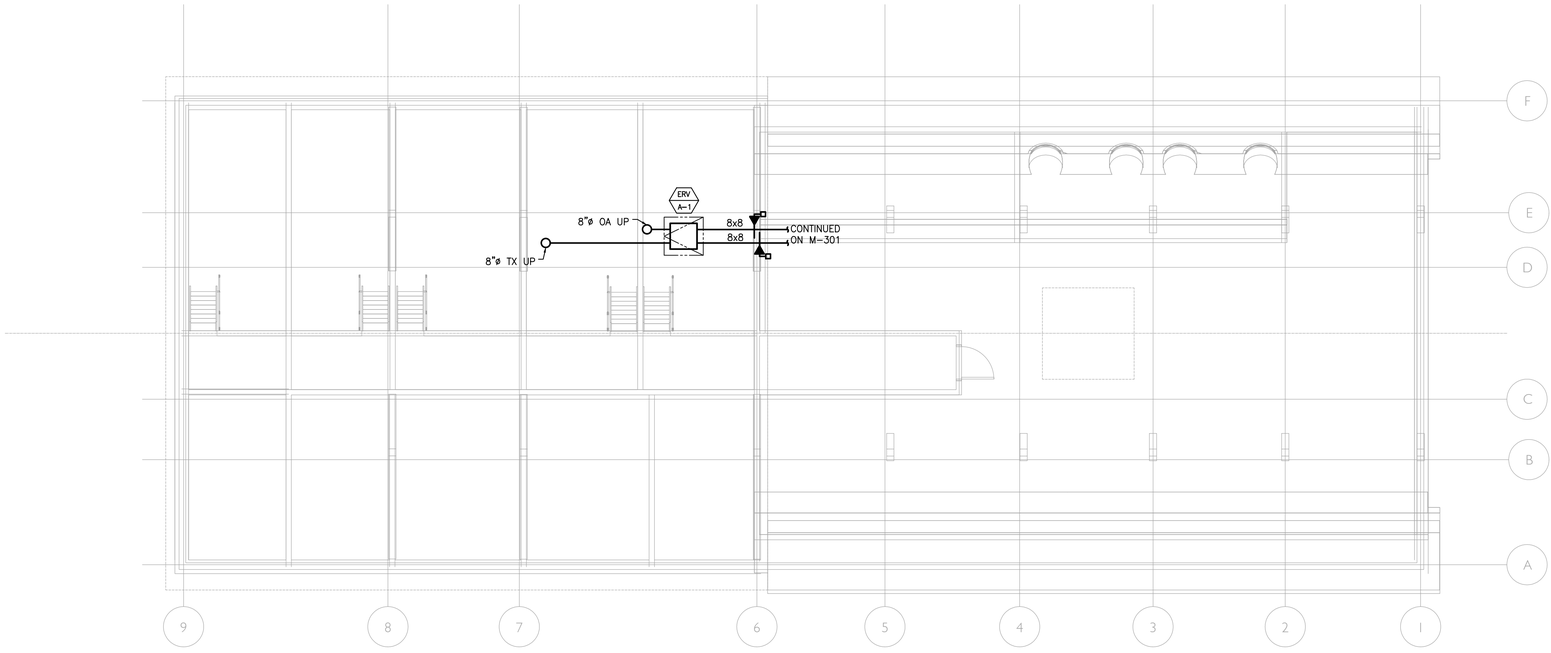
M-301.00

MECHANICAL CONSTRUCTION PLAN - 2ND FLOOR

SEAL | SIGNATURE:

STATE OF NEW YORK
GIOVANNI E. MELENDEZ
PROFESSIONAL ENGINEER



MECHANICAL CONSTRUCTION PLAN - 2ND FLOOR MEZZANINE

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7551 Court Street P.O. Box 217
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MECHANICAL CONSTRUCTION PLAN - 2ND FLOOR MEZZANINE

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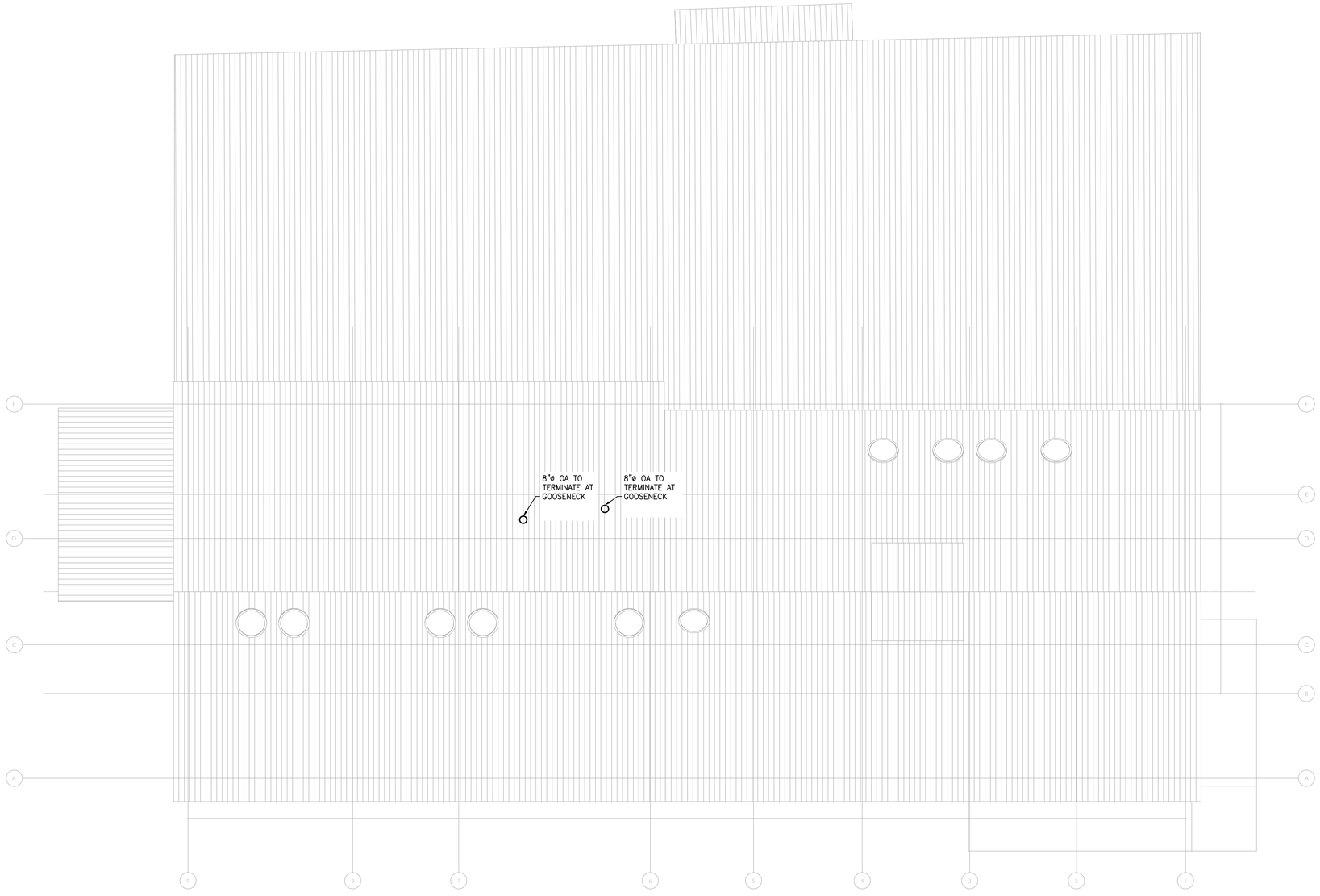

PROPOSED ROOF PLAN
Scale: 1/4" = 1'-0"

MECHANICAL CONSTRUCTION PLAN - ROOF

1 SCALE: 3/16"=1'-0"

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6. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.
7. PROVIDE ACCESS PANELS FOR EQUIPMENT THAT REQUIRES PERIODIC SERVICE.
8. PROVIDE HANGERS, INSERTS, ANCHORS, SUPPLEMENTAL STEEL & SUPPORTS AS REQUIRED TO SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM STRUCTURE.
9. SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERING WITH EXISTING OPERATIONS IN THE FACILITY.
10. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS. MECHANICAL CONTRACTOR TO NOTIFY OWNER PRIOR TO STARTING WORK TO VERIFY COMPLIANCE WITH BOND AND WARRANTY OF EXISTING ROOF.

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
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90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

ISSUES:

01	04.07.23	BID 01

ESSEX COUNTY FARMWORKER HOUSING RENOVATION
Barn
82 Loukes RD
Westport NY 12993

M-303.00

MECHANICAL CONSTRUCTION PLAN - ROOF

SEAL | SIGNATURE:

STATE OF NEW YORK
GIOVANNI E. MELENDEZ
LICENSED PROFESSIONAL ENGINEER

BOILER SCHEDULE - BASED ON THERMO 2000

UNIT NO.	ASSOCIATED HEAT PUMP	LOCATION	BURNER					ELECTRICAL			PHYSICAL		BOILER MODEL #
			FUEL TYPE	OUTPUT LOAD (kW)	DT (°F)	MAX FLOW (GPM)	OPERATING PRESSURE (PSI)	V/PH/HZ	CONTROL VOLTAGE	FLA	WEIGHT (LBS)	L x W x H (IN)	
B-1-1	HHP-1-1&2	MECH ROOM	ELECTRIC	15	20	–	30	240/1/60	24	62.5	75	11 x 12 x 22	BTH ULTRA 33

NOTES:
1. 10 YR LIMITED WARRANTY ON HEAT EXCHANGER AND 5 YR PARTS WARRANTY.
2. ARTIC CONTACT: DEAN LONG DEAN@DMJSC.COM 320-455-1557

BOILER 1-1 SUPPLEMENTAL EQUIPMENT & ACCESSORIES:
1. (2) GRUNDFOS UPS 26-99 FC 220V 1
2. (1) GRUNDFOS ALPHA2 15-55FC 120 VAC 1
3. (3) ISOLATION PUMP FLANGE 1
4. (1) ARCTIC HEATING/CHILLER 120G
5. HBX-ECO-0600

DISTRIBUTION EQUIPMENT:
1. (1) PEX-IVAR-9-MNFLD-1
2. (9) PEX-IVAR-FIT-CON 1/2
3. (9) PEX-IVAR-ACT-24-ES
4. (1) ARCTIC HEATING/CHILLER 120G
5. HBX-ECO-0600

HYDRONIC HEAT PUMP SCHEDULE - BASED ON ARTIC

UNIT NO.	ELECTRICAL DATA			HEATING CAPACITY (MBH)	HEATING CAPACITY @ -11°F (MBH)	APPROX. WEIGHT (LBS)	SOUND DATA (DBA)	MODEL	EFFICIENCY	DIMENSIONS LxWxH (INCHES)
	V/PH/HZ	MCA	MOP						COP	
HHP-1-1&2	220/1/60	28	40	58	30	289	56	HP-060ZA/BE	3.1	47x19x50

NOTES:
1. INDOOR UNITS SHALL HAVE FACTORY WALL MOUNTED THERMOSTATS, DISCONNECT SWITCHES, FACTORY SUPPLIED INTEGRAL DRIP PANS AND DRAIN PAN LEVEL SENSORS, INTEGRAL CONDENSATE PUMPS, AND HANGERS.
2. PROVIDE 7-YEAR WARRANTY ON COMPRESSOR AND 1-YEAR WARRANTY ON PARTS.
3. PROVIDE HEADERS AND OTHER REFRIGERANT PIPING ACCESSORIES AS REQUIRED BY THE MANUFACTURER.
4. ALL CONDENSERS TO BE PROVIDED WITH BASIN HEATERS.
5. ALL EQUIPMENT SHALL BE ENERGY STAR CERTIFIED.
6. CONDENSING UNITS SHALL BE MOUNTED ON STEEL DUNNAGE OR EQUIPMENT RAILS, WITH SPRING ISOLATORS SIMILAR TO MASON INDUSTRIES SLR (1" DEFLECTION SPRING MOUNTS). SEE STRUCTURAL PLANS FOR MORE INFORMATION. UNITS SHALL BE INSTALLED ABOVE SNOW LINE, AT LEAST 18" ABOVE ROOF SURFACE.

ENERGY RECOVERY VENTILATOR SCHEDULE - RENEWAIRE

UNIT NO.	RENEWAIRE MODEL NUMBER	TYPE	THERMAL EFFECTIVENESS (%)		FLOW RATE (CFM)	ELECTRICAL DATA (SUPPLY/RETURN)		WEIGHT (LBS)	BASE UNIT DIMENSIONS HxWxD (IN)
			WINTER	SUMMER		V/PH/HZ	POWER (W)		
ERV-A-1	EV PREMIUM MH	CEILING	56	38	150	208/1/60	179	48	13x23x24

NOTES:
1. PROVIDE W/FLEXIBLE DUCT CONNECTIONS AND DISCONNECT SWITCH.
2. ERVS SHALL BE PROVIDED WITH BACKDRAFT & AUTOMATIC BALANCING DAMPER.
3. ERVS SHALL OPERATE CONTINUOUSLY DURING HOURS OF OPERATION.

PIPING INSULATION SCHEDULE

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	FLUID TYPE	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)					FINISH	MATERIAL
		CONDUCTIVITITY BTU-IN / (H-FT²-°F)	MEAN RATING TEMPERATURE (°F)	< 1	1 TO < 1½	1½ TO < 4	4 TO < 8	≥ 8		
> 350	STEAM	0.32 – 0.34	250	4.5	5.0	5.0	5.0	5.0	F-1	P-1
251 – 350	STEAM	0.29 – 0.32	200	3.0	4.0	4.5	4.5	4.5	F-1	P-1
201 – 250	STEAM	0.27 – 0.30	150	2.5	2.5	2.5	3.0	3.0	F-1	P-1
141 – 200	HWS/R	0.25 – 0.29	125	1.5	1.5	2.0	2.0	2.0	F-1	P-1
105 – 140	RL	0.21 – 0.28	100	1.0	1.0	1.5	1.5	1.5	F-1	P-6
40 – 104	CWS/R, COND	0.21 – 0.27	75	0.5	0.5	1.0	1.0	1.0	F-1	P-1
< 40	RS	0.20 – 0.26	50	0.5	1.0	1.0	1.0	1.5	F-1	P-6

1. THICKNESS OF INSULATION MAY VARY BY MANUFACTURER. INSULATION MUST MATCH LISTED R-VALUE FOR ASSOCIATED SPACE.
2. REFER TO M-800 SERIES FOR FINISH AND MATERIAL WITHIN PIPING INSULATION SECTION.
3. INCREASE INSULATION BY 1" AND PROVIDE PVC UV JACKET FOR OUTDOOR PIPING.
4. CPVC CONDENSATE PIPING SHALL NOT REQUIRE INSULATION.

EQUIPMENT IS SPECIFIED AS BASIS OF DESIGN.
APPROVED ALTERNATIVES ARE ACCEPTABLE.

DIFFUSER SCHEDULE - BASED ON ANEMOSTAT

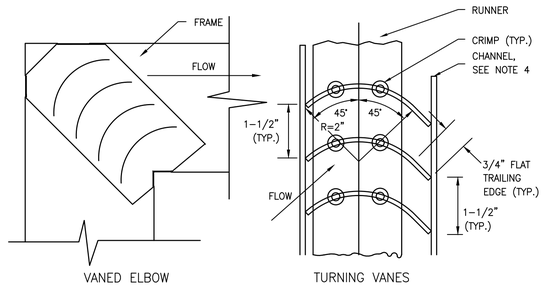
DESIGNATION	FUNCTION	TYPE	MOUNTING	NECK SIZE INCHES	OVERALL DIMENSIONS	CFM RANGE	NOISE CRITERIA	MODEL
CD-A	SUPPLY	DIFFUSER	LAY-IN	6" ø	18" X 18"	0 – 150	< 25 NC	PG PARAGON
				8" ø		151 – 275		
				10" ø		276 – 400		
				12" ø		401 – 600		
EG-A	RETURN	DIFFUSER	LAY-IN	15" ø	18" X 18"	–	< 25 NC	PG PARAGON

NOTES:
1. ARCHITECT TO APPROVE BORDER TYPE, STYLE, COLOR AND FINISH PRIOR TO PURCHASING.
2. ALL REGISTERS LOCATED IN ROOMS THAT WILL EXPERIENCE HIGH HUMIDITY SHALL BE ALUMINUM CONSTRUCTION.
3. EXHAUST AND RETURN GRILLES SHALL BE 45° DEFLECTION.
4. ALL AIR OUTLETS/INLETS TO BE PROVIDED WITH VOLUME DAMPERS. PROVIDE CABLE OPERATED DAMPERS FOR INACCESSIBLE CEILINGS.
5. ALL BLADES TO BE PARALLEL TO LONG DIMENSION. COORDINATE W/ ARCHITECT.

DUCTWORK INSULATION SCHEDULE

SERVICE	LOCATION	THICKNESS	MATERIAL	FINISH	MIN. R-VALUE
SUPPLY/RETURN	INDOOR	1-1/2"	D-1	VAPORSEAL	R-6
SUPPLY/RETURN	OUTDOOR	2"	D-2	VAPORSEAL	R-8
INTAKE	ALL	2"	D-3	VAPORSEAL	R-8
ERV INTAKE/EXHAUST (EXTERIOR SIDE)	INDOORS	2"	D-3	VAPORSEAL	R-8
ERV INTAKE/EXHAUST (INTERIOR SIDE)	OUTDOORS	2"	D-2	VAPORSEAL	R-8

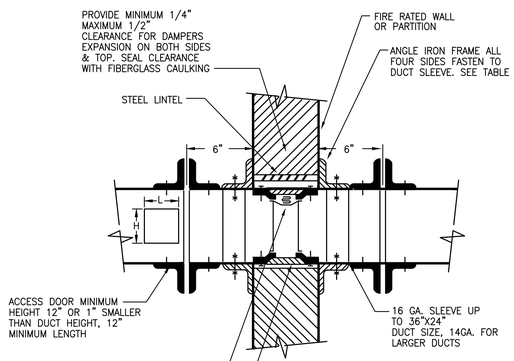
NOTES:
1. ALL SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED
2. ALL EXPOSED DUCTWORK SHALL BE INTERNALLY LINED
3. ALL DUCTWORK UPSTREAM AND DOWNSTREAM OF AC'S & FANS SHALL BE INTERNALLY LINED FOR A MINIMUM 20 FT.
4. REFER TO M-800 SERIES DRAWING FOR EXTERIOR DUCT INSULATION.



NOTES:
1. MAXIMUM UNSUPPORTED VANE LENGTH 36"
2. VANES AND FRAMES – 24 GAUGE
3. DUCT INLET AND OUTLET DIMENSIONS TO BE EQUAL
4. FOR HIGH VELOCITY APPLICATIONS PROVIDE 18 GAUGE CHANNEL AND TACK WELD VANE EDGES TO CHANNEL, TYPICAL BOTH ENDS
5. FRAMES AND CHANNELS – BOLTED OR TACK WELDED TO ELBOW

SINGLE-THICKNESS TURNING VANES FOR SQUARE ELBOW

1 SCALE: NONE



ANGLE IRON TABLE	
WALL OPENING	ANGLE SIZE
UP TO 30"	1"x1"x1/8"
31" TO 54"	1-1/2"x1-1/2"x1/8"
55" TO 84"	3"x2"x3/16"
85" TO 120"	3"x2"x3/16"

GENERAL NOTES:
1. FIRE DAMPER TO BE U.L. LABELED N.F.P.A. 90A
2. N.F.P.A. APPROVED INSTALLATION DETAILS TO BE PART OF SUBMISSION OF FIRE DAMPER FOR APPROVAL, WHICH SHALL MEET N.F.P.A. STANDARD 90A
3. DETAILS SHOWN ARE FOR FIRE DAMPERS IN HORIZONTAL DUCTWORK. FOR FIRE DAMPERS IN VERTICAL DUCTWORK, DETAILS SIMILAR EXCEPT DAMPERS SHALL BE SPRING LOADED.
4. U.L. APPROVED BREAKAWAY SLIP JOINT CONNECTION MAY BE USED IN LIEU OF FLANGED CONNECTION
5. ACCESS DOOR IS SHOWN ON SIDE OF DUCT; IF FUSIBLE LINK IS MORE ACCESSIBLE FROM BOTTOM OF DUCT RELOCATE ACCESS DOOR.
6. FROM FIRST 10'-0" OF FAN DISCHARGE DUCTS AND FOR DUCT SIZES LESS THAN 8" DEEP, FIRE DAMPER DAMPER BLADES SHALL BE INSTALLED IN POCKET OUTSIDE OF AIR STREAM

LOW PRESSURE FIRE DAMPER DETAIL

1 SCALE: NONE

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CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
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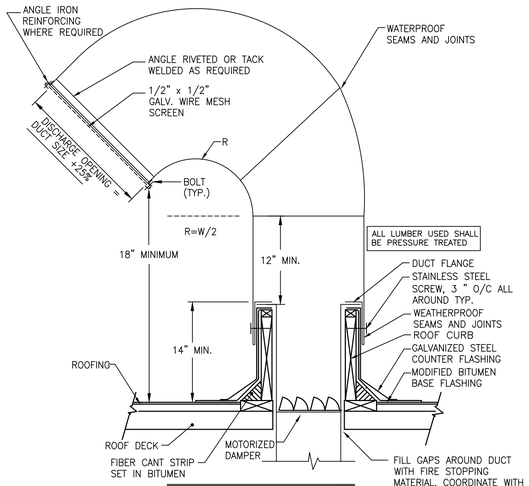
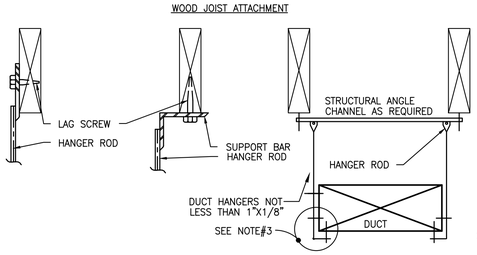
MECHANICAL SCHEDULES

SEAL | SIGNATURE:



GOOSENECK DETAIL

1 SCALE: NONE



HANGER SIZE FOR RECTANGULAR DUCT SHALL BE AS FOLLOWS:

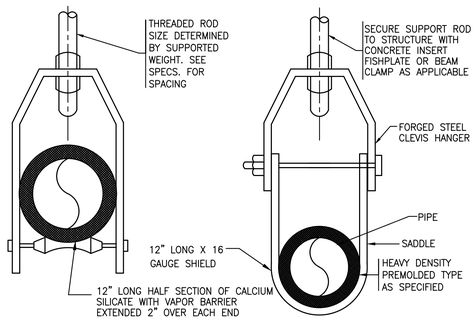
LONGEST DIMENSION OF DUCT	ROUND HANGERS	MAX SPACING SEE NOTE #4	STRAP HANGERS	TRAPEZE SHELF ANGLES
UP TO 18"	8"GA.WIRE	8'–0"	1"X1/8"	1"X1"X 1/8"
19" TO 30"	1/4" ROD	8'–0"	1"X1/8"	1"X1"X 1/8"
31" TO 42"	1/4" ROD	8'–0"	1"X1/8"GA.	1 1/2"X 1 1/2"X 1/8"
43" TO 60"	3/8" ROD	4'–0"	———	1 1/2"X 1 1/2"X 1/8"
61" TO 84"	3/8" ROD	4'–0"	———	2"X2"X1/8"
85" TO 96"	3/8" ROD	4'–0"	———	2"X2"X 3/16"
OVER 97"	3/8" ROD	4'–0"	———	2"X2"X 1/4"

NOTES:

1. ALL DUCT TO BE HUNG FROM BUILDING CONSTRUCTION NOT TO BE SUPPORTED FROM HUNG CEILING.
2. WHEN DUCT AREA EXCEEDS 8 SQ.FT. ANGLE STIFFENERS REQUIRED AROUND CIRCUMFERENCE EVERY 4'–0.
3. FOR DUCT OVER 48"WIDE HANGERS SHALL TURN UNDER DUCT AT LEAST 2"AND SHALL BE FASTENED TO THE BOTTOM AS WELL AS TO THE SIDES OF THE DUCT.
4. FOR DUCTS WITH A CROSS SECTIONAL AREA OF 4 SQ.FT. OR LESS. HANGERS SHALL BE NO MORE THAN 8FT. APART. FOR DUCTS WITH A CROSS SECTIONAL AREA OF MORE THAN 4 SQ.FT. BUT NOT OVER 8 SQ.FT. HANGERS SHALL BE NOT MORE THAN 6 FT. A PART. AND FOR DUCTS WITH A CROSS SECTIONAL AREA OF MORE THAN 8 SQ.FT. HANGERS SHALL BE NOT MORE THAN 4 FT. A PART. THE DISTANCES BETWEEN SHALL BE MEASURED LINEARLY ALONG THE DUCT.

DUCT SUPPORT DETAIL - WOOD

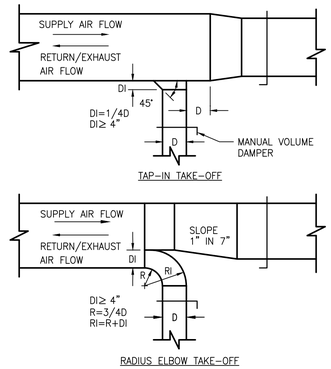
2 SCALE: NONE



WHERE STRUCTURAL SLAB DOES NOT PERMIT INSERTS. SUPPORT PIPING FROM STRUCTURE WITH AUXILIARY STEEL IF REQUIRED.

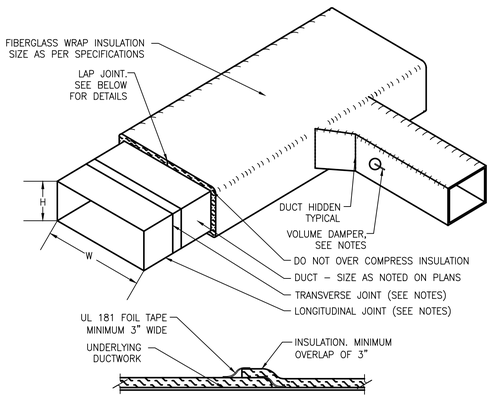
CLEVIS ROLLER HANGER DETAIL

3 SCALE: NONE



DUCT BRANCH TAKE-OFF DETAIL

4 SCALE: NONE



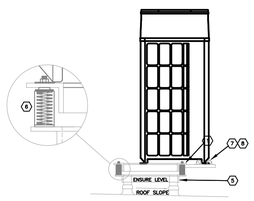
LAP–JOINT

NOTES

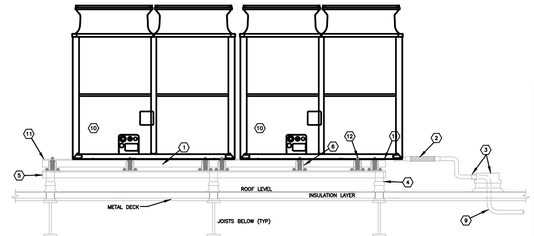
1. INSULATION SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS
2. DEVICES INSTALLED INSIDE DUCT SHALL NOT BE HIDDEN BY INSULATION
3. ACCESS DOORS AND VOLUME DAMPERS SHALL BE FULLY FUNCTIONAL AFTER INSULATION HAS BEEN INSTALLED
4. ALL TRANSVERSE AND LONGITUDINAL JOINTS AND SEAMS IN SUPPLY AIR DUCT SHALL BE SEALED AIR TIGHT WITH DAP CMC DUCT SEALER. JOINTS ALSO SHALL BE RIVETED OR CONNECTED WITH SHEET METAL SCREWS.
5. SOFT ELASTOMER BUTYL GASKETS WITH ADHESIVE BACKING SHALL BE USED TO SEAL FLANGED JOINTS.
6. INSULATION SHALL BE MINIMUM 1–1/2" THICK R–6 TO MEET MINIMUM ENERGY CODE VALUES.

INTERIOR DUCTWORK INSULATION AND SEALING DETAIL

5 SCALE: NONE



SIDE VIEW



FRONT VIEW

CODED NOTES:

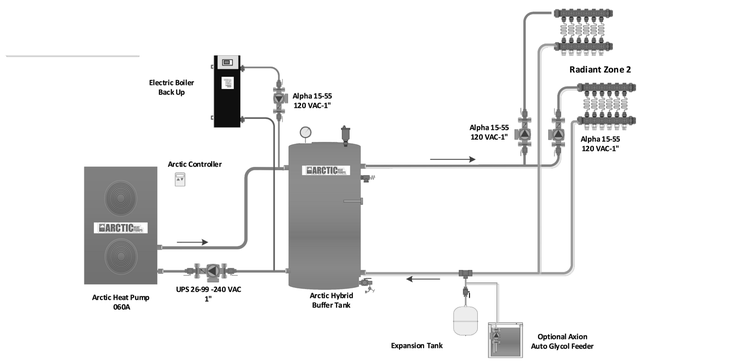
1. PROVIDE STRUCTURAL INTERSTITIAL ANGLE IRON MOUNTING MEMBER OR SIMILAR ATTACHED DIRECTLY TO BOTTOM OF UNIT MOUNTING FLANGE AND PROVIDE CROSS BRACING FOR RIGIDITY. ENSURE IT CARRIES FULL MOUNTING FOOT WIDTH ON UNIT. FINAL SPECIFICATION OF MEMBER BY STRUCTURAL ENGINEER OF RECORD.
2. PROVIDE BRAIDED COPPER FLEXIBLE CONNECTOR, R410A RATED, 650PSI MAX WORKING PRESSURE, PACKLESS INDUSTRIES OR EQUAL ON ALL MAIN PIPING DOWNSTREAM OF TWINNING KITS/CONVERGING FITTINGS PRIOR TO PENETRATION THROUGH ROOF.
3. PIPE ROOF CURB, FLASHED AND SEALED WATER TIGHT, PROVIDE FLEXIBLE WATER TIGHT COLLAR TO ALLOW FOR MOVEMENT WHERE PIPE ENTERS CURB. DO NOT ENTER PIPE CURB FROM VERTICAL DIRECTION.
4. TYPICAL BASE SUPPORT POSTS, SECURELY ANCHORED TO BUILDING STRUCTURE BELOW, QUANTITY, SIZE, AND CARRYING CAPACITY DETERMINED BY STRUCTURAL ENGINEER OF RECORD.
5. STRUCTURAL ANGLE IRON BASE MOUNTING FRAME WITH CROSS MEMBERS FOR RIGIDITY – FINAL SIZING BY STRUCTURAL ENGINEER OF RECORD.
6. VIBRATION SPRING SLR TYPE ISOLATORS (MASON INDUSTRIES OR EQUIV.) WITH RUBBER BASE PADS, SECURELY FASTENED TO STRUCTURAL BASE AND TO CONDENSING UNIT INTERSTITIAL SUPPORT STEEL. SPRING ISOLATOR TO PROVIDE MINIMUM 1" DEFLECTION OR 10 TIMES THE STATIC DEFLECTION OF THE ROOF DECK FROM EQUIPMENT WEIGHT – DETERMINED BY STRUCTURAL ENGINEER OF RECORD. AT A MINIMUM, PROVIDE SPRING ISOLATORS AT EACH EQUIPMENT BASE MOUNTING HOLE LOCATION.
7. IF REQUIRED, ONLY SUPPORT LATERAL PIPE EMANATING FROM CONDENSING UNIT CONNECTIONS BY CROSS MEMBER SUPPORT THAT IS ATTACHED DIRECTLY TO CONDENSING UNIT MOUNTING ANGLE IRON FRAME ABOVE SPRING ISOLATORS. DO NOT ATTACH ANY PIPING TO LOWER FIXED SUPPORT BASE.
8. USE NEOPRENE ISOLATION COLLARS ON PIPE CLAMS WHEN FASTENING PIPING TO SUPPORTS.
9. USE LONG RADIUS SWEEPING COPPER ACR TUBE PIPE BENDS WHERE PIPE ENTERS BUILDING AT FIRST ELBOW INTO CEILING SPACE TO MINIMIZE REFRIGERANT FLOW NOISE AND VIBRATION.
10. ALL ELECTRICAL CONNECTIONS TO UNITS TO BE VIA FLEXIBLE CONDUIT, PROVIDE SUFFICIENT SLACK TO ALLOW FOR UNIT MOVEMENT ON SPRING ISOLATORS.
11. ENSURE CROSS MEMBERS OF INTERSTITIAL FRAME AND BOTTOM SUPPORT FRAME ARE NOT DIRECTLY BELOW ENDS OF MODULES IN ALL LOCATIONS AND DO NOT BLOCK DRAINAGE WEEP HOLES IN BOTTOM OF UNIT CASING, FAILURE TO DO THIS MAY RESULT IN ICE DAMMING/BUILDUP BENEATH UNIT AND SUBSEQUENT BUILDUP OF ICE IN BOTTOM OF UNIT CASING BELOW COIL AND POTENTIAL DAMAGE TO BOTTOM OF COIL.
12. WHEN SELECTING SPRING ISOLATORS ALWAYS CONSIDER WEIGHT DISTRIBUTION BY REFERENCING EQUIPMENT WEIGHT AND CENTER OF GRAVITY. NEAR RIGHT ENDS OF UNITS (VIEWED FROM FRONT PANEL) SPRING WEIGHT CAPACITY MAY BE LARGER. IF HIGHER SPRING WEIGHT CAPACITY IS REQUIRED VS OTHER SPRING LOCATIONS, CONSIDER AN ADDITIONAL SPRING OF EQUAL "K" VALUE (lbs/in) NEAR RIGHT END OF LAST MODULE. IN GENERAL IT IS RECOMMENDED TO SELECT ALL MOUNTING SPRINGS OF EQUIVALENT "K" VALUE (lbs/in).

CONDENSING UNIT SUPPORT DETAIL

6 SCALE: NONE

General Hydronic Heating
INFLOOR

FOR REFERENCE ONLY



THE SCALE OF THIS DRAWING IS CORRECT WHEN PRINTED ON 24x36 SIZE PAPER. ALL OTHER PAPER SIZES WILL NOT SHOW THE CORRECT SCALE.

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
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Westport NY 12993

M-700.00

MECHANICAL DETAILS

SEAL | SIGNATURE:

1. GENERAL

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.

C. INVESTIGATE EACH SPACE THROUGH WITCH EQUIPMENT MUST BE MOVED INCLUDING HALLWAYS, DOOR WIDTHS, ELEVATOR DIMENSIONS, ETC. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM BUILDING OWNER AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.

D. DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.

E. SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.

F. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

G. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES IN MAKING UP THE WORK PROPOSAL.

H. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO ENSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING OWNER. INSTALL ISOLATION VALVES AT POINT OF CONNECTION TO THE EXISTING PIPING. PROVIDE TEMPORARY DUCT CAPS AND/OR CONNECTIONS TO MINIMIZE SHUTDOWN TIME.

I. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED WHILE INSTALLING NEW WORK TO ACCEPTABLE CONDITION AS DETERMINED BY ARCHITECT.

J. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW SYSTEM.

K. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

L. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL.

M. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.

N. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT, WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS, SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

O. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

P. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.

Q. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE PREMIUM PORTION OF THE WAGES PAID.

R. UNLESS OTHERWISE SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

S. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

T. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC. WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION. THE ON-SITE INSPECTION SHALL VERIFY EXISTING DUCTWORK, PIPING (SIZES, CLEARANCES, ETC.) AND CONDITIONS.

U. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

V. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

W. GUARANTEE:

i. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE MECHANICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER, AND IS UNDER CARE, CUSTODY, AND CONTROL OF THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP AND OPERATION OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE SYSTEM.

ii. THE CONTRACTOR SHALL GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN THE GUARANTEE PERIOD. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL INCLUDE RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THIS CONTRACTOR.

iii. THIS CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL SYSTEMS UNTIL THE FINAL ACCEPTANCE OF THE WORK.

iv. ALL AIR CONDITIONING UNIT COMPRESSORS AND REFRIGERATION COMPONENTS SHALL HAVE A 5-YEAR WARRANTY.

X. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES. WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.

Y. DEFINITIONS:

i. "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.

ii. "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.

iii. "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

iv. "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

v. "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.

vi. "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

vii. "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

2. SCOPE OF WORK

A. THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.

B. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. PERMITS AND FEES

i. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TEST OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

ii. THIS CONTRACTOR SHALL PREPARE OR HIRE THE NECESSARY CONSULTANTS TO PREPARE AND FILE ALL PLANS, CALCULATION, FORMS, ETC. REQUIRED FOR FILING WITH ALL AGENCIES REQUIRED FOR THIS WORK INCLUDING BUT NOT LIMITED TO THE DEP (DEPARTMENT OF ENVIRONMENTAL PROTECTION), DEC (DEPARTMENT OF ENVIRONMENTAL CONSERVATION), BUREAU OF AIR RESOURCES, EPA (ENVIRONMENTAL PROTECTION AGENCY), FDNY, ETC.

E. INSPECTIONS & TESTING / SPECIAL INSPECTIONS

i. THIRD PARTY INSPECTION AGENCY SHALL BE HIRED BY THE OWNER TO PERFORM ALL INSPECTIONS REQUIRED BY ALL LOCAL CODES.

F. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT PROVIDE COMPLETE SET OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, DUCTWORK, PIPING AND CONTROL SYSTEMS INDICATING CAPACITY DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

G. WITHIN 15 DAYS AFTER AWARD OF CONTRACT, SUBMIT FOR REVIEW, A LIST OF ALL MATERIAL AND EQUIPMENT MANUFACTURER'S PRODUCTS THAT ARE PROPOSED, AS WELL AS NAMES OF ALL SUBCONTRACTORS WHOM THIS TRADE PROPOSES TO UTILIZE ON THIS PROJECT.

3. SHOP DRAWINGS

A. INDICATE ON EACH SUBMISSION: PROJECT NAME AND LOCATION, ARCHITECT AND ENGINEER, ITEM IDENTIFICATION AND APPROVAL STAMP OF PRIME CONTRACTOR, SUBCONTRACTOR NAMES AND PHONE NUMBERS, REFERENCE TO THE APPLICABLE DESIGN DRAWING OR SPECIFICATION ARTICLE, DATE AND SCALE.

B. THE WORK DESCRIBED IN ALL SHOP DRAWING SUBMISSION SHALL BE CAREFULLY CHECKED FOR ALL CLEARANCES (INCLUDING THOSE REQUIRED FOR MAINTENANCE AND SERVICING), FIELD CONDITIONS, MAINTENANCE OF ARCHITECTURAL CONDITIONS AND PROPER COORDINATION WITH ALL TRADES ON THE JOB.

C. EACH SUBMITTED SHOP DRAWING IS TO INCLUDE A CERTIFICATION THAT ALL RELATED JOB CONDITIONS HAVE BEEN CHECKED AND VERIFIED AND THAT THERE ARE NO CONFLICTS.

D. ALL SHOP DRAWINGS ARE TO BE SUBMITTED TO ALLOW 5 BUSINESS DAYS FOR CHECKING IN ADVANCE OF FIELD REQUIREMENTS. ALL SUBMITTALS TO BE COMPLETE AND CONTAIN ALL REQUIRED AND DETAILED INFORMATION. SHOP DRAWINGS WITH MULTIPLE PARTS SHALL BE SUBMITTED AS A PACKAGE.

E. IF SUBMITTALS DIFFER FROM THE CONTRACT DOCUMENT REQUIREMENTS, MAKE SPECIFIC MENTION OF SUCH DIFFERENCES IN A LETTER OF TRANSMITTAL, WITH REQUEST FOR SUBSTITUTION, TOGETHER WITH REASONS FOR SAME.

F. ELECTRONIC COPIES OF ENGINEERING DRAWINGS:

i. IF THE CONTRACTOR REQUIRES (.DWG) FORMAT. THE DRAWINGS WILL BE FORWARDED ONLY UPON RECEIPT OF SIGNED ACCEPTANCE OF TERMS FORM. PERMISSION FROM THE ARCHITECT MUST FIRST BE OBTAINED FOR ENGINEER TO INCLUDE THE ARCHITECTURAL BACKGROUND AS REFERENCE. THE CONTRACTOR IS TO OBTAIN THE ARCHITECT'S LATEST DRAWINGS DIRECTLY FROM THE ARCHITECT.

ii. THESE FILES ARE BEING ISSUED FOR THE CONVENIENCE OF THE CONTRACTOR AND THE CONTRACTOR REMAINS RESPONSIBLE FOR ALL CONTRACT REQUIREMENTS RELATED TO THE NORMAL SHOP DRAWING PREPARATION PROCESS.

G. SUBMISSIONS:

i. PROVIDE ALL COORDINATION DRAWINGS, DUCTWORK AND PIPING SHOP DRAWINGS IN PDF FORMAT - PAPER SUBMISSIONS SHALL NOT BE ACCEPTED. THE ARCHITECT WILL FORWARD ALL SUBMISSIONS TO THE ENGINEER.

H. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

j. SHEET METAL SHOP DRAWING (3/8 INCH SCALE)

ii. SHEET METAL & PIPING SHOP STANDARDS

SHEETMETAL SHOP STANDARDS SHALL BE COMPILED DIRECTLY FROM THE "SMACNA DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" MANUAL. MODIFICATIONS FOR A SPECIFIC PROJECT, IF ANY, SHALL BE INDICATED DIRECTLY ON THE SMACNA TEMPLATES. MODIFIED SHOP STANDARDS NOT TAKEN DIRECTLY FROM THE SMACNA TEMPLATES WILL NOT BE ACCEPTED. ANY DEVIATIONS FROM SMACNA SHALL BE NOTED.

iii. AIR OUTLETS

iv. AIR AND WATER BALANCE REPORT

v. AC UNITS

vi. FANS & ERVS

vii. VFD DRIVES

viii. TERMINAL BOXES (VAV, FAN POWERED, ETC.)

ix. PUMPS

x. VALVES

xi. PIPING LAYOUT: DETAIL, AT 3/8 INCH SCALE PIPING LAYOUT WITH FITTINGS, VALVES AND EQUIPMENT, USE SINGLE LINE FOR PIPE SIZES 3 INCHES AND SMALLER, AND DOUBLE LINE FOR PIPE SIZES 4 INCHES AND GREATER. FABRICATION OF PIPE ANCHORS, HANGERS, SUPPORTS FOR MULTIPLE PIPES, ALIGNMENT GUIDES, EXPANSION JOINTS AND LOOPS, AND ATTACHMENTS OF THE SAME TO THE BUILDING STRUCTURE. DETAIL LOCATION OF ANCHORS, ALIGNMENT GUIDES, AND EXPANSION JOINTS AND LOOPS SUBMIT ALL WELDING CERTIFICATES.

xii. BOILERS

xiii. VIBRATION AND SEISMIC ISOLATION

xiv. DAMPER AND VALVE ACTUATORS

xv. AUTOMATIC CONTROL SYSTEMS AND DEVICES

xvi. SEQUENCE OF OPERATIONS

I. COORDINATION DRAWINGS: CONTRACTOR SHALL PROVIDE PLANS AT 3/8 INCH SCALE INDICATING COORDINATION BETWEEN THE TRADES USING INPUT FROM INSTALLERS OF THE ITEMS INVOLVED.

i. DUCT AND PIPING INSTALLATION INDICATING COORDINATION WITH GENERAL CONSTRUCTION, BUILDING COMPONENTS, AND OTHER BUILDING SERVICES. INDICATE LOCATIONS AND SIZES OF ALL OPENINGS IN FLOOR, WALLS AND ROOF THAT MAY BE REQUIRED.

ii. COORDINATION WITH SUSPENDED CEILING COMPONENTS, STRUCTURAL MEMBERS TO WHICH DUCT WILL BE ATTACHED, SIZE AND LOCATION OF INITIAL ACCESS MODULES FOR ACOUSTICAL TILE, PENETRATIONS OF SMOKE BARRIERS AND FIRE-RATED CONSTRUCTION, LIGHTING FIXTURES, AIR OUTLETS AND INLETS, SPEAKERS, SPRINKLERS, ACCESS PANELS, PERIMETER MOLDINGS SHALL BE PERFORMED.

4. AS-BUILTS AND EQUIPMENT OPERATION INSTRUCTIONS

A. PROVIDE ALL COORDINATION DRAWINGS, DUCTWORK AND PIPING AS-BUILTS IN AUTOCAD 2013 AND PDF FORMAT. ALL CATALOG CUTS AND SUBMITTALS TO BE PROVIDED IN ELECTRONIC PDF FORMAT. THE ARCHITECT WILL FORWARD ALL SUBMISSIONS TO THE ENGINEER.

B. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

C. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 INCH X 11 IN FORMAT. THE CONTRACTOR SHALL GIVE ONE COPY OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

D. THE INSTRUCTIONS SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

E. FINAL AS-BUILT DRAWINGS INDICATING AS INSTALLED CONDITIONS SHALL BE PROVIDED TO THE ARCHITECT AND ENGINEER AFTER COMPLETION OF THE INSTALLATION.

5. SUBSTITUTIONS

A. NO SUBSTITUTE MATERIAL OR MANUFACTURER OF EQUIPMENT SHALL BE PERMITTED WITHOUT A FORMAL WRITTEN SUBMITTAL TO THE ENGINEER WHICH INCLUDES ALL DIMENSIONAL, PERFORMANCE AND MATERIAL SPECIFICATIONS. ANY CHANGES IN LAYOUT, ELECTRICAL CHARACTERISTICS, STRUCTURAL REQUIREMENTS OR DESIGN DUE TO THE USE OF A SUBSTITUTION SHALL BE SUBMITTED TO THE ENGINEER AS PART OF THIS PROPOSAL. THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR THE SUBSTITUTION AND ALL CHANGES RESULTING FROM THE SUBSTITUTION. ALL ITEMS SHALL BE SUBMITTED FOR REVIEW IN CONJUNCTION WITH THE SUBMITTAL OF THE SUBSTITUTION. ANY SUBSTITUTION MUST BE SUBMITTED WITH AN EXPLANATION WHY A SUBSTITUTION IS BEING UTILIZED. IF THE SUBSTITUTED ITEM DEVIATES FROM THE SPECIFIED ITEM, THOSE DEVIATIONS ARE TO BE IDENTIFIED ON A LINE BY LINE BASIS. IF THE SUBSTITUTE IS BEING UTILIZED FOR FINANCIAL REASONS, THE ASSOCIATED CREDIT MUST BE SIMULTANEOUSLY SUBMITTED.

B. ALL SUBSTITUTED EQUIPMENT SHALL CONFORM TO SPACE REQUIREMENTS AND PERFORMANCE REQUIREMENTS SHOWN ON CONTRACT DOCUMENTS. CONTRACTOR SHALL REPLACE ANY EQUIPMENT THAT DOES NOT MEET THESE REQUIREMENTS AT HIS OWN EXPENSE. ANY MODIFICATIONS TO ASSOCIATED SYSTEMS OR ADDITIONAL COSTS ATTRIBUTED TO THIS SUBSTITUTION SHALL BE AT THIS CONTRACTOR'S EXPENSE.

C. CONTRACTOR SHALL SUBMIT BID BASED ON SPECIFIED ITEMS AND SHALL SUPPLY AS AN ALTERNATE PRICE ANY SUBSTITUTIONS.

6. SERVICE AND WARRANTY (MAINTENANCE CONTRACT)

A. THIS CONTRACTOR SHALL PROVIDE AS AN ADD ALTERNATE PRICE, A FULL ONE YEAR SERVICE OF ALL MECHANICAL COMPONENTS AND SYSTEMS, WITH PRICES FOR YEARS 2, 3 AND 4 FOLLOWING THIS FIRST YEAR. AT THE TIME OF ACCEPTANCE OF PROJECT, THE TENANT OR OWNER'S REPRESENTATIVE WILL DECIDE TO ACCEPT WHICH ALTERNATE, IF ANY. THIS IS IN ADDITION TO THE WARRANTY BEING PROVIDED AS PART OF THE BASE CONTRACT.

7. ACCESS DOORS IN GENERAL CONSTRUCTION

A. THIS CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL A PLAN INDICATING THE SIZE (MINIMUM 18 INCH X 18 INCH) AND LOCATION OF ALL ACCESS DOORS REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT, DEVICES, VALVES, DAMPERS AND CONTROLS. CONTRACTOR SHALL ARRANGE FOR FURNISHING AND INSTALLATION OF ALL ACCESS DOORS IN FINISHED CONSTRUCTION AND INCLUDE COSTS IN THE BID.

B. REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL EQUIPMENT, DAMPERS, VALVES, ETC. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.

8. SHEET METAL WORK

A. DUCT CONSTRUCTION, INCLUDING SHEET METAL THICKNESSES, SEAM AND JOINT CONSTRUCTION, REINFORCEMENTS, HANGERS AND SUPPORTS, SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" LATEST EDITION AND PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

B. EXCEPT AS OTHERWISE SHOWN OR NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL

C. DESCRIPTION OF DUCTWORK PRESSURE CLASS AND EQUIPMENT:

i. 2 INCH DUCT CLASS AND LESS: ALL OTHER LOW PRESSURE DUCTOWORK. SEAL CLASS C, LEAKAGE CLASS 24 (RECTANGULAR) OR CLASS 12 (ROUND).

ii. 3 INCH DUCT CLASS: ALL SUCTION AND DISCHARGE OF KITCHEN EXHAUST AND OTHER EXHAUST DUCTWORK. SEAL CLASS B, LEAKAGE CLASS 12 RECTANGULAR METAL OR CLASS 6 (ROUND).

iii. 4 INCH AND GREATER DUCT CLASS: ALL SUPPLY/RETURN DUCTWORK FROM DISCHARGE/INTAKE OF FANS, AIR HANDLING UNITS OR AC UNITS TO INLET/OUTLET OF TERMINAL BOXES ON FLOOR, ALL OUTDOOR DUCTWORK AND ALL DUCTWORK RUNNING THROUGH UNCONDITIONED SPACES. SEAL CLASS A, LEAKAGE CLASS 6 (RECTANGULAR METAL) OR CLASS 3 (ROUND).

D. GENERAL FABRICATION REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", LATEST EDITION, BASED ON INDICATED STATIC-PRESSURE CLASS UNLESS OTHERWISE INDICATED.

i. THE FOLLOWING FITTING CONNECTIONS AND DUCT CONSTRUCTION GAUGES ARE NOT ACCEPTABLE

a) DRIVE SLIP [T-1, T-2] FITTING CONNECTIONS

b) 26 GAUGE DUCTWORK.

ii. TRANSVERSE JOINTS: SELECT JOINT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", "TRANSVERSE (GIRTH) JOINTS", FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." FITTINGS AND/OR JOINTS OF TWO DIFFERENT GAUGES, CONNECTED JOINT RATING SHALL MEET MORE STRINGENT CONDITIONS.

iii. USE THE FOLLOWING SMACNA TRANSVERSE (GIRTH) JOINTS

a) DUCT CONSTRUCTION AS FOLLOWS FOR 2 INCH W.G. CLASS:
(1) UP TO 12 INCH WIDE USE T-6 OR T-7
(2) 13 INCH TO 28 INCH WIDE USE T-11 OR T12
(3) 29 INCH WIDE AND UP USE TDC OR TDF

b) DUCT CONSTRUCTION AS FOLLOWS FOR 3 INCH W.G. CLASS:
(1) UP TO 20 INCH WIDE USE T-6 OR T-7
(2) 21 INCH TO 24 INCH WIDE USE T-11 OR T12
(3) 25 INCH WIDE AND UP USE TDC OR TDF

c) DUCT CONSTRUCTION AS FOLLOWS FOR 4 INCH W.G. CLASS:
(1) UP TO 12 INCH WIDE USE T-6 OR T-7
(2) 13 INCH TO 18 INCH WIDE USE T-11 OR T12
(3) 19 INCH WIDE AND UP USE TDC OR TDF

E. VOLUME DAMPERS: GALVANIZED STEEL, PER SMACNA "LOW VELOCITY MANUAL," EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR TO CLEAR INSULATION. INSTALL WITH LEVERS ACCESSIBLE.

i. PROVIDE MANUAL BALANCING VOLUME DAMPERS AS REQUIRED TO PROPERLY BALANCE THE AIR DISTRIBUTION SYSTEM. IF THE LOCATION OF BALANCING DAMPERS ARE NOT DEFINED ON THE DRAWINGS, THE FOLLOWING MINIMUM STANDARDS SHALL GOVERN:

a) LOW PRESSURE: ALL SUPPLY AIR MAIN BRANCHES FROM TRUNK, EACH SPLIT, AND ALL SUB-BRANCHES FROM MAINS SHALL BE PROVIDED WITH BALANCING DAMPERS.

b) LOW PRESSURE: ALL EXHAUST AND RETURN BRANCHES FROM TRUNK, EACH SPLIT AND ALL SUB-BRANCHES FROM MAINS SHALL BE PROVIDED WITH BALANCING DAMPERS.

F. FLEXIBLE DUCTWORK SHALL NOT BE USED ON THIS PROJECT.

G. ACCESS DOORS: INSULATED OR UNINSULATED, SAME AS DUCT.

i. PROVIDE MINIMUM 20 INCH X 14 INCH ON MAIN DUCTS, AND 12 INCH X 6 INCH ON BRANCH DUCTS, UNLESS OTHERWISE APPROVED, AT FIRE DAMPERS, AND AT ALL DUCT ACCESSORIES SUCH AS HUMIDIFIERS, DUCT SMOKE DETECTORS, AUTO DAMPERS, AND LOUVERS.

ii. ALL ACCESS DOORS TO BE HINGED, WITH LATCH SIMILAR TO VENTLOCK NO. 100.

H. FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ PER SQUARE YD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE WITH METAL COLLARS. ALLOW MINIMUM MOVEMENT OF 1 INCH.

I. TURNING VANES: GALVANIZED STEEL SMALL DOUBLE-THICKNESS VANES WITH 2 INCH INSIDE RADIUS.

J. FIRE DAMPERS: DYNAMIC; RATED AND LABELED ACCORDING TO UL 555 BY AN NRTL GALVANIZED STEEL CONSTRUCTION, CURTAIN TYPE WITH BLADES OUT OF THE AIRSTREAM (TYPE B), SPRING LOADED, EQUIPPED WITH FUSIBLE LINK, CONFORMING TO NFPA STANDARD 90A AND APPROVED BY NEW YORK CITY, SIMILAR TO POTOROFF OR RUSKIN, RATED AS REQUIRED. PROVIDE FIRE DAMPERS AS NOTED ON THE PLANS AND IN DUCTS AND OPENINGS IN SHAFTS, FLOORS, FIRE WALLS, FIRE-RESISTANCE PARTITIONS, FIRE RATED CEILINGS, EXIT CORRIDOR WALLS. PROVIDE ACCESS DOOR IN DUCT ADJACENT TO EACH FIRE DAMPER. SEE INSTALLATION ON DRAWING.

K. COMBINATION FIRE/SMOKE DAMPERS:

i. COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED AS INDICATED ON DRAWING AND AS REQUIRED BY LOCAL CODES. DAMPERS TO BE UL 555S LATEST EDITION LISTED AND LABELED AND IN CONFORMANCE WITH NFPA.

ii. COMBINATION FIRE/SMOKE DAMPERS SHALL BE CLASS 1 (ONE), DUAL OVERRIDE REMOTE RESETTABLE, OPPOSED MULTIBLADE TYPE WITH FIRESTAT OR EQUIVALENT HEAT RESPONSIVE DEVICE, 120-VOLT ACTUATOR AS REQUIRED MOUNTED OUT OF THE AIR STREAM, WITH DAMPER OPERATOR AND BLADE POSITION INDICATOR SWITCHES. PROVIDE MOTOR MOUNT BRACKET STRENGTHENER FOR DAMPERS OVER 10 INCH IN HEIGHT. PROVIDE A 10 GAUGE WELDED VERTICAL STIFFENER AT EACH CORNER TO PREVENT DAMPER MISALIGNMENT.

iii. PROVIDE ACCESS DOOR IN DUCT ADJACENT TO EACH FIRE/SMOKE DAMPER.

iv. PROVIDE FIRE/SMOKE DAMPERS AS NOTED ON THE PLANS AND IN DUCTS AND OPENINGS IN SHAFTS, FLOORS, FIRE WALLS, FIRE-RESISTANCE PARTITIONS, FIRE RATED CEILINGS AND SMOKE BARRIERS.

v. THE HVAC CONTRACTOR SHALL PROVIDE ALL DEVICES, RELAYS, END SWITCHES, E/P SWITCHES, CONTROL COMPONENTS, AIR PIPING, POWER WIRING, CONTROL WIRING AND INTERLOCK WIRING AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION FOR THESE DAMPERS.

vi. DAMPERS SHALL BE MANUFACTURED BY GREENHECK MODEL FSD-311, RUSKIN MODEL FSD-60, OR APPROVED EQUAL.

vii. MODULATING COMBINATION FIRE/SMOKE DAMPERS TO BE PROVIDED WITH ACTUATORS RATED AND TESTED FOR THIS APPLICATION.

viii. SEE INSTALLATION ON DRAWING.

L. ALL DUCT DIMENSIONS INDICATED ON PLANS ARE INSIDE CLEAR DIMENSIONS. INCREASE DUCT DIMENSIONS AS REQUIRED TO ACCOUNT FOR INTERNAL LINING.

M. AUTOMATIC DAMPERS: COMPLETE WITH LINKAGE AND ELECTRIC OPERATOR. OPPOSED BLADE DAMPER OR GALVANIZED STEEL MIN. 4 INCH, MAX. 8 INCH WIDE WITH COMPRESSIBLE EDGE SEALS TO PREVENT LEAKAGE. FACTORY-ASSEMBLE STEEL LINKAGE AND SHAFT WITH NYLON OR OIL-IMPREGNATED BRONZE BEARINGS. MOTOR WITH SUFFICIENT POWER TO LIMIT LEAKAGE TO 10 CFM PER SQUARE FEET. LINKAGE TO WITHSTAND LOAD EQUAL TO TWICE MAXIMUM OPERATING FORCE WITHOUT DEFLECTION. DAMPER MOUNTED IN WELDED STEEL CHANNEL FRAME.

i. SHUTOFF DAMPERS SHALL BE CLASS I MOTORIZED DAMPERS WITH AN AIR LEAKAGE RATE NOT GREATER THAN 4 CFM/SF OF DAMPER SURFACE AREA AT 1.0 INCH WG AND AMCA 500D LISTED.

N. EXTERIOR LOUVERS: 4 INCH WIDE STATIONARY LOUVER, EXTRUDED ALUMINUM, 0.081 INCH WALL THICKNESS, 6063T5 ALLOY BLADES AND FRAME WITH STAINLESS STEEL OR ALUMINUM FASTENERS. LOUVER TO INCORPORATE STRUCTURAL SUPPORT TO WITHSTAND WIND LOAD OF 20 LBS PER SQUARE FEET. PROVIDE REMOVABLE 3/4 INCH X 3/4 INCH ALUMINUM BIRDSCREEN IN AN ALUMINUM FRAME. AIR PERFORMANCE AND WATER PENETRATION LESS THAN OR EQUAL TO GREENHECK. COORDINATE ALL REQUIREMENTS WITH THE BUILDING MANAGEMENT AND ARCHITECT. LOUVER TO COMPLY WITH BASE BUILDING STANDARDS.

O. ALUMINUM DUCTWORK:

i. ALUMINUM SHEETS: COMPLY WITH ASTM B 209ALLOY 3003, H14 TEMPER; WITH MILL FINISH FOR CONCEALED DUCTS, AND STANDARD, ONE-SIDE BRIGHT FINISH FOR DUCT SURFACES EXPOSED TO VIEW.

ii. ALL OUTSIDE AIR, EXHAUST, AND RELIEF DUCTWORK WITHIN 5 FEET OF LOUVERS SHALL BE ALUMINUM WITH SEAMS SEALED WATERTIGHT WITH ALCOA ALUMINASTIC TYPE C SEAM SEALER OR SOLDER. PITCH DUCTWORK TOWARDS LOUVER.

P. WIRE MESH SCREEN (WMS): NO. 16 USSG, 3/4 SQUARE MESH, IN 1 INCH WIDE GALVANIZED STEEL ENCLOSING FRAME. FLANGED DUCT OPENING TO RECEIVE FRAME.

Q. EXISTING DUCTWORK TO BE REUSED:

i. THIS CONTRACTOR SHALL INSPECT, SEAL PER SMACNA REQUIREMENTS, LEAK TEST, AND INSULATE ALL EXISTING DUCTWORK TO BE REUSED. EXISTING DUCTWORK TO BE REUSED SHALL CONFORM TO SPECIFICATIONS FOR NEW DUCTWORK LISTED HEREIN. ALL REQUIRED WORK SHALL BE PART OF BID.

R. EXPOSED DUCTWORK:

i. WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS, INCLUDING PITTINGS, SEAM MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS. PROVIDE FINISHES WHICH WILL ALLOW PAINTING. PROVIDE FLAT TYPE SEAMS AND JOINTS FOR ALL EXPOSED DUCT CONSTRUCTION.

S. LEAKAGE TESTING:

i. ALL DUCTWORK GREATER THAN 2 INCH CLASS AS DEFINED WITHIN IS TO BE TESTED. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL COLLARS, CAPS, ELECTRIC POWER, ETC. NECESSARY TO PERFORM THE TESTS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR SCHEDULING THE TEST NO LESS THAN THREE (3) BUSINESS DAYS PRIOR TO ITS INTENDED OCCURRENCE. LOW PRESSURE DUCTWORK (2 INCH CLASS) SHALL BE TESTED ON AN AS NEEDED BASIS AT THE ENGINEER'S DIRECTION. LEAKAGE TEST PROCEDURE SHALL FOLLOW THE OUTLINES AND CLASSIFICATIONS IN THE SMACNA HVAC DUCT LEAKAGE TEST MANUAL. IF SPECIMEN FAILS TO MEET ALLOTTED LEAKAGE LEVEL, THE CONTRACTOR SHALL MODIFY TO BRING IT INTO COMPLIANCE AND SHALL RETEST IT UNTIL ACCEPTABLE LEAKAGE IS DEMONSTRATED. TESTS AND NECESSARY REPAIR SHALL BE COMPLETED AND A REPORT SHALL BE SUBMITTED TO AND APPROVED BY ENGINEER PRIOR TO CONCEALMENT OF DUCTS.

9. AIR OUTLETS

A. GENERAL:

i. MARGIN TYPES, COLORS, FINISH AND METHODS OF ATTACHMENT FOR ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE COORDINATED WITH ARCHITECTURAL CEILING AND WALL DETAILS AND SPECIFICATIONS. FINISH SHALL MATCH COLOR SAMPLE AS APPROVED:

ii. FRAME TYPE SUITABLE FOR MOUNTING IN CEILING OR WALL CONSTRUCTION AS INDICATED ON ARCHITECTURAL PLANS.

iii. EXACT LOCATION OF ALL AIR OUTLETS AS PER ARCHITECTURAL PLANS.

iv. PROVIDE MOUNTING AND BLOCKING

v. SUITABLE FOR OPERATION AT 20% EXCESS AND 20% LESS THAN NOTED CAPACITY FOR CONSTANT VOLUME SYSTEMS AND AT 20% EXCESS AND 60% LESS THAN NOTED CAPACITY FOR VARIABLE VOLUME SYSTEMS.

vi. MANUFACTURER RESPONSIBLE FOR EXAMINING APPLICATION OF EACH OUTLET AND GUARANTEE THAT EACH WILL PROVIDE REQUIRED NC LEVELS AND COMFORT SPACE CONDITIONS WITHOUT DRAFTS THROUGHOUT OPERATING RANGE.

vii. ALL REGISTERS SHALL BE PROVIDED WITH OPPOSED BLADE VOLUME DAMPERS. DAMPER OPERATING LEVERS SHALL BE ACCESSIBLE AT THE FACE OF AIR OUTLETS. CEILING DIFFUSERS SHALL NOT HAVE BUTTERFLY DAMPERS WITHIN NECK.

viii. ONLY FOUR (4) WAY DIFFUSERS SHALL BE PROVIDED. PROVIDE SHEETMETAL BLANK OFF AS REQUIRED FOR 1 WAY, 2 WAY OR 3 WAY DIFFUSERS.

ix. PROVIDE BLANKING FOR PROPER COVERAGE AND BLOW WITHOUT PRODUCING OBJECTIONABLE NOISE OR AIR MOTION AT OCCUPIED LEVEL.

x. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

a) ANEMOSTAT PRODUCTS; A MESTEK COMPANY.

b) TITUS.

c) PRICE INDUSTRIES

B. LINEAR DIFFUSERS: EXTRUDED ALUMINUM CONSTRUCTION, FINISH AS PER ARCHITECT, REMOVABLE CORE, AIR DEFLECTION VANE AND CABLE DAMPER IN EACH BRANCH TAP WITH 3 FEET CABLE TO DIFFUSER FACE.

i. LINEAR DIFFUSERS: FRAME TYPES SHALL MATE WITH CEILINGS. PROVIDE MEANS TO NEATLY BUTT AND ALIGN UNITS TO GIVE CONTINUOUS APPEARANCE WITHOUT BUTTING FLANGES. NO SCREW HOLES OR WELDED CORNERS VISIBLE ON DIFFUSERS OR FRAMES WILL BE PERMITTED. AIR VOLUME SHALL BE ADJUSTABLE THROUGH AIR SUPPLY FACE WITHOUT REQUIRING REMOVAL OF FACE PANEL. PROVIDE BLANKED SECTIONS FOR INACTIVE LENGTHS. PROVIDE PLASTER FRAMES AND OPPOSED BLADE VOLUME DAMPERS WITH REMOTE CABLE OPERATORS WHERE NOTED. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAILS AND OVERALL LENGTHS.

C. SQUARE DIFFUSERS: DIFFUSERS SHALL BE STEEL CONSTRUCTION PAINTED WHITE SUITABLE FOR THE TYPE OF CEILING.

D. REGISTERS AND GRILLES:

THE SCALE OF THIS DRAWING IS CORRECT WHEN PRINTED ON 24x36 SIZE PAPER. ALL OTHER PAPER SIZES WILL NOT SHOW THE CORRECT SCALE.

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

ISSUES:

01	04.07.23	BID 01

ESSEX COUNTY FARMWORKER HOUSING RENOVATION
Barn
82 Loukes RD
Westport NY 12993

M-800.00

MECHANICAL SPECIFICATIONS (1 OF 3)

SEAL | SIGNATURE:

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i. RETURN AND EXHAUST REGISTERS: STEEL CONSTRUCTION WITH VOLUME DAMPER.

ii. SUPPLY REGISTERS: STEEL CONSTRUCTION ADJUSTABLE DOUBLE DEFLECTION STEEL AIRFOIL LOUVERS, WITH VOLUME DAMPER. PROVIDE AIR EQUALIZING DEFLECTOR WHERE REGISTER COLLAR DUCT IS LESS THAN 2 FEET LONG.

iii. TRANSFER GRILLES: STEEL CONSTRUCTION WITHOUT VOLUME DAMPER.

10. NOISE CONTROL

A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.

B. PROVIDE SOUNDLINING FOR THE FOLLOWING DUCTWORK:

i. ALL DUCTWORK WITHIN MECHANICAL ROOMS AND NOT LESS THAN 25 FEET ON EACH SIDE OF ALL FANS AND AC UNITS.

ii. ALL AIR TRANSFER AND JUMPER DUCTS.

iii. RETURN AIR STUB DUCTS AT MER WALLS AND SHAFT INTAKE OPENINGS FOR FULL LENGTH.

iv. DOWNSTREAM OF ALL TERMINAL BOXES (CV, VAV) FOR A MINIMUM OF 15 FEET).

v. ALL MIXED AIR PLENUMS, EXCEPT WHERE MOISTURE CARRYOVER FROM OUTDOOR AIR LOUVER WILL OCCUR.

vi. EXPOSED SUPPLY DUCTWORK SHALL BE ACOUSTICALLY LINED IN LIEU OF EXTERNAL INSULATION.

vii. ALSO WHERE NOTED ON A DRAWING.

C. SOUNDLINING IN DUCTWORK: FIBROUS GLASS, MINIMUM 3 LB DENSITY, 1-1/2 INCH THICKNESS, MAXIMUM 0.25 K FACTOR AT 75°F MEAN TEMPERATURE WITH ACRYLIC COATED FINISH FACTORY APPLIED EDGE COATING AND STENCILED IN ACCORDANCE WITH NFPA 90. FLAMESPREAD SHALL BE A MAXIMUM OF 25. LINING SHALL NOT SUPPORT MICROBIAL GROWTH AND SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1071 AND ASTM G21/G22. SIMILAR TO MANVILLE PERMACOTE LINACOUSTIC.

D. ALL SOUNDLINING, ADHESIVES, FACES AND ACCESSORIES TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE NOTED.

11. TESTING AND BALANCING

A. ALL AIR AND WATER BALANCING SHALL BE BY AN INDEPENDENT CONTRACTOR NOT AFFILIATED WITH THE MECHANICAL CONTRACTOR AND IN ACCORDANCE WITH LOCAL STANDARDS. CONTRACTOR SHALL UTILIZE BASE BUILDING BALANCING CONTRACTOR OR APPROVED EQUAL, CONTACT BUILDING MANAGEMENT.

B. CONTRACTOR TO BALANCE ENTIRE SYSTEM TO AIR AND/OR WATER QUANTITIES AS SHOWN ON ALL RELATED DRAWINGS FOR THIS JOB, AND AS DESCRIBED HEREIN. BALANCING MUST BE DONE IN THE PRESENCE OF A BUILDING ENGINEER.

C. AIR BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF FANS AND BRANCH DAMPERS FOR MAJOR ADJUSTMENTS. AIR SUPPLY OUTLETS TO BE BALANCED TO A UNIFORM SUPPLY ACROSS ENTIRE FACE. ADJUSTMENT OF TERMINAL DAMPERS AND DEVICES SHALL BE FOR TRIM OR MINOR ADJUSTMENT ONLY. THIS SHALL BE DONE TO PERMIT THE LEAST NOISE GENERATION IN THE TERMINAL AREAS AND UTILIZE MINIMUM FAN ENERGY.

D. WATER BALANCING SHALL BE ACCOMPLISHED BY ADJUSTMENT OF BALANCING VALVES AT PUMPS FOR PROPER FLOW. ADJUST FLOW THROUGH COILS AS REQUIRED.

E. UPON COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL REBALANCE ANY EXISTING PORTIONS OF AIR DISTRIBUTION SYSTEM AND WATER DISTRIBUTION SYSTEM AFFECTED BY THE RENOVATION AND ALSO BALANCE ALL NEW WORK.

F. IF DISCREPANCIES EXIST IN THE REPORT THAT REQUIRE FIELD VERIFICATION, THE TESTING AND BALANCING COMPANY IN THE PRESENCE OF THE ENGINEER SHALL VISIT THE JOBSITE FOR FIELD VERIFICATION OF THE REPORT.

G. THE CONTRACTOR SHALL PROVIDE ALL LABOR, PRESSURE GAUGES, FLOW METERS, SHEAVES, AND BELTS REQUIRED TO BALANCE SYSTEMS.

H. BALANCING REPORT SHALL BE PROVIDED ON NEBB OR AABC-TYPE FORMS.

I. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY A CERTIFIED NEBB OR AABC TECHNICIAN.

J. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY ONE OF THE FOLLOWING INDEPENDENT FIRMS SPECIALIZING IN TESTING AND BALANCING:

i. INTERNATIONAL TESTING AND BALANCING

ii. INDEPENDENT TESTING & BALANCING

iii. MERENDINO ASSOCIATES.

K. THE PERFORMANCE AND CAPACITY OF ALL SYSTEMS AND EQUIPMENT TO BE DEMONSTRATED BY THE CONTRACTOR.

L. AFTER SUBMISSION OF THE FIELD VERIFIED BALANCING REPORT, THE AIR BALANCING COMPANY SHALL RETURN TO THE JOB SITE TO PERFORM TWO (2) OCCUPANT COMFORT BALANCES AS DIRECTED BY THE OWNER OR ENGINEER

M. THE FINAL REPORT AFTER THE COMFORT BALANCE IS TO BE INCLUDED IN PROJECT OPERATING AND MAINTENANCE MANUAL TO OWNER AND ENGINEER.

N. THE TESTING AND BALANCING AGENCY SHALL INCLUDE AS PART OF THEIR WORK AN EXTENDED WARRANTY OF 90 DAYS AFTER COMPLETION OF TEST AND BALANCE WORK. THE ENGINEER AT HIS DISCRETION DURING THE WARRANTY PERIOD MAY REQUEST A RECHECK, OR RESETTING OF ANY EQUIPMENT. THE MECHANICAL CONTRACTOR AND THE BALANCING CONTRACTOR SHALL PROVIDE THE NECESSARY TECHNICIANS TO FACILITATE THIS WORK.

O. BALANCING AGENCY SHALL PERMANENTLY MARK ALL ADJUSTMENT DEVICES (VALVES, DAMPERS, ETC.) TO ENABLE THE SETTING TO BE RESTORED.

P. AIR BALANCING:

i. PRE-CONSTRUCTION AIR TESTING: MEASURE PRESSURE, TEMPERATURE, AND VOLUME OF AIR FROM EXISTING BASE BUILDING SYSTEM BEFORE STARTING WORK. TRAVERSE MAIN SUPPLY AND RETURN DUCTS BEFORE WORK TO OBTAIN TOTAL FLOW. SUBMIT REPORT TO ENGINEER IMMEDIATELY AFTER COMPLETION OF TEST.

ii. HVAC CONTRACTOR SHALL ENSURE THAT A FIRST SET OF AIR FILTERS ARE IN PLACE, WHENEVER FANS ARE RUNNING AND REPLACED WITH A NEW CLEAN SET OF FILTERS BEFORE TESTING IS COMMENCED.

iii. TEST, ADJUST, REPLACE SHEAVES, AND BALANCE ALL EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE AIR QUANTITIES INDICATED ON PLANS WITHIN PLUS OR MINUS 5 PERCENT.

iv. TEST REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

a) FLOW, LEAKAGE CLASS, TEMPERATURE, STATIC PRESSURE OF AIR AT ALL TRUNK DUCTS SERVING AREAS OF WORK.

b) TEMPERATURE OF AIR LEAVING OUTLETS AT TWO (2) TYPICAL AIR OUTLETS.

c) QUANTITY OF AIR AT EACH AIR INLET AND OUTLET AFTER BALANCING.

d) PROVIDE FOR ALL FANS, FAN MOTOR HP, AMPS, VOLTS, FAN RPM, CFM, INLET AND DISCHARGE STATIC PRESSURE, SHEAVE POSITION.

e) PROVIDE FOR ALL AIR CONDITIONING UNITS, SUPPLY CFM, OUTSIDE AIR CFM, RETURN AIR CFM, MIXED AIR CFM. PROVIDE OUTSIDE AIR, MIXED AIR AND SUPPLY AIR TEMPERATURES (DRY BULB – COOLING AND HEATING, WET-BULB-COOLING.) INDICATE UNIT OPERATING MODE DURING TEST.

f) CALIBRATE ALL NEW TERMINAL BOXES (VAV) AS REQUIRED TO MEET SPECIFIED MINIMUM/MAXIMUM CFM.

g) LISTING OF DESIGN AND ACTUAL READINGS AS WELL AS ALL MANUFACTURER'S DATA FOR EQUIPMENT.

Q. WATER BALANCING:

i. TEST, ADJUST, AND BALANCE NEW AND EXISTING TO BE REUSED DISTRIBUTION SYSTEMS TO PROVIDE FLOW QUANTITIES INDICATED ON THE DRAWINGS WITHIN PLUS OR MINUS 2 PERCENT.

ii. PLACE SYSTEM IN FULL AUTOMATIC OPERATION, WITH AUTOMATIC CONTROLS SET IN ACCORDANCE WITH DESIGN CONDITIONS, AND ALLOW WATER TO REACH DESIGN TEMPERATURE AND PRESSURE.

iii. ALL PIPE TESTING SHALL BE COMPLETED BEFORE COMMENCING BALANCING.

iv. SET ZONE OR CIRCUIT BALANCING VALVES AT EACH PIECE OF EQUIPMENT (PUMP, AIR HANDLING UNIT, ETC.), TO HANDLE THE DESIGN FLOW.

v. AIR HANDLING UNITS CONTAINING COILS, CHECK AND ADJUST EACH UNIT TO ENSURE THE PROPER VOLUME OF AIR IS PASSING THROUGH THE COILS, WHILE THE BALANCING PROCEDURE IS IN PROGRESS.

vi. THE TEST REPORT SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

a) THE PRESSURE DROP ACROSS AND FLOW AT EACH PIECE OF EQUIPMENT AND AT EACH RISER AND MAIN.

b) TEST PUMPS AND BALANCE FLOW. RECORD THE FOLLOWING ON PUMP REPORT SHEETS:

(1) PUMP IDENTIFICATION AND SYSTEM SERVED.
(2) SUCTION AND DISCHARGE PRESSURE AT OPERATING CONDITIONS.
(3) RUNNING AMPS AND BRAKE HORSEPOWER OF PUMP MOTOR UNDER FULL FLOW AND NO FLOW CONDITIONS.
(4) PRESSURE DROP ACROSS PUMP IN FEET OF WATER OR PSIG AND TOTAL GPM PUMP IS HANDLING UNDER FULL FLOW CONDITIONS.
(5) IF THE PUMPS HAVE VARIABLE FREQUENCY DRIVES FOR BALANCING OR OPERATE IN DIFFERENT MODES, THE BALANCING CONTRACTOR SHALL SET THE DRIVE TO PROVIDE REQUIRED FLOW AND COORDINATE WITH THE CONTROLS CONTRACTOR.

vii. PROVIDE FLOW DIAGRAMS INDICATING PIPING LAYOUT, FLOW BALANCING VALVES AND WHERE THE READING OF EACH INDIVIDUAL PIECE OF EQUIPMENT HAS BEEN TAKEN.

viii. MARK VALVE TAG AFTER BALANCING OF EACH BALANCING VALVE TO INDICATE POSITION OF VALVE.

12. INSULATION – GENERAL REQUIREMENTS

A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA A2.5-1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

B. PRODUCTS SHALL NOT CONTAIN ASBESTOS, LEAD, MERCURY, OR MERCURY COMPOUNDS.

C. DEFINITIONS:

i. EXPOSED: INDOOR DUCTS, PIPING OR EQUIPMENT LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.

ii. CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.

iii. OUTDOOR: DUCTS, PIPING OR EQUIPMENT WHICH IS EXPOSED TO THE WEATHER.

13. DUCTWORK INSULATION

A. INSULATE ALL DUCTWORK IN ACCORDANCE WITH INSULATION SCHEDULE ON M-600 DRAWING EXCEPT AS OTHERWISE NOTED.

B. REINSULATE ALL DUCTWORK AND PIPING WHICH IS EXISTING AND DAMAGED DURING CONSTRUCTION OR REQUIRED TO BE RELOCATED. INSULATE WITH SAME MATERIAL AND THICKNESS.

C. NON-INSULATED DUCTWORK:

i. WHERE SOUNDLINING IS OF MINIMUM THICKNESS SPECIFIED FOR INSULATION.

ii. AIR CONDITIONING RETURN AIR DUCTWORK EXPOSED IN AIR CONDITIONED SPACES AND INSTALLED IN HUNG CEILINGS WHERE SPACE IMMEDIATELY ABOVE AND BELOW ARE BOTH AIR CONDITIONED.

D. OUTDOOR DUCTWORK

i. FOR OUTDOOR DUCTWORK OR DUCTWORK EXPOSED TO THE ELEMENTS IN ADDITION TO INSULATION AND FINISHES SPECIFIED FOR INDOOR DUCTWORK, APPLY TWO (2) COATS OF WEATHERPROOF MASTIC AND EMBED INTO WET COAT TWO (2) LAYERS OF GLASS CLOTH OVER INSULATION JACKET. SMOOTH MEMBRANE TO AVOID WRINKLES AND OVERLAP ALL SEAMS AT LEAST 3 INCH. APPLY A SECOND COAT OF SAME COATING TO THE ENTIRE SURFACE. TOP CENTER OF RECTANGULAR DUCT SHALL PITCH TO EACH SIDE TO AVOID TRAPPING OF WATER IN THE CENTER.

E. MATERIAL:

i. TYPE D-1: MINIMUM 1-LB DENSITY FIBERGLASS BLANKET, MAXIMUM 0.28 K-FACTOR AT 75°F MEAN TEMPERATURE WITH FACTORY-APPLIED FOIL-SKRIM-KRAFT FACING SIMILAR TO MANVILLE MICROLITE.

ii. TYPE D-2: 3 LB. FIBERGLASS BOARD. THE MAXIMUM K FACTOR SHALL BE 0.23 AT 75°F MEAN TEMPERATURE WITH A MINIMUM DENSITY OF 3 LB. THE INSULATION SHALL BE PROVIDED WITH A FACTORY-APPLIED ALL PURPOSE OR ALL SERVICE FACING. THE INSULATION SHALL BE EQUAL TO MANVILLE TYPE 814 SPIN-GLAS AP.

iii. TYPE D-3: MINIMUM 6 LB FIBERGLASS BOARD. MAXIMUM 0.22 K-FACTOR AT 75°F MEAN TEMPERATURE WITH FACTORY APPLIED ALL PURPOSE OR ALL SERVICE FACING. SIMILAR TO MANVILLE 817 SPIN-GLAS AP.

F. INSTALLATION:

i. FIBERGLASS BLANKET: 2 INCH LAP STRIPS AT ALL SEAMS. SECURE BOTTOM OF ALL DUCTS OVER 24 INCH WIDE WITH MIN. 2 ROWS OF WELD PINS 12 INCH ON CENTER. SECURE ALL SEAMS WITH FOIL VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE.

ii. FIBERGLASS BOARD: SEAL JOINTS AND BREAKS IN FACING WITH 3 INCH WIDE TAPE TO MATCH FACING AND ADHERE WITH VAPOR SEAL ADHESIVE. APPLY 5 INCH WIDE TAPE AT CORNERS, WELD PINS ON TOP, SIDES AND BOTTOM.

14. PIPING INSULATION

A. INSULATE ALL PIPING IN ACCORDANCE WITH INSULATION SCHEDULE ON M-600 DRAWING EXCEPT AS OTHERWISE NOTED.

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

i. LOW TEMPERATURE PIPING SYSTEMS, 40 TO 100°F INCLUDING

a) CHILLED WATER SUPPLY AND RETURN.

b) CONDENSER WATER SUPPLY AND RETURN.

c) GLYCOL WATER SUPPLY AND RETURN.

d) CONDENSATE DRAIN PIPING.

ii. LOW TEMPERATURE HOT PIPING SYSTEMS, 100 TO 250°F INCLUDING

a) LOW TEMPERATURE HOT WATER SUPPLY AND RETURN.

b) LOW PRESSURE STEAM SUPPLY TO 15 PSIG.

c) LOW PRESSURE CONDENSATE RETURN, EXCEPT STEAM TRAPS AND TRAP ASSEMBLY AND RADIATION RUNOUTS CONCEALED IN RADIATION ENCLOSURES.

d) PUMPED CONDENSATE DISCHARGE.

C. MATERIAL

i. TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.23 K-FACTOR AT 75°F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.

ii. TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.28 K-FACTOR AT 75°F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.

iii. TYPE P-6: MINIMUM 6 LB MOLDED FOAMED PLASTIC. MAXIMUM 0.27 K-FACTOR AT 75°F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

D. FINISH:

i. TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.

ii. TYPE F-4: PVC JACKETING WITH MINIMUM 0.016 INCH WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.

E. OUTDOOR PIPING:

i. FOR ALL PIPING, FITTINGS AND VALVES LOCATED OUTDOORS, INCREASE SCHEDULED INSULATION THICKNESS BY A MINIMUM OF 1 INCH AND PROVIDE F-4 FINISH. PROVIDE VAPORSEAL ON ALL OUTDOOR PIPES, VALVES AND FITTINGS SUBJECT TO CONDENSATION.

ii. COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL HEAT TRACING REQUIREMENTS AND PIPING LENGTH REQUIREMENTS. ELECTRICAL TO PROVIDE CABLING AND THERMOSTAT.

F. INSTALLATION:

i. BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.

ii. ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 INCH LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT PIPING INSULATION SHALL HAVE MITERED FITTINGS.

iii. ALL INSULATION AND VAPOR BARRIERS SHALL BE CONTINUOUS PASSING THROUGH SLEEVES, HANGERS, ETC., OR OTHER OPENINGS. PROVIDE SADDLES OR SHIELDS FOR PROTECTION.

iv. INSULATION FOR STRAINERS OR OTHER FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

15. FIRE-RATED INSULATION SYSTEMS

A. FIRE-RATED BOARD: STRUCTURAL-GRADE, PRESS-MOLDED, XONOLITE CALCIUM SILICATE, FIREPROOFING BOARD SUITABLE FOR OPERATING TEMPERATURES UP TO 1700°F. COMPLY WITH ASTM C 656, TYPE II, GRADE 6. TESTED AND CERTIFIED TO PROVIDE A 2-HOUR FIRE RATING BY A NRTL ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. MANUFACTURERED BY JOHNS MANVILLE; SUPER FIRETEMP M.

B. FIRE-RATED BLANKET: HIGH-TEMPERATURE, FLEXIBLE, BLANKET INSULATION WITH FSK JACKET THAT IS TESTED AND CERTIFIED TO PROVIDE A 2-HOUR FIRE RATING BY A NRTL ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. MANUFACTURED BY JOHNS MANVILLE; FIRETEMP WRAP; FIREMASTER DUCT WRAP, 3M; FIRE BARRIER WRAP PRODUCTS, UNIFRAX CORPORATION; FYREWRAP.

C. NYC PROJECTS: PRODUCT SHALL HAVE LISTING FOR THE PARTICULAR APPLICATION

16. VIBRATION ISOLATION

A. FURNISH AND INSTALL ALL NECESSARY VIBRATION ISOLATORS, VIBRATION HANGERS, MOUNTING PADS, RAILS, ETC., TO ISOLATE VIBRATION AND SOUND FROM BEING TRANSMITTED TO THE BUILDING STRUCTURE. ALL VIBRATION PRODUCTS SHALL BE SPECIFICALLY DESIGNED FOR THEIR INTENDED USE. PROVIDE ISOLATION FOR MOTORIZED EQUIPMENT.

B. MANUFACTURER OF THE VIBRATION ISOLATION EQUIPMENT SHALL HAVE THE FOLLOWING RESPONSIBILITIES

i. SUBMIT TYPE, SIZE, DEFLECTION, LOCATION AND DETAILS INCLUDING FREE HEIGHT FOR EACH ISOLATOR PROPOSED FOR ITEMS IN THE SPECIFICATION AND ON THE DRAWINGS.

ii. SUBMIT DETAILS OF ALL STEEL FRAMES AND CONCRETE INERTIA BASES TO BE USED IN CONJUNCTION WITH THE ISOLATION IN THIS SPECIFICATION AND IN THE DRAWINGS.

iii. CLEARLY OUTLINE THE PROCEDURES FOR INSTALLING AND ADJUSTING THE ISOLATORS OR HANGERS.

iv. GUARANTEE THE SPECIFIED ISOLATION SYSTEMS DEFLECTION AND THAT A MINIMUM OF 90% EFFICIENCY WILL BE OBTAINED.

C. THE FOLLOWING ARE APPROVED MANUFACTURERS, PROVIDED THEIR SYSTEMS STRICTLY COMPLY WITH THE DESIGN INTENT FOR PERFORMANCE, DEFLECTION AND STRUCTURAL CAPACITY OF THIS SPECIFICATION.
i. MASON INDUSTRIES, INC., HAUPPAUGE, NY
ii. VIBRATION MOUNTINGS & CONTROLS, INC., BLOOMINGDALE, NJ
iii. AMBER BOOTH, HOUSTON, TX
iv. KINETICS NOISE CONTROL, INC

D. PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE.

E. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS INCLUDING THE LOAD AND SPRING STATIC DEFLECTION FOR EACH FLOOR OR CEILING HUNG ISOLATOR.

F. PROVIDE LEVELING DEVICES AND APPROVED RESILIENT DEVICES AS REQUIRED TO LIMIT EQUIPMENT AND PIPING MOTION IN EXCESS OF 1/4 INCH ISOLATORS SHALL HAVE CAPABILITY OF SUPPORTING EQUIPMENT AND PIPING AT A FIXED ELEVATION DURING INSTALLATION AND AT A SPECIFIED HEIGHT AFTER ADJUSTMENT.

G. ALL SPRINGS SHALL HAVE AT LEAST 50% ADDITIONAL LOAD CAPACITY ABOVE DESIGN LOAD.

H. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE EQUIPMENT CANNOT SUPPORT POINT LOADS.

I. PROVIDE CORROSION PROTECTION FOR EQUIPMENT MOUNTED OUTDOORS. SPRING CORROSION RESISTANCE SHALL BE POWDER COATING OF THE SPRING WITH THE STEEL HOUSING HOT DIPPED GALVANIZED. ALL HARDWARE TO BE CADMIUM PLATED.

J. CENTRIFUGAL FANS

i. FLOOR MOUNTED AXIAL FANS, CABINET FANS, FAN SECTIONS, AIR HANDLING UNITS UTILIZE MASON TYPE SLF FREE STANDING SPRING OR EQUAL.

ii. CEILING HUNG UTILIZE MASON TYPE 30 N OR EQUAL.

iii. 3 HP AND LESS MOTOR TYPE B-1 BASE WITH SPRING ISOLATORS MASON TYPE SLF SPRING ISOLATORS OR EQUAL.

iv. 24 INCH DIAMETER AND UP, WITH UP TO 40 HP MOTOR-TYPE B-1 BASE WITH MASON TYPE SLF SPRING ISOLATORS OR EQUAL.

v. MOTOR SIZE – MINIMUM CONCRETE THICKNESS

a) 5 TO 15 HP – 6 INCHES

b) 20 TO 50 HP – 8 INCHES

K. FLOOR MOUNTING OF PACKAGED AIR CONDITIONING UNIT WITH INTERNAL ISOLATION FOR COMPRESSORS – NEOPRENE IN SHEAR – TYPE SUPER W- BRIDGE BEARING.

i. 50 PSI MAXIMUM LOADING. PROVIDE STEEL BEARING PLATE TO DISTRIBUTE LOAD WHERE REQUIRED.

L. ROOFTOP AC UNITS – SPRING ROOF CURB – TYPE RSC AND/OR DUNNAGE STEEL WITH TYPE SLR WITH VERTICAL LIMIT STOPS.

M. SUPPORT OF PIPING IN EQUIPMENT ROOMS AND WHERE EXPOSED ON ROOF

i. ALL WATER PIPING OUTSIDE OF SHAFTS WITHIN 50 FEET OF CONNECTED ROTATING EQUIPMENT TO BE SUPPLIED WITH ISOLATORS.

ii. HANGER ROD ISOLATORS (TYPE 30N) MOUNTINGS.

iii. INDOOR SUPPORTED PIPING ISOLATORS (TYPE SLR).

iv. VERTICAL RISER PIPING ANCHOR AND GUIDES (TYPE ADA).

N. FLOOR AND ROOF MOUNTING OF FACTORY ASSEMBLED AIR HANDLING UNITS, AIR CONDITIONING UNITS, HEAT EXCHANGERS AND CONDENSING UNITS, – SPRING ISOLATORS (ROOF MOUNTED EQUIPMENT TYPE SLR), OR (INDOOR EQUIPMENT TYPE SLF).

O. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL FANS AND DUCTWORK (REFER TO DUCTWORK SECTION FOR SPECIFICATIONS).

17. PIPING – GENERAL REQUIREMENTS

A. COMPLETE WITH: PIPE, FITTINGS, VALVES, STRAINERS, MOTORIZED VALVE OPERATORS, HANGERS, SUPPORTS, GUIDE, SLEEVES, AND ACCESSORIES.

B. ALL ITEMS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS:

i. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).

ii. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

iii. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).

iv. MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS).

C. GASKETS: ONE PIECE RING TYPE 1/16 INCH MINIMUM THICKNESS KLINGER C4400 ONLY (OR APPROVED EQUAL, SUBMIT FOR APPROVAL BEFORE USE).

D. WELDING

i. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH ALL CODES APPLICABLE TO THE PARTICULAR SERVICE. WELDING FILLER METALS: COMPLY WITH AWS D10.12/D10.12M FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS AND CHEMICAL ANALYSIS OF STEEL PIPE BEING WELDED.

ii. COMPLY WITH SECTION II, PART C OF THE ASME BOILER AND PRESSURE VESSEL CODE FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS AND FOR CHEMICAL ANALYSIS OF PIPE BEING WELDED.

iii. QUALIFY PROCESSES AND OPERATORS ACCORDING TO ASME BOILER AND PRESSURE VESSEL CODE: SECTION IX, "WELDING AND BRAZING QUALIFICATIONS". COMPLY WITH PROVISIONS IN ASME B31 SERIES, "CODE FOR PRESSURE PIPING."

iv. WELDERS SHALL BE QUALIFIED FOR ALL REQUIRED PIPE SIZES, MATERIAL, WALL THICKNESS, AND POSITION IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERING (ASME) SECTION IX, BOILER AND PRESSURE VESSEL CODE. CERTIFY THAT EACH WELDER HAS PASSED AWS QUALIFICATION TESTS FOR WELDING PROCESSES INVOLVED AND THAT CERTIFICATION IS CURRENT.

v. COPIES OF THE CERTIFIED WELDER QUALIFICATION REPORTS SHALL BE MAINTAINED BY THE RESPONSIBLE WELDING AGENCY AND THE COMPANY PERFORMING THE WELDING, AND SHALL BE SUBMITTED TO THE OWNER AND/OR ENGINEER UPON REQUEST.

vi. ALL DEFECTIVE WELDS SHALL BE CHIPPED OUT AND REPAIRED AT NO COST TO THE OWNER, BASED ON PROCEDURE TO BE SPECIFIED AT THE TIME.

E. COPPER TUBE BRAZING

i. ALL BRAZING SHALL BE DONE IN ACCORDANCE WITH ALL CODES APPLICABLE TO THE PARTICULAR SERVICE. BRAZING FILLER METALS: AWS A5.8, BCUP SERIES, COPPER-PHOSPHORUS ALLOYS FOR JOINING COPPER WITH COPPER; OR BAG-1, SILVER ALLOY FOR JOINING COPPER WITH BRONZE OR STEEL.

ii. QUALIFY PROCESS AND OPERATORS IN ACCORDANCE WITH ASME BOILER AND PRESSURE VESSEL CODE, SECTION IX, "WELDING AND BRAZING QUALIFICATIONS".

iii. BRAZERS SHALL BE QUALIFIED FOR ALL REQUIRED TUBE SIZES, MATERIAL, WALL THICKNESS, AND POSITION IN ACCORDANCE WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERING (ASME), SECTION IX, BOILER AND PRESSURE VESSEL CODE.

iv. COPIES OF THE CERTIFIED BRAZER QUALIFICATION REPORTS SHALL BE MAINTAINED BY THE RESPONSIBLE BRAZING AGENCY AND THE COMPANY PERFORMING THE BRAZING, AND SHALL BE SUBMITTED TO THE OWNER AND/OR ENGINEER UPON REQUEST.

v. ALL DEFECTIVE BRAZEMENTS SHALL BE CHIPPED OUT AND REPAIRED AT NO COST TO THE OWNER, BASED ON PROCEDURE TO BE SPECIFIED AT THE TIME.

F. GASKETS

i. PIPE-FLANGE GASKET MATERIALS: SUITABLE FOR CHEMICAL AND THERMAL CONDITIONS OF PIPING SYSTEM CONTENTS. ASME B16.21, NONMETALLIC, FLAT, ASBESTOS-FREE, 1/8-INCH MAXIMUM THICKNESS UNLESS THICKNESS OR SPECIFIC MATERIAL IS INDICATED.

G. ALL PRESSURIZED HYDRONIC PIPING TO BE TESTED HYDROSTATICALLY TO 150 PSI OR 150% OF OPERATING PRESSURE, WHICHEVER IS GREATER, BUT NEVER EXCEED TEST PRESSURE ANSI B16.1 BASIS. TEST DURATION TO BE 2 HOURS WITH NO PRESSURE CHANGE CORRECTED FOR TEMPERATURE CHANGE. REPAIR OR REPLACE LEAKS OR DEFECTS WITHOUT ADDITIONAL COST.

i. REFRIGERANT PIPING

a) TEST REFRIGERANT PIPING FOR TIGHTNESS AND LEAKS UNDER PRESSURE OR VACUUM – COORDINATE WITH MANUFACTURER REQUIREMENTS. THE DURATION OF EACH TEST SHALL BE TWENTY-FOUR (24) HOURS.

b) TEST JOINTS IN ACCORDANCE WITH ASHRAE 15-LATEST EDITION. THERE SHALL BE NO OBSERVABLE LEAKS OR CHANGES IN PRESSURE. IF EITHER IS OBSERVED, SEAL LEAKS, AND REPEAT TEST PROCEDURES

H. SYSTEM FILLING

j. SYSTEMS OR PORTIONS OF SYSTEMS TO BE TESTED SHALL HAVE PROVISIONS FOR FILLING, VENTING (AIR REMOVAL), DRAINAGE AND TEST PRESSURE CONNECTION.

ii. LIQUID USED FOR TESTING SHALL BE CLEAN CITY WATER MIXED WITH CHEMICALS SPECIFIED BY THE BASE BUILDING WATER TREATMENT CONTRACTOR. THE HVAC CONTRACTOR SHALL HIRE THE SERVICES OF THE BUILDING WATER TREATMENT CONTRACTOR AND PROVIDE ALL REQUIRED LABOR. PROVIDE TEMPORARY METERING AND MIXING DEVICES AS REQUIRED. THE HVAC CONTRACTOR SHALL OBTAIN ALL REQUIREMENTS FROM THE BUILDING MANAGEMENT.

I. FLUSHING AND CLEANING AND TREATMENT

i. AFTER COMPLETION OF HYDROSTATIC TESTS AND EMPTYING, PROVIDE LABOR FOR INITIAL FLUSHING, CLEANING, AND PASSIVATING IN ACCORDANCE WITH THE OWNER'S WATER TREATMENT SPECIFICATION. THE HVAC CONTRACTOR SHALL HIRE THE SERVICES OF THE BASE BUILDING WATER TREATMENT CONTRACTOR. COORDINATE WITH THE OWNER'S WATER TREATMENT COMPANY AND PROVIDE ALL SPECIFICATION REQUIREMENTS AND REQUIRED LABOR. COORDINATE ALL REQUIREMENTS WITH BASE BUILDING MANAGEMENT FOR BASE BUILDING VENDOR.

ii. PROVIDE ONE YEAR'S SUPPLY OF NECESSARY WATER TREATMENT CHEMICALS FOR NEW SYSTEM TO THE OWNER OR TENANT INCLUDING THE FOLLOWING:

iii. CLOSED SYSTEM TREATMENT (CHILLED WATER, SECONDARY WATER, CLOSED CONDENSER WATER AND HOT WATER). PROVIDE AGENTS TO REDUCE SCALE DEPOSITS, TO ADJUST PH AND TO INHIBIT CORROSION. TREATMENT SHALL NOT CONTAIN ANY CHROMATE'S OR OTHER TOXIC SUBSTANCES. USE PROPER CHEMISTRY TO PROVIDE BACTERIA COUNTS BELOW 103/ COLONIES PER MILLILITER (AEROBIC & NON AEROBIC). PH LEVELS TO BE BETWEEN 7.0 AND 9.0. CORROSION RATE TO BE LESS THAN 1/2 MILS/YEAR STEEL, 1/10 MILS/YEAR COPPER.

iv. OPEN SYSTEM TREATMENT (CONDENSER WATER) PROVIDE AGENTS TO REDUCE SCALE DEPOSITS, TO ADJUST PH AND TO INHIBIT CORROSION. TREATMENT SHALL NOT CONTAIN ANY CHROMATE'S OR OTHER TOXIC SUBSTANCES. USE PROPER CHEMISTRY TO PROVIDE BACTERIA COUNTS BELOW 105/ COLONIES PER MILLIMETER (AEROBIC AND NON-AEROBIC). PH TO BE BETWEEN 7.5 AND 8.5. CORROSION RATES TO BE LESS THAN 1 MILS/YEAR -STEEL AND 1/10 MILS/YEAR COPPER.

J. PROVIDE DIELECTRIC FITTINGS WHERE DISSIMILAR METALS ARE TO BE JOINED.

K. HOT (WET) TAPS:

i. PROVIDE NEW HOT (WET) TAP CONNECTIONS INTO PIPING SYSTEMS AS INDICATED ON THE PLANS.

ii. PROVIDE ALL REQUIRED EQUIPMENT AND MATERIALS SUCH AS A TAPPING MACHINE, WELDING MACHINE, FULL PORTED VALVE AND A PRESSURE CONTAINING FITTING. VALVE AND PRESSURE FITTING TO BE RATED FOR THE WORKING PRESSURE OF THE PIPING SYSTEM.

iii. HOT TAP TO BE PERFORMED BY A QUALIFIED CONTRACTOR WHO IS SPECIALIZED IN PERFORMING THIS TYPE OF WORK. CONTRACTORS NAME SHALL BE SUBMITTED TO THE OWNER, OWNER'S REPRESENTATIVE, BUILDING MANAGEMENT AND ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.

iv. HOT (WET) TAP COUPON IS TO BE TURNED OVER TO BUILDING MANAGEMENT.

L. DRAIN DOWN FOR NEW PIPING CONNECTION INTO EXISTING:

i. CONTRACTOR TO OBTAIN SCHEDULE AND COORDINATE WITH BUILDING MANAGEMENT FOR SYSTEM DRAIN DOWN AND CONNECTION INTO EXISTING BUILDING PIPING. ALL COSTS ASSOCIATED WITH DRAIN DOWN ARE TO BE INCLUDED AS PART OF BID.

M. ALL INSTRUMENTATION (PRESSURE GAUGES AND THERMOMETERS) SHALL BE RATED FOR THE SAME PRESSURE AND TEMPERATURE AS PIPING SYSTEM AND RATED SPECIFICALLY FOR THE SAME SERVICE AS THE PIPING. PRESSURE GAUGES ARE TO BE LIQUID FILLED WITH 1% ACCURACY. SELECT GAUGES AND THERMOMETERS SO THAT THE MID-POINT IS AT THE WORKING PRESSURE AND TEMPERATURE. INSTRUMENTS TO BE MANUFACTURED BY WEISS INSTRUMENT, MILJOCO CORPORATION OR APPROVED EQUAL.

i. PROVIDE THERMOMETERS IN PIPING AS INDICATED ON THE DRAWINGS AND AT THE INLET AND OUTLET OF EACH HYDRONIC COIL, HEAT EXCHANGER AND PIECE OF EQUIPMENT THAT INVOLVES A DIFFERENTIAL TEMPERATURE. THERMOMETERS TO BE ORGANIC LIQUID FILLED.

ii. PROVIDE PRESSURE GAUGES IN PIPING AS INDICATED ON THE DRAWINGS AND AT SUCTION AND DISCHARGE OF EACH PUMP AND AT INLETS AND OUTLETS OF EACH HYDRONIC COIL, HEAT EXCHANGER AND PIECE OF EQUIPMENT THAT INVOLVES A DIFFERENTIAL PRESSURE.

N. PIPE SUPPORTS:

i. PROVIDE ADEQUATE SUPPORT FOR PIPE AND CONTENTS TO PREVENT SAGGING, VIBRATION, OR SWAYING AND ALLOW FOR EXPANSION AND CONTRACTION. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE STRUCTURE CANNOT SUPPORT POINT LOADS.

ii. HORIZONTAL PIPING TO BE SUPPORTED BY FORGED STEEL ADJUSTABLE CLEVIS TYPE HANGER. MAXIMUM SPACING AS FOLLOWS:

a) STEEL 1 INCH AND SMALLER: 6 FEET.

b) STEEL 1-1/4 INCH AND LARGER: 10 FEET.

c) COPPER 1 INCH AND SMALLER: 5 FEET.

d) COPPER 1-1/2 IN TO 2-1/2 INCH: 8 FEET.

e) COPPER 3 INCH: 10 FEET.

f) PROVIDE ADDITIONAL SUPPORTS AT CHANGES IN DIRECTION, BRANCH PIPING AND RUNOUTS OVER 5 FEET AND CONCENTRATE LOADS DUE TO VALVES, STRAINERS AND OTHER SIMILAR ITEMS.

iii. ROD SIZE

a) PIPE 2 IN AND SMALLER: 3/8 IN

b) PIPE 2-1/2 IN TO 3 IN: 1/2 IN

c) PIPE 4 TO 8 IN: 3/4 IN

iv. VERTICAL PIPING:

a) BASE ELBOW SUPPORT WITH BEARING PLATE ON STRUCTURAL SUPPORT.

b) GUIDES AT EVERY SECOND FLOOR (SPACING NOT TO EXCEED 25 FEET).

c) TOP SUPPORT HANGER OR SADDLE IN HORIZONTAL CONNECTION WITH PROVISIONS FOR EXPANSION.

d) INTERMEDIATE STEEL RISER CLAMP SUPPORT BOLTED AND WELDED TO PIPE BEARING ON STRUCTURAL STEEL OR BEARING PLATE AT FLOOR.

e) FOR MULTIPLE PIPES, COORDINATE GUIDES, BEARING PLATES AND ACCESSORY STEEL.

O. VALVES – GENERAL REQUIREMENTS

i. VALVE PRESSURE AND TEMPERATURE RATINGS: NOT LESS THAN INDICATED AND AS REQUIRED FOR SYSTEM PRESSURES AND TEMPERATURES.

ii. VALVE SIZES: SAME AS UPSTREAM PIPING UNLESS OTHERWISE INDICATED.

iii. VALVE-END CONNECTIONS:

a) FLANGED: WITH FLANGES ACCORDING TO ASME B16.1 FOR IRON VALVES

b) FLANGED: WITH FLANGES ACCORDING TO ASME B16.5 FOR STEEL VALVES

c) FLANGED: WITH FLANGES ACCORDING TO ASME B16.24 FOR BRONZE VALVES.

d) SOLDER JOINT: WITH SOCKETS ACCORDING TO ASME B16.18.

e) THREADED: WITH THREADS ACCORDING TO ASME B1.20.1.

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

ISSUES:

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ESSEX COUNTY FARMWORKER HOUSING RENOVATION
Barn
82 Loukes RD
Westport NY 12993

M-801.00
MECHANICAL SPECIFICATIONS (2 OF 3)

SEAL | SIGNATURE:

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f) VALVE BYPASS AND DRAIN CONNECTIONS: MSS SP–45.

iv. GENERAL–DUTY VALVE APPLICATIONS: UNLESS OTHERWISE INDICATED, USE THE FOLLOWING VALVE TYPES:

a) SHUTOFF SERVICE EXCEPT STEAM: BALL, BUTTERFLY OR GATE VALVES.

b) SHUTOFF SERVICE, STEAM: GATE VALVES.

c) THROTTLING SERVICE EXCEPT STEAM: BALL, BUTTERFLY, PLUG VALVES.

d) THROTTLING SERVICE, STEAM: GLOBE VALVES.

v. INSTALL SHUTOFF DUTY VALVES AT EACH BRANCH CONNECTION TO SUPPLY MAINS, AT SUPPLY CONNECTION TO EACH PIECE OF EQUIPMENT, UNLESS ONLY ONE PIECE OF EQUIPMENT IS CONNECTED IN THE BRANCH LINE. INSTALL THROTTLING DUTY VALVES AT EACH BRANCH CONNECTION TO RETURN MAINS, AT RETURN CONNECTIONS TO EACH PIECE OF EQUIPMENT, AND ELSEWHERE AS INDICATED.

vi. INSTALL CALIBRATED BALANCING VALVES IN THE RETURN WATER LINE OF EACH HEATING OR COOLING ELEMENT AND ELSEWHERE AS REQUIRED TO FACILITATE SYSTEM BALANCING.

vii. INSTALL SPRING LOADED CHECK VALVES AT EACH PUMP DISCHARGE AND ELSEWHERE AS REQUIRED TO CONTROL FLOW DIRECTION.

viii. THREADED CONNECTIONS ARE NOT TO BE USED FOR GLYCOL SYSTEMS.

18. LOW TEMPERATURE WATER SYSTEMS, BELOW 100 PSIG, –20 TO 200°F OPERATING TEMPERATURES

A. MATERIAL SHALL BE STEEL IN ACCORDANCE WITH ASTM A 53, SEAMLESS, GRADES A OR B.

i. WALL THICKNESS SHALL BE:

a) TO 2 INCH: SCHEDULE 40 WITH THREADED ENDS OR SCHEDULE 40 WITH SOCKET WELD ENDS.

b) 2–1/2 INCH TO 10 INCH: SCHEDULE 40, BUTT WELD ENDS ONLY.

c) 4 INCH AND SMALLER TYPE K, DRAWN–TEMPER COPPER TUBING, WROUGHT–COPPER FITTINGS, AND BRAZED JOINTS

d) NO THREADED JOINTS ARE ALLOWED IN GLYCOL SYSTEMS

B. IRON BUTTERFLY VALVES

i. 200 PSI COLD WORKING PRESSURE (CWP), 2 INCH TO 24 INCH, ASTM A126 CAST IRON BODY, ANSI 125/150 PATTERN, FULLY LUGGED, AND TAPPED BODY STYLE, CLOSED WATER SYSTEMS–ALUMINUM BRONZE DISC, OPEN WATER SYSTEMS–316 STAINLESS STEEL DISC, STAINLESS STEEL STEM, RESILIENT EPDM SEAT, BRONZE STEM BUSHING, STAINLESS STEEL DISC SCREWS OR TAPER PINS

MANUFACTURERS – IRON BUTTERFLY VALVES, KEYSTONE DIVISION OF TYCO FLOW CONTROL, BRAY VALVE & CONTROLS, ABZ VALVES & CONTROLS

C. BALL VALVES

i. 3 INCHES AND SMALLER– THREADED OR SOLDERED, 3 PIECE, CLASS 150 PSI STEAM, 600 PSI COLD WORKING PRESSURE (CWP), FULL PORT, ASTM B584 CAST BRONZE BODY, STAINLESS STEEL BALL AND STEM, CHROME PLATED BRASS BALL WITH BRASS STEM, BLOW OUT PROOF STEM DESIGN, PTFE SEATS, PTFE STEM PACKING, ZINC PLATED STEEL LEVER WITH VINYL COVERED GRIP, THREADED ENDS OR SOLDER ENDS AS REQUIRED BY PIPING SYSTEM.

ii. GLYCOL, 2 INCHES AND SMALLER– SOCKET WELDED – 3 PIECE, CLASS 150 PSI STEAM, 1000 PSI COLD WORKING PRESSURE (CWP), FULL PORT, 2 INCHES AND SMALLER, ASTM A108 CARBON STEEL BODY, STAINLESS STEEL BALL AND STEM, ASTM A108 CHROME PLATED BALL AND STEM, BLOW OUT PROOF STEM DESIGN, PTFE SEATS, PTFE STEM PACKING, ZINC PLATED STEEL LEVER WITH VINYL COVERED GRIP, SOCKET WELD ENDS

MANUFACTURERS – BRONZE BALL VALVES, CONBRACO INDUSTRIES INC.; APOLLO DIVISION, CRANE CO.; CRANE VALVE GROUP; JENKINS VALVES, STOCKHAM DIVISION, JAMESBURY INC., MILWAUKEE VALVE COMPANY

iii. GREATER THAN 3 INCH– FLANGE, ANSI FLANGED, CLASS 150 PSI STEAM, 285 PSI COLD WORKING PRESSURE (CWP), REDUCED PORT, 2½ INCHES TO 10 INCHES, ASTM A216 WCB CAST CARBON STEEL BODY , ASTM A216 WCB CHROME PLATED BALL, ASTM A108 CARBON STEEL STEM, BLOW OUT PROOF STEM DESIGN, PTFE SEATS, GRAPHITE STEM PACKING, GALVANIZED PIPE LEVER, RAISED FACE FLANGE ENDS.

MANUFACTURERS – STEEL BALL VALVES, CONBRACO INDUSTRIES INC.; APOLLO DIVISION, CRANE CO.; CRANE VALVE GROUP; STOCKHAM DIVISION, JAMESBURY INC., COOPER CAMERON CORP.; COOPER CAMERON VALVES DIV., MILWAUKEE VALVE COMPANY

D. SWING CHECK VALVES

i. 2 INCHES AND SMALLER, BRONZE SWING CHECK VALVES, MSS SP–80, CLASS 150 PSI STEAM, 300 PSI COLD WORKING PRESSURE (CWP), ASTM B 62 CAST – BRONZE BODY AND CAP, Y–PATTERN, STAINLESS STEEL FREE FLOATING HINGE PIN, THREADED CAP, REGRINDING SEAT, BRONZE DISC, THREADED (STEEL PIPING) END CONNECTION OR SOLDERED (COPPER PIPING) END CONNECTION AS REQUIRED BY PIPING SYSTEM.

MANUFACTURERS – BRONZE CHECK VALVES, HORIZONTAL AND VERTICAL, HORIZONTAL, CRANE CO.; CRANE VALVE GROUP; JENKINS VALVES, CRANE VALVES, STOCKHAM DIVISION, GRINNELL CORPORATION, WALWORTH COMPANY, NIBCO INC, VERTICAL, CINCINNATI VALVE CO

ii. 2½ INCH TO 12 INCH, ASME B16.10, IRON SWING CHECK VALVES, CLASS 125 PSI STEAM, 200 PSI COLD WORKING PRESSURE (CWP), CAST IRON BODY AND CAP, REPLACEABLE BRONZE SEAT RING, 6 INCH AND SMALLER: SOLID BRONZE DISC, 8 INCH AND LARGER: CAST IRON DISC WITH BRONZE FACING, REPLACEABLE BRASS HINGE PIN, FLANGED ENDS

MANUFACTURERS – IRON SWING CHECK VALVES, CRANE CO.; CRANE VALVE GROUP; JENKINS VALVES, STOCKHAM DIVISION, GRINNELL CORPORATION, CINCINNATI VALVE CO., NIBCO INC.

E. CALIBRATED BALANCING VALVES

i. 2 INCH AND SMALLER, 200 PSI COLD WORKING PRESSURE (CWP) UP TO 250°F, BRONZE BODY, STRAIGHT THROUGH BALL VALVE DESIGN, BRASS BALL, CARBON FILLED TFE SEAT RINGS, READ OUT PORTS WITH INTERNAL EPT INSERT AND CHECK VALVE, ¼ INCH NPT TAPPED DRAIN PORT, MEMORY STOP FEATURE, CALIBRATED NAMEPLATE, SWEAT ENDS

ii. 2 INCH AND SMALLER, 300 PSI COLD WORKING PRESSURE (CWP) UP TO 250°F, BRONZE BODY, STRAIGHT THROUGH BALL VALVE DESIGN, BRASS BALL, CARBON FILLED TFE SEAT RINGS, READ OUT PORTS WITH INTERNAL EPT INSERT AND CHECK VALVE, ¼ INCH NPT TAPPED DRAIN PORT, MEMORY STOP FEATURE, CALIBRATED NAMEPLATE, THREADED ENDS

iii. 2½ INCH TO 3 INCH,175 PSI COLD WORKING PRESSURE (CWP) UP TO 250°F, CAST IRON BODY, STRAIGHT THROUGH BALL VALVE DESIGN, BRASS BALL, CARBON FILLED TFE SEAT RINGS, READ OUT PORTS WITH INTERNAL EPT INSERT AND CHECK VALVE, MEMORY STOP FEATURE, CALIBRATED NAMEPLATE, ANSI CLASS 125 FLANGED END CONNECTIONS

iv. 3 INCH TO 12 INCH, 175 PSI COLD WORKING PRESSURE (CWP) UP TO 250°F, CAST IRON BODY, Y–PATTERN GLOBE VALVE DESIGN, BRONZE SEAT, REPLACEABLE BRONZE DISC, EPDM SEAL INSERT, STAINLESS STEEL STEM, READ OUT PORTS WITH INTERNAL EPT INSERT AND CHECK VALVE,MEMORY STOP FEATURE, CALIBRATED NAMEPLATE, ANSI CLASS 125 FLANGED END CONNECTIONS

v. MANUFACTURERS – ITT BELL & GOSETT, MACON, TUNSTALL CORP.

F. Y STRAINERS

i. SYSTEMS OF COPPER CONSTRUCTION, WORKING PRESSURE: TO 250 PSIG, NON–CHOCK. SIZES 1/4 INCH TO 2 INCH: CLASS 250. CONNECTIONS: THREADED. BODY: BRONZE, ASTM B62, WITH MACHINED SEAT FOR SCREEN RETENTION. CAP: BRONZE, ASTM B62, WITH MACHINED SEAT FOR SCREEN RETENTION. SCREEN: 20 MESH, 304 STAINLESS STEEL, ASTM 240. FREE AREA NOT LESS THAN 2–1/2 TIME INLET AREA. BLOWOFF OUTLET: WITH FEMALE NPT TAPPING, MUELLER MODEL NO. 352M.

ii. SYSTEMS OF COPPER CONSTRUCTION, WORKING PRESSURE TO 225 PSIG CLASS 150; TO 400 PSIG CLASS 300. SIZES 2–1/2 INCH TO 12 INCH: CONNECTIONS: FLANGED. BODY: BRONZE, ASTM B62 (85–5–5–5) OR BRONZE ASTM B61. ALUMINUM BRONZE ASTM A148–90 FOR SIZES 8 INCH AND LARGER. WITH MACHINED SEAT FOR SCREEN RETENTION. COVER: MATERIAL TO MATCH BODY. WITH MACHINED SEAT FOR SCREEN RETENTION. SCREEN TO 8 INCH: 1/8 INCH PERFORATIONS, 304 STAINLESS STEEL, ASTM 240. FREE AREA NOT LESS THAN 2–1/2 TIMES INLET AREA. SCREEN 10 INCH AND LARGER: 5/32 INCH PERFORATIONS, 304 STAINLESS STEEL, ASTM 240. FREE AREA NOT LESS THAN 2–1/2 TIMES INLET AREA. BLOWOFF OUTLET: WITH FEMALE NPT TAPPING., MUELLER MODEL NO. 851 OR 851M FOR CLASS 150, MUELLER MODEL. NO. 852 FOR CLASS 300.

G. PROVIDE 1/2 INCH DRAIN VALVE WITH CAPPED HOSE CONNECTION AT ALL LOW POINTS. PROVIDE 3/4 INCH GATE VALVE TO DRAIN SYSTEMS IN EQUIPMENT ROOMS.

H. PROVIDE MANUAL AIR VENTS LINE SIZE AIR CHAMBER WITH 1/2 INCH GLOBE VALVE AT ALL HIGH POINTS AND WHERE FLOW DIRECTION CHANGES FROM HORIZONTAL TO DOWNWARD.

I. PITCH WATER PIPING EXCEPT AS NOTED:

i. UP TO 1 INCH: 1 INCH IN 40 FEET.

ii. 1–1/2 INCH AND LARGER: 1 INCH IN 100 FEET.

J. CONDENSATE DRAIN PIPING

i. PIPE: ASTM B88, HARD DRAWN COPPER TUBING TYPE L.

ii. FITTINGS: SOLDERED JOINT FITTINGS, 95/5 SOLDER.

iii. PITCH: MINIMUM 1 INCH IN 8 FEET, PREFERRED 1 INCH IN 4 FEET

19. REFRIGERANT SYSTEMS

A. PROVIDE ALL REFRIGERANT PIPING REQUIRED FOR A COMPLETE REFRIGERATION SYSTEM, WITH ALL VALVES, FITTINGS AND SPECIALTIES NECESSARY FOR SATISFACTORY OPERATION IN ACCORDANCE WITH ASHRAE STANDARD 15–LATEST EDITION AND ALL AUTHORITIES HAVING JURISDICTION. REFRIGERATION SYSTEM SHALL INCLUDE ALL REQUIRED ITEMS FOR CHARGING, DRAINING AND PURGING THE SYSTEM.

B. REFRIGERANT PIPING SHALL BE HARD COOPER, TYPE L OR ACR, ASTM B88 OR ASTM B 280, BRAZED.

C. JOINTS IN REFRIGERATION PIPING SHALL BE BRAZED.

D. REFRIGERANT PIPING SHALL BE OF THE SIZE AND NUMBER OF PIPES RECOMMENDED BY THE MANUFACTURER AND AS APPROVED BY THE ENGINEER.

E. HORIZONTAL PIPING OF THE COMPRESSOR SUCTION AND DISCHARGE LINES AND THE CONDENSER DISCHARGE LINES SHALL BE PITCHED A MINIMUM OF ½ INCH IN 10 FEET, IN THE DIRECTION OF REFRIGERANT FLOW. EACH SUCTION GAS VERTICAL RISER SHALL BE TRAPPED AT ITS EVAPORATOR WITH A TRAP AS RECOMMENDED BY THE COMPRESSOR MANUFACTURER.

F. INSTALL REFRIGERANT PIPING TO PREVENT EXCESSIVE OIL FROM BEING TRAPPED IN THE SYSTEM. ANY ADDITIONAL RISERS OR EQUALIZER LINES REQUIRED BY THE MANUFACTURER OF EQUIPMENT FOR THE PROPER SYSTEM OPERATION SHALL BE INSTALLED AS PART OF THIS CONTRACT. PROVIDE A FULLY PIPED OIL SEPARATOR FOR EACH REFRIGERANT SYSTEM AS PER MANUFACTURER'S RECOMMENDATIONS.

G. VALVES SHALL BE DESIGNED FOR REFRIGERANT SERVICE. SHUTOFF VALVES SHALL BE BRASS PACKLESS TYPE. UNIONS, FLANGED VALVES OR FITTINGS SHALL BE PROVIDED FOR DISCONNECTING EQUIPMENT, CONTROLS, ETC. FOR MAKING REPAIRS. PIPING SHALL BE RUN IN A SINGLE LAYER, WITH EACH LINE ISOLATED FROM ANOTHER TO PREVENT RUBBING. PROVISION SHALL BE MADE FOR EXPANSION AND CONTRACTION OF PIPING. ALL PIPING PASSING THROUGH WALLS, PARTITIONS, ETC., SHALL BE FURNISHED WITH SLEEVES AS REQUIRED.

H. REFRIGERANT PIPING PASSING THROUGH RATED FLOORS OR DEMISING WALLS SHALL BE ENCLOSED IN A RIGID AND GAS–TIGHT CONTINUOUS FIRE–RESISTING PIPE DUCT OR SHAFT VENTED TO THE OUTSIDE, IN ACCORDANCE WITH ASHRAE STANDARD 15–LATEST EDITION. PIPE CONDUIT SHALL BE COPPER TUBE TYPE L WITH SOLDERED FITTINGS.

I. REFRIGERANT PIPING RUNNING THROUGH/ABOVE PUBLIC CORRIDORS SHALL BE INSTALLED WITHIN 1–HR RATED ENCLOSURE. UNLESS IT CONTAINS LESS THAN 10 POUNDS OF GROUP A–1 REFRIGERANT, ITS COMPLETE DISCHARGE INTO THE CORRIDOR WOULD BE LESS THAN 50% OF ITS RCL PER TABLE 1103.1 IN THE NYC AND IT IS INSTALLED AT LEAST 9' AFF.

J. SHAFTS CONTAINING REFRIGERANT PIPING SHALL NOT BE SHARED WITH ANY AIR DUCTWORK.

20. ELECTRICAL WORK

A. GENERAL:

i. ELECTRICAL POWER WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACT. CONTROL WIRING SHALL BE PROVIDED BY THE HVAC CONTRACT. CONTROL WIRING SHALL BE DEFINED AS ANY WIRING 120V AND BELOW INSTALLED FOR PURPOSES OTHER THAN PROVIDING PRIMARY ELECTRICAL POWER TO EQUIPMENT.

ii. MOTOR STARTERS AND VARIABLE FREQUENCY DRIVES (VFD) SHALL BE FURNISHED BY THE HVAC CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. REFER TO EQUIPMENT SECTION FOR VARIABLE FREQUENCY DRIVE SPECIFICATIONS.

iii. DUCT MOUNTED SMOKE DETECTORS, WHERE REQUIRED, SHALL BE PROVIDED BY AND WIRED BY THE ELECTRICAL CONTRACTOR, AND MOUNTED BY THE HVAC CONTRACTOR.

a) THIS CONTRACTOR SHALL INSTALL THE SMOKE DETECTOR SAMPLING TUBES IN THE DUCT AS COORDINATED IN THE FIELD.

b) THIS CONTRACTOR SHALL ASSIST THE ELECTRICAL CONTRACTOR IN TESTING THE DUCT–MOUNTED SMOKE DETECTION SYSTEM.

iv. ALL ELECTRICAL CONTROL WIRING SHALL COMPLY WITH LOCAL ELECTRICAL CODE, ALL AUTHORITIES HAVING JURISDICTION AND THE PROJECT ELECTRICAL SPECIFICATIONS.

v. MECHANICAL CONTRACTOR TO OBTAIN QUANTITY OF CONTROLLERS REQUIRED AND COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL OPERATING REQUIREMENTS, INTERLOCKS AND CONNECTIONS FOR STARTERS.

vi. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL POINT TO POINT, COMPLETELY COORDINATED WIRING DIAGRAMS AND INDICATE ALL SOURCE POWER REQUIREMENTS AND ALL FIELD WIRING TO BE PERFORMED BY THE ELECTRICAL CONTRACTOR.

vii. WHERE EXISTING STARTERS ARE TO BE REUSED, THIS CONTRACTOR SHALL MAINTAIN ALL EXISTING CONTROL CONNECTIONS. WHERE NEW STARTERS ARE TO BE PROVIDED TO REPLACE EXISTING, THIS CONTRACTOR SHALL SURVEY THE EXISTING CONTROL CONNECTIONS AND PREPARE AN EXISTING CONTROL WIRING DIAGRAM PRIOR TO DEMOLITION FOR SUBMITTAL TO THE ENGINEER. THE NEW STARTERS SHALL BE PROVIDED WITH THE NECESSARY CONTACTS AND RELAYS REQUIRED TO RECONNECT THE EXISTING CONTROLS. PROVIDE ALL REQUIRED CONTACTS FOR START/STOP AND FIRE ALARM.

21. MOTORS:

A. MOTORS SHALL HAVE THE ELECTRICAL CHARACTERISTICS AS LISTED ON THE DRAWINGS. COORDINATE ALL REQUIREMENTS WITH ELECTRICAL CONTRACTOR. ALL MOTORS SHALL COMPLY WITH NEMA MG–1 STANDARD AND SHALL BE OF THE HIGH EFFICIENCY TYPE AND MEET THE 1992 EPA ENERGY EFFICIENCY ACT AND UTILITY COMPANY REBATE REQUIREMENTS.

B. MOTORS FOR VARIABLE FREQUENCY DRIVES (VFD) SHALL BE SUITABLE FOR USE WITH VARIABLE FREQUENCY DRIVES AND COMPLY WITH NEMA MG–1 PART 31.40.4.2. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS OF THE MOTOR AND VFD MANUFACTURER.

C. IF CONTRACTOR ELECTS TO SUBSTITUTE OR INCREASE MOTOR HORSEPOWER OVER THAT SPECIFIED, THE COST OF MOTOR AND ELECTRICAL CHANGES SHALL BE BORNE BY THIS CONTRACTOR.

D. MOTORS (UNDER HVAC WORK): IN ACCORDANCE WITH NEMA, IEEE AND ANSI C50 STANDARDS:

i. STANDARD EFFICIENCY UNLESS OTHERWISE NOTED.

ii. 1.15 SERVICE FACTOR INCLUDING MOTORS SERVED FROM A VFD

iii. SQUIRREL CAGE INDUCTION, OPEN DRIPPROOF TYPE, 1750 RPM, NEMA TYPE B INSULATION CLASS, CONTINUOUS DUTY, EXCEPT AS NOTED.

22. MOTOR CONTROLLERS

A. SUPPLIED BY HVAC CONTRACTOR AND INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.

B. ENCLOSURES:

i. PROVIDE ENCLOSURES FOR STARTERS AND VFD'S SUITABLE FOR OPERATING ENVIRONMENT. ENCLOSURE'S SHALL BE NEMA 1 VENTILATED SHEETMETAL FOR INDOOR APPLICATION, NEMA 3R WITH ADDITIONAL GASKETING WEATHER–PROOF RAINTIGHT ENCLOSURE FOR EXPOSED OUTDOOR SERVICE OR INDOOR SERVICE EXPOSED TO MOISTURE. PROVIDE DISCONNECT SWITCH ON ENCLOSURE AS REQUIRED FOR SERVICE.

C. WITH SOLID–STATE (ELECTRONIC) OVERLOAD PROTECTION. COORDINATE ALL MOTOR CONTROLLER TYPES AND SIZES WITH MOTOR TYPES AND SIZES.

D. 1/3 HP AND SMALLER: PROVIDE MANUAL STARTER EXCEPT USE MAGNETIC TYPE WHERE AUTOMATICALLY CONTROLLED.

i. MANUAL TYPE: 2–POLE TOGGLE SWITCH WITH OVERLOAD PROTECTION AND PILOT LIGHT.

E. 1/2 HP AND LARGER: PROVIDE MAGNETIC STARTER:

i. COMBINATION UNFUSED DISCONNECT SWITCH AND MAGNETIC STARTER EXCEPT AS NOTED.

ii. SOLID–STATE (ELECTRONIC) OVERLOAD PROTECTION IN EACH PHASE LEG WITH RESET IN ENCLOSURE.

iii. HOA SELECTOR SWITCH FOR AUTOMATICALLY OPERATED MOTORS. SAFETY CONTROLS COMMON TO BOTH CONTROLS.

iv. RED, GREEN AND AMBER PILOT LIGHTS.

v. SWITCHES: HORSE–POWER–RATED, EXTERNAL PADLOCKING TYPE.

vi. HOLDING COILS: 10 WATT, 120 VOLT.

vii. CONTACTS: MAIN LINE AND MINIMUM (2) – NORMALLY OPEN, (2) – NORMALLY CLOSED 10 AMP AUXILIARIES, IN ADDITION TO CONTACTS

viii. REQUIRED FOR CONTROLS SPECIFIED.

ix. CONTROL TRANSFORMER: FOR MOTORS OVER 120 VOLTS, TO STEP DOWN CONTROL VOLTAGE TO 120 VOLTS; OF THE REQUIRED CAPACITY WITH FUSE AND GROUND CONNECTION ON VOLTAGE SIDE.

x. FUSES: SIMILAR TO BUSSMAN.

xi. RELAYS: TO SUPPLEMENT AUXILIARY CONTACTS IN CONTROLLER. MINIMUM 10 WATT COIL AND TWO 10 AMP CONTACTS.

xii. TERMINALS: SUITABLE FOR CONDUCTORS NOTED AND AS APPROVED.

F. DISCONNECT SWITCHES ARE PROVIDED BY THE ELECTRICAL CONTRACTOR IF NOT INTEGRAL WITH EQUIPMENT.

G. ACCEPTABLE MANUFACTURERS:

i. EATON/ CUTLER HAMMER.

ii. SQUARE D.

iii. ALLEN BRADLEY.

iv. ABB

23. EQUIPMENT

A. PROVIDE ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS.

B. INSTALL EQUIPMENT IN ACCORDANCE WITH APPROVED SHOP DRAWINGS, MANUFACTURERS INSTRUCTIONS AND ALL CODES AND REGULATIONS WHICH APPLY.

C. PROVIDE EQUIPMENT SUPPORTS AND/OR MOUNTINGS AS INDICATED ON THE DRAWING, IN VIBRATION SPECIFICATION AND AS FOLLOWS:

i. FLOOR MOUNTED EQUIPMENT – PROVIDE DIMENSIONS FOR A 4 INCH CONCRETE HOUSEKEEPING PAD WITH ALL REQUIRED WATERPROOFING TO THE CONSTRUCTION MANAGER.

ii. EQUIPMENT ON FLOOR STANDS – PROVIDE FLOOR STAND OF STRUCTURAL STEEL OR STEEL PIPES AND FITTINGS ATTACHED TO FLOOR.

iii. ROOF MOUNTED EQUIPMENT – PROVIDE PREFABRICATED ISOLATED ROOF CURB WITH INTEGRAL VIBRATION ISOLATORS.

iv. CEILING MOUNTED EQUIPMENT – PROVIDE SUPPORTS WITH APPROVED SUITABLE ANCHORS SUSPENDED DIRECTLY FROM BUILDING STEEL STRUCTURE.

v. PROVIDE SUPPLEMENTAL STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE EQUIPMENT LOAD.

vi. EQUIPMENT SHALL BE INSTALLED WITH VIBRATION ISOLATION, REFER TO VIBRATION ISOLATION SECTION.

D. RIGGING

i. THIS CONTRACTOR SHALL SURVEY THE BUILDING AND VERIFY THE RIG PATH PRIOR TO PURCHASE OF EQUIPMENT. CONFIRM ALL EQUIPMENT FITS THROUGH ALL HALLWAYS, DOORS, ELEVATORS, WINDOWS, ETC. WITHOUT REQUIRING MAJOR ALTERATIONS TO THE EXISTING BUILDING CONDITIONS. ANY MODIFICATIONS TO EXISTING CONDITIONS SHALL BE REPAIRED OR REPLACED BY CONTRACTOR.

ii. THIS CONTRACTOR SHALL PROVIDE ALL REQUIRED RIGGING, HOISTING AND BRACING TO INSTALL THE EQUIPMENT AS INDICATED ON THE PLANS. THIS WORK SHALL BE PERFORMED BY AN INSURED CERTIFIED LICENSED RIGGING COMPANY THAT IS EXPERIENCED IN RIGGING EQUIPMENT OF THE TYPE INDICATED FOR THE AREAS SHOWN ON THE CONSTRUCTION DOCUMENTS. THIS CONTRACTOR SHALL SUBMIT RIGGING PLANS FOR APPROVAL PRIOR TO PROCEEDING WITH THE WORK.

iii. ALL PERMITS REQUIRED FROM THE AUTHORITIES AND AGENCIES INVOLVED TO PERFORM THE RIGGING ARE THE RESPONSIBILITIES OF THIS CONTRACTOR.

iv. ALL STRUCTURAL SUPPORTS, MODIFICATIONS OR ADDITIONS ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO PROCEEDING WITH THE WORK. ALL SUPPLEMENTAL STRUCTURAL SUPPORTS, ELEVATOR CHARGES /MODIFICATIONS, BRACING AND PROTECTION REQUIRED FOR THE RIG IS THE RESPONSIBILITY OF THIS CONTRACTOR.

v. THE RIGGING CONTRACTOR SHALL HIRE AND PAY FOR ALL CHARGES AND SERVICES OF THE BUILDING ELEVATOR CONTRACTOR FOR THE RIGGING OF THE EQUIPMENT.

E. UP FRONT PURCHASE OF EQUIPMENT

i. THE CONTRACTOR SHALL SUBMIT A LIST OF LONG LEAD TIME ITEMS THAT WILL AFFECT THE SCHEDULE OF THE PROJECT IF NOT PURCHASED IMMEDIATELY UP FRONT AT THE START OF THE PROJECT. THE MECHANICAL CONTRACTOR SHALL SUBMIT PROPOSED MANUFACTURER AND LEAD TIMES FOR ALL PROJECT EQUIPMENT AT TIME OF PROJECT AWARD.

24. AUTOMATIC CONTROLS – GENERAL REQUIREMENTS

A. WORK INCLUDED

i. FURNISH AND INSTALL AS HEREIN SPECIFIED, A COMPLETE AUTOMATIC TEMPERATURE CONTROL SYSTEM. MANUFACTURER SHALL BE SUBMITTED WITH BID AND APPROVED BY ENGINEER BEFORE BID AWARD. THE ATC CONTRACTOR SHALL BE AN INDEPENDENT CONTRACTOR NOT AFFILIATED WITH THE MECHANICAL CONTRACTOR.

ii. PROVIDE POWER FOR PANELS AND CONTROL DEVICES FROM A SOURCE DESIGNATED BY THE ELECTRICAL CONTRACTOR.

iii. COORDINATE INSTALLATION SCHEDULE WITH THE MECHANICAL CONTRACTOR AND GENERAL CONTRACTOR.

iv. FURNISH, MOUNT, AND WIRE ALL ASSOCIATED PANELS AND DEVICES FOR THE SYSTEM TO BE COMPLETELY OPERATIONAL REGARDLESS OF FUNCTION OR VOLTAGE, UNLESS OTHERWISE STATED.

B. SUBMITTALS

i. PRODUCT DATA: INCLUDE MANUFACTURER'S TECHNICAL LITERATURE FOR EACH CONTROL DEVICE INDICATED, LABELED WITH SETTING OR ADJUSTABLE RANGE OF CONTROL. INDICATE DIMENSIONS, CAPACITIES, PERFORMANCE CHARACTERISTICS, ELECTRICAL CHARACTERISTICS, FINISHES FOR MATERIALS, AND INSTALLATION AND STARTUP INSTRUCTIONS FOR EACH TYPE OF PRODUCT INDICATED.

ii. SHOP DRAWINGS: DETAIL EQUIPMENT ASSEMBLIES AND INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHOD OF FIELD ASSEMBLY, COMPONENTS, AND LOCATION AND SIZE OF EACH FIELD CONNECTION.

a) SCHEMATIC FLOW DIAGRAMS SHOWING FANS, COILS, DAMPERS, VALVES, AND CONTROL DEVICES.

b) WIRING DIAGRAMS: POWER, SIGNAL, AND CONTROL WIRING.

c) DETAILS OF CONTROL PANEL FACES, INCLUDING CONTROLS, INSTRUMENTS, AND LABELING.

C. QUALITY ASSURANCE

i. INSTALLER QUALIFICATIONS: A QUALIFIED INSTALLER WHO IS AN AUTHORIZED REPRESENTATIVE OF THE AUTOMATIC CONTROL SYSTEM MANUFACTURER FOR BOTH INSTALLATION AND MAINTENANCE OF UNITS REQUIRED FOR THIS PROJECT.

ii. COMPLY WITH ALL CURRENT GOVERNING CODES, ORDINANCES, AND REGULATIONS INCLUDING UL, NFPA, THE LOCAL BUILDING CODE, NEC, ETC.

iii. MATERIALS AND EQUIPMENT SHALL BE THE CATALOGUED PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN PRODUCTION AND INSTALLATION OF AUTOMATIC TEMPERATURE CONTROL SYSTEMS AND SHALL BE MANUFACTURER'S LATEST STANDARD DESIGN THAT COMPLIES WITH THE SPECIFICATION REQUIREMENTS.

25. SEQUENCE OF OPERATIONS:

A. HEAT PUMP SEQUENCE:

1)PROVIDE A PROGRAMMABLE THERMOSTAT (BY MANUFACTURER) FOR EACH AIR HANDLER, WITH CAPABILITY FOR FAN TO BE ALWAYS ON OR IN AUTOMATIC MODE.

a) PROGRAMMABLE THERMOSTAT SHALL BE CAPABLE OF SETBACK CONTROLS, PROGRAMMED BY THE END USER, FOR 65°F AND 80°F IN WINTER AND SUMMER, RESPECTIVELY.

b) PROGRAMMABLE THERMOSTAT SHALL HAVE 5°F DEADBAND AND SETPOINT OVERLAP RESTRICTIONS

c) ALL UNITS TO BE CONNECTED TO CENTRALIZED CONTROLLER FOR MONITORING AND CONTROL.

2)PROVIDE ALL WIRING FROM CONDENSING UNITS TO RESPECTIVE CONTROLLER.

3)UNIT MODES:

a) IN HEATING MODE, THE HEAT PUMP SHALL CYCLE (ON, OFF) TO MAINTAIN SETPOINT.

B. BOILER:

I. START UP

a) UPON A COMMAND TO START THE BOILER, THE BOILER SHALL ENERGIZE.

II. ACTIVE MODE

a) THE BOILER PUMP SHALL START AND REMAIN ON.

b) THE BOILER'S BURNERS SHALL MODULATE TO MAINTAIN A HOT WATER SUPPLY SETPOINT. SETPOINT SHALL BE DETERMINED BY THERMOSTAT INPUT. THE HOT WATER SUPPLY SETPOINT SHALL VARY LINEARLY ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

THE SCALE OF THIS DRAWING IS CORRECT WHEN PRINTED ON 24x36 SIZE PAPER. ALL OTHER PAPER SIZES WILL NOT SHOW THE CORRECT SCALE.

BARN

CLIENT
Essex County
7551 Court Street P.O. Box 217
Elizabethtown, NY 12932
518.873.3895

ARCHITECT
david cunningham architecture planning pllc
543 Union Street Suite 1C
Brooklyn NY 11215
718.208.0815

ASSOCIATE ARCHITECT
Civic Architecture Workshop PLLC
543 Union Street Suite 1C
Brooklyn NY 11215
917.501.7337

ENGINEER: STRUCTURAL
Old Structures Engineering
90 Broad Street Suite 1501
New York NY 10004
212.244.4546

ENGINEER: MEP
EP Engineering LLC
110 William Street 32nd Floor
New York NY 10038
212.257.6190

ISSUES:

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ESSEX COUNTY FARMWORKER HOUSING RENOVATION
Barn
82 Loukes RD
Westport NY 12993

M-802.00

MECHANICAL SPECIFICATIONS (3 OF 3)

SEAL | SIGNATURE: