

Building Envelope Condition Survey Report

**Martha's Vineyard Regional High School
100 Edgartown Road
Oak Bluffs, Massachusetts**

May 29, 2015

RBA Project No. 2015037

Prepared by:



**33 Center Street, 2nd Floor
Burlington, MA
Tel: 781-273-1537
Fax: 781-273-1695**

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Russo Barr Associates, Inc.

33 Center Street, 2nd Floor
Burlington, MA 01803

781-273-1537 tel
781-273-1695 fax

May 29, 2015

Ms. Amelia C. Tierney, MCPPO
School Business Administrator
Martha's Vineyard Public Schools
4 Pine Street
Vineyard Haven, MA 02568

Re: Building Envelope Condition Survey Report
Martha's Vineyard Regional High School
Oaks Bluff, MA
RBA Project No. 2015037

Ms. Tierney:

During the month of May 2015, we performed a limited investigation of the building envelope at the Martha's Vineyard Regional High School located at 100 Edgartown Road in Oak Bluffs, MA. This investigation consisted of an exterior visual inspection of all walls, windows and doors, conducted from the ground and the roofs. Some interior visual inspections were also conducted. This report documents our findings and includes recommendations for repairs and a detailed construction cost estimate. Numerous photos and marked-up original exterior elevation drawings are also included.

OBSERVATIONS

General

The subject building consists of a single-story, steel and wood framed, partial brick masonry structure, that includes wood and aluminum framed windows and steel doors. The original structure was built approximately 56 years ago with additions added in the 1970's and 1990's. The roofs underwent substantial renovation in 2013, which included replacement of several sections of roofing with a PVC roof membrane system and repairs to the remaining roof sections.

Reference is made to the following Table of Building Areas, the Schematic Floor Plan included in the Appendix and original elevation drawings for descriptions of building areas:

TABLE OF BUILDING AREAS

Color key on Floor Plan	Interior Area Identification	Letter key shown on marked-up drawings	Approximate Age (years)
Green	Library, Cafeteria, Kitchen, Family Ctr, Principal, Guidance, Front office	G & H	56
Yellow	Classrooms 501 – 520	J	56
Purple	Auto, Culinary Arts, Bldg. Trades, Classrooms 210 – 219	E & F	45
Pink	Gym, Locker Rooms, Classrooms 301 – 326	C & D	25
Blue	Performing Arts, Special Ed	A & B	25

The original building primarily includes exterior wall surfaces constructed of brick masonry with wood frame windows. The additions' exterior surfaces primarily include cedar shingles (may be fire retardant treated) with wood trim and aluminum framed windows. The total area of exterior surfaces is approximately 92,220 square feet.

Mr. Ty Hobbs, Vocational Director for the School, and longtime custodians; Jeff Kurth and Jeff Murphy provided some background information as follows:

- There are no known roof leaks. Recent leakage due to roof-mounted ductwork has been reportedly addressed.
- Swing doors of older areas of the building are in poor condition.
- One set of doors leading to the south courtyard has been enclosed. In order to create an office space.
- Air infiltration is common to most operable windows and doors.

Walls

Exterior cedar shingles cover the majority of wall areas, and total approximately 47,220 square feet. The condition of the shingles is fair. Most of the shingles are weathered to a gray color and many are curled due to the shingles being unfinished. However, the weathering of the cedar shingles is a preferred appearance for many Martha's Vineyard structures. We observed that a fair amount of cedar shingles are severely damaged or missing.

Exterior brick masonry walls cover a total of approximately 15,500 square feet. The condition of the brick masonry is fair. We observed numerous areas of deteriorated and/or cracked mortar joints. There are steel angles that are used as lintels above wall openings to support the masonry above. We observed (2) lintels to be deteriorated to the point where surrounding brick masonry is disrupted. Sealants associated with the brick masonry and totaling approximately 2,000 linear feet are failed or failing.

It appears that (17) uni-vent openings in the brick masonry or wood shingled walls were covered with plywood and this plywood is deteriorated.

There is a good deal of painted wood trim associated with the cedar shingle and brick masonry wall coverings. Wood trim in various widths and configurations cover approximately 7,900 square feet. The condition of the wood trim is fair to poor. Paint is peeling in many areas. We observed two lengths of wood fascia that are broken.

There is one area of spalled concrete foundation (+/- 2 SF) in the south courtyard. This condition, although not ideal, is viewed as an imperfection that could remain as-is.

Windows

Windows installed in the older and shop areas of the School (Building areas; E, F, G, H and J) are wood framed. Glazing associated with the oldest areas are single pane. All remaining windows are aluminum framed units with insulated glazing. Styles of windows include, fixed, and project out in punched and curtain wall configurations.

The condition of the windows is fair to mainly poor. Windows associated with the original building and the shop areas are aged and the wood components are badly deteriorated. Window perimeter sealants (+/- 8,200 LF) are failed at all locations. 61 window glazing units have failed and are fogged or are broken. The hardware associated with many operable windows is worn-out or broken. Some window screens are torn/broken. Some window brackets that help support protruding windows that are deteriorated.

Doors

There are over 30 sets of single or double personnel or overhead doors serving this building and they are constructed of wood and steel. There was a former door opening into the south courtyard that has been enclosed by building staff in order to create office space. All doors and frames are not thermally broken. The condition of the doors varies considerably from new to poor. Most weather stripping is failed. Hardware also varies in condition.

Other

Although not a part of this investigation but worthy of mention is the condition of interior finishes in rooms 111 and 113. There is a partition separating these areas that was installed after the main structure was completed. The teacher that occupies this space stated that gypsum wallboard had cracked during this past winter's heavy snowfall and this cracking has dissipated. It is clear that the existing roof structure settled under the snow load and some of the stress was taken up by the newer partition. The newer partition was not intended to support the load and had cracked. This occurrence is not considered unusual or a safety concern and will probably not repeat itself until the next truly heavy snow accumulation.

CONCLUSIONS & RECOMMENDATIONS

Walls

The condition of the exterior walls is generally good to fair. Numerous deteriorations exist. Corrective repair recommendations include:

- Repoint deteriorated mortar joints.
- Replace cracked/spalled/displaced brick units.
- Replace sealants at masonry and window and door perimeters.
- Replace missing or broken cedar shingles.
- Remove and replace damaged wood trim.
- Repair and paint all painted wood trim.
- Enclose uni-vent louvers with aluminum clad insulated panels.

Windows

The condition of the windows is fair to poor. Most windows are over 45 years old and all windows are weatherworn. Replacement of all windows with new aluminum thermally broken energy efficient windows is recommended. The window replacement design should meet or exceed the requirements of the MA Stretch Energy Code; Maximum U-factor = 0.45 and Solar Heat Gain Coefficient (SGHC) = 0.40. The work should include low e glass panels and all necessary panning, trim (interior & exterior), expanders, operating hardware, sealants, and window treatments.

Doors

Many of the existing doors are in good to fair condition with weather stripping repairs and hardware replacements required. Some door should be replaced entirely while some are in almost new condition. All should be repainted. The one courtyard doorway that has been enclosed should be investigated for emergency egress requirements and then should be reactivated or properly enclosed.

Estimated Construction Cost

The total estimated construction cost to perform the referenced recommended scope of repair work to the walls, windows and doors is **\$2,965,105**. Reference is made to the attached Estimated Construction Cost Spreadsheet located in the Appendix.

After your review of the report, we recommend a meeting promptly take place with all involved parties to review and discuss the report.

Sincerely,

A handwritten signature in black ink that reads "Michael J. Flaherty". The signature is written in a cursive, flowing style.

Michael J. Flaherty
Senior Project Manager

Appendix

Construction Cost Estimate

School Floor Plan

Photographic Documentation

RBA

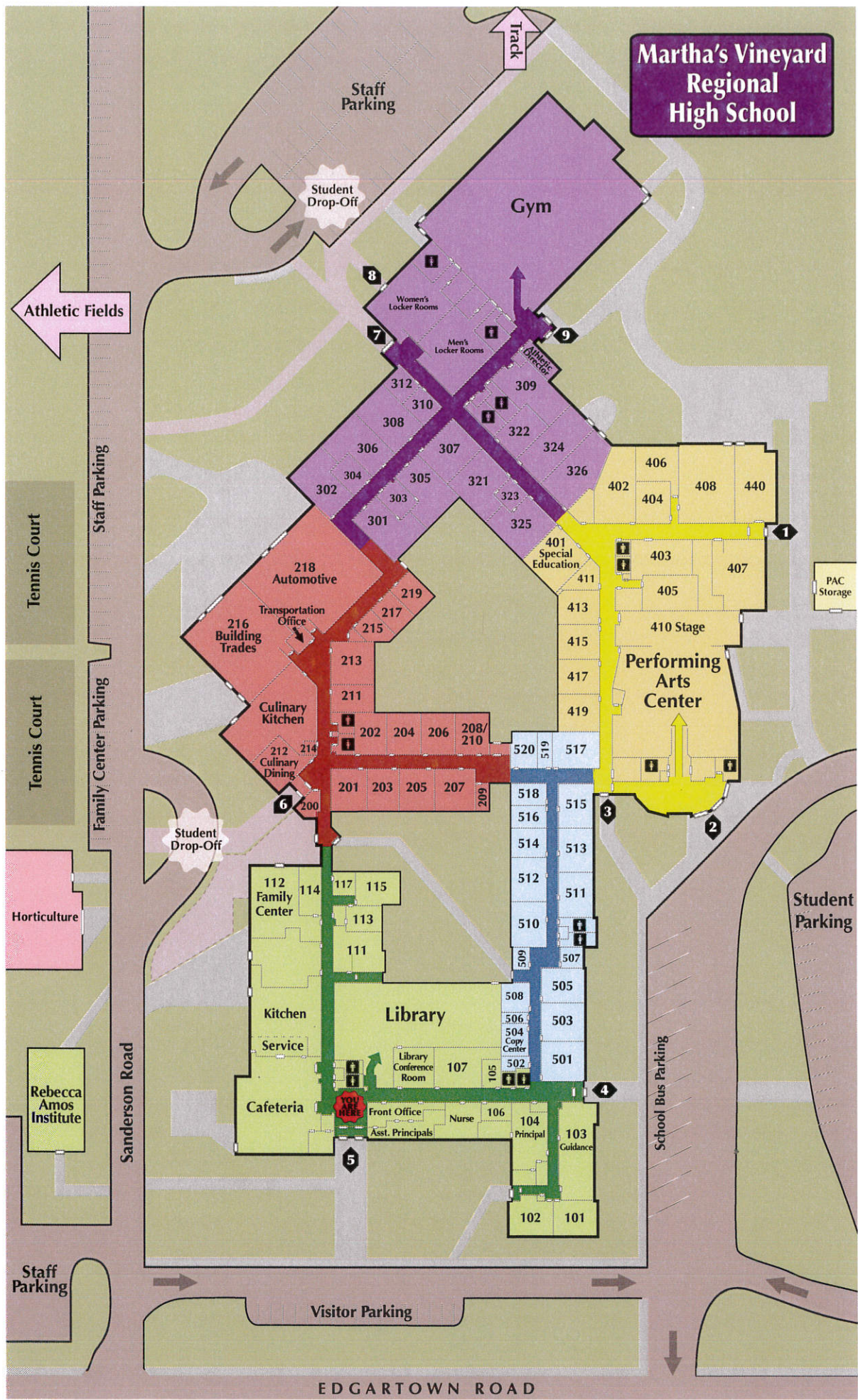
RUSO BARR ASSOCIATES, INC.

33 Center St., 2nd Floor, Burlington, Massachusetts 01803 tel 781.273.1537 fax 781.273.1695 e-mail mflaherty@russobarr.com

Estimated Construction Cost

Project: Building Envelope Condition Report Martha's Vineyard Regional High School 100 Edgartown Rd Oak Bluffs, Massachusetts				Sheet 1 of 1
Project Number: 2015037.00				Date 5/29/15
Description	Materials & Labor			Total
	Qty	Units	Unit Cost	
Exterior Wall Repairs				
Remove and replace sealant joints associated with windows, doors & brick masonry	10,200	LF	\$20.00	\$204,000
Remove and replace missing or broken cedar shingles	1,000	EA	\$20.00	\$20,000
Repoint failed mortar joints	4,000	LF	\$15.00	\$60,000
Repair and paint all wood trim	7,900	SF	\$10.00	\$79,000
Remove and replace cracked brick units	100	EA	\$60.00	\$6,000
Repoint step cracked mortar	30	LF	\$60.00	\$1,800
Remove and replace deteriorated (2) steel lintels	2	EA	\$5,000.00	\$10,000
Properly enclose louvers	17	EA	\$350.00	\$5,950
Rebuild deteriorated window brackets	2	EA	\$1,000.00	\$2,000
Exterior Wall Repairs SubTotal				\$388,750
Construction Contingency (10%) & Island Mark-up (20%)				\$116,625
Wall Repairs - Construction Cost EstimateTotal				\$505,375
Window Replacement				
Remove and replace all windows	14,900	SF	\$120.00	\$1,788,000
Window Replacement SubTotal				\$1,788,000
Construction Contingency (10%) & Island Mark-up (20%)				\$536,400
Window Replacement - Construction Cost EstimateTotal				\$2,324,400
Door Repairs				
Remove and replace double doors	11	EA	\$5,000.00	\$55,000
Remove and replace single doors	4	EA	\$3,000.00	\$12,000
Remove and replace weather stripping	16	EA	\$300.00	\$4,800
Remove and replace panic hardware	1	EA	\$500.00	\$500
Remove and replace push plate	1	EA	\$150.00	\$150
Remove and replace closer	1	EA	\$200.00	\$200
Remove and replace hinge	1	EA	\$300.00	\$300
Remove and replace trim	1	EA	\$350.00	\$350
Remove and replace overhead doors	2	EA	\$7,000.00	\$14,000
Paint all doors	2,400	SF	\$7.00	\$16,800
Door Repairs SubTotal				\$104,100
Construction Contingency (10%) & Island Mark-up (20%)				\$31,230
Door Repairs - Construction Cost EstimateTotal				\$135,330
TOTAL PROJECT CONSTRUCTION COST ESTIMATE - BUILDING ENVELOPE REPAIR WORK				\$2,965,105

Martha's Vineyard Regional High School



Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 01

Aerial view of project.



Photo No. 02

Missing/broken shingles.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 03

Improperly mounted air conditioner unit.



Photo No. 04

Failed sealant joint between brick & wood trim, & vertical control joint.

Typical failed mortar joint between top two rows of brick – on all walls that have both brick and shingle.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 05

Rusted edges of windows and doors at main entrance.



Photo No. 06

Apparent lintel repair at heads of windows (see lighter colored mortar).

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 07

Louver in brick wall
boarded over.

Damaged brick.



Photo No. 08

Louver in shingled
wall boarded over.

Damaged shingles.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 09

Chipped/peeling paint on most wood window frames and wood trim.



Photo No. 10

Failed paint at base of window.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 11

Door into larger courtyard enclosed and covered & sealed with plywood.

All glazing around door is cloudy and failed.

It is not clear if this door enclosure violates egress requirements.



Photo No. 12

Cloudy/failed glazing with condensation drips on the inside.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 13

Close up of typical failed vertical control joint in brick wall.



Photo No. 14

Typical failed sealant joint between window and brick sill.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 15

Typical failed sealant joint between window and wood trim.



Photo No. 16

Broken and missing bricks on wall.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 17

Pieces of wood window trim broken and dislodged, with chipped and peeling paint.



Photo No. 18

Broken and cracked cornerboard.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 19

Missing and/or broken windows.



Photo No. 20

Open hole in shingled wall.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 21

Wood trim around bay windows rotted and warped with screws sticking out. Brackets rotted.



Photo No. 22

Wood corner board cracked and broken with missing paint and damage.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 23

Typical cracked mortar between bricks.



Photo No. 24

Failed joint at bottom of clerestory windows.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 25

Interior of enclosed doorway.



Photo No. 26

Typical damaged/deteriorated weather stripping.

Photographic Documentation
Existing Building Envelope Condition Survey Project
Martha's Vineyard Regional High School
Oak Bluffs, MA



Photo No. 27

Residential quality door latch in commercial application.



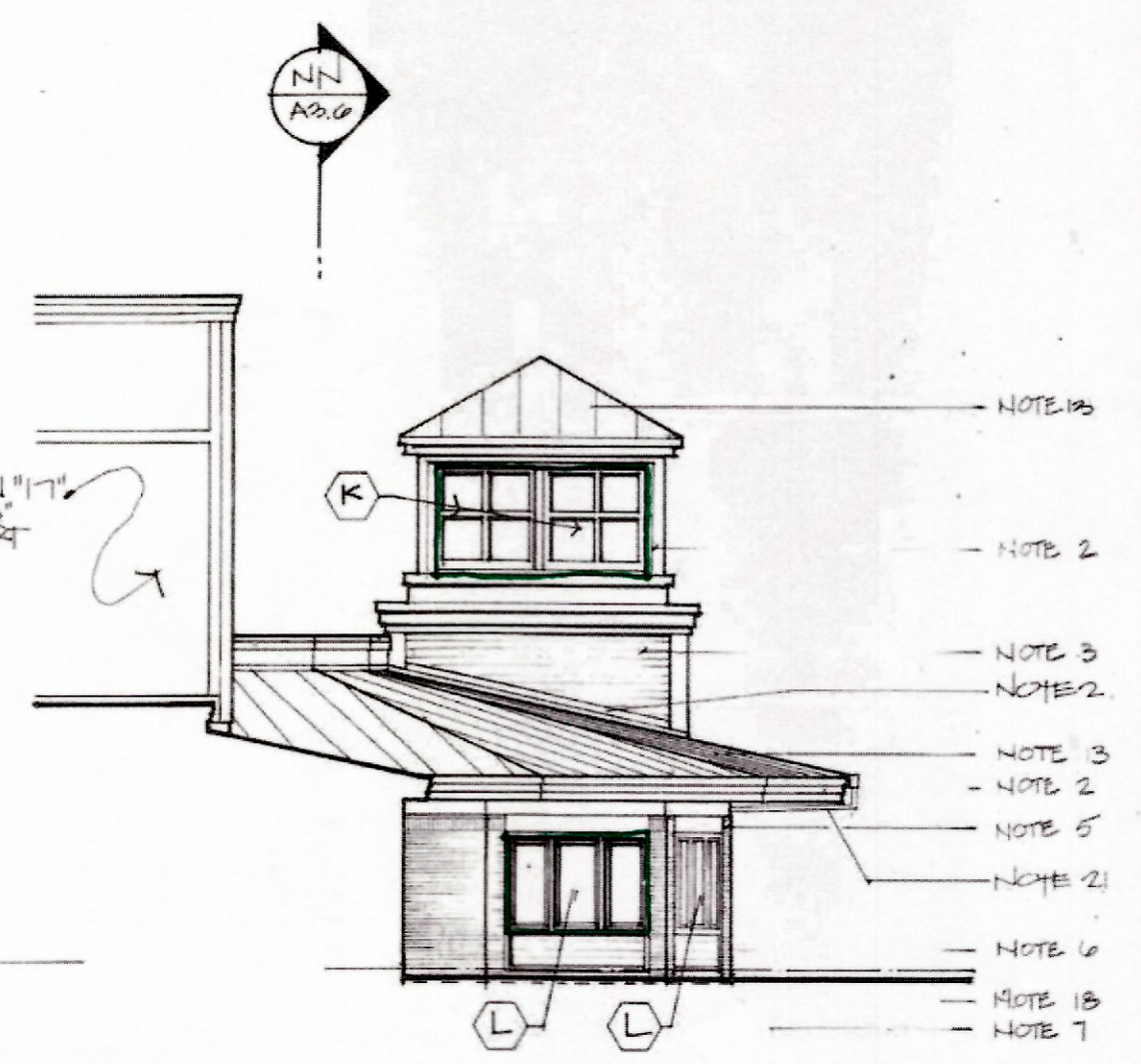
Photo No. 28

Cracks in this non-load bearing wall appeared during heavy roof snow loading but these cracks have dissipated.

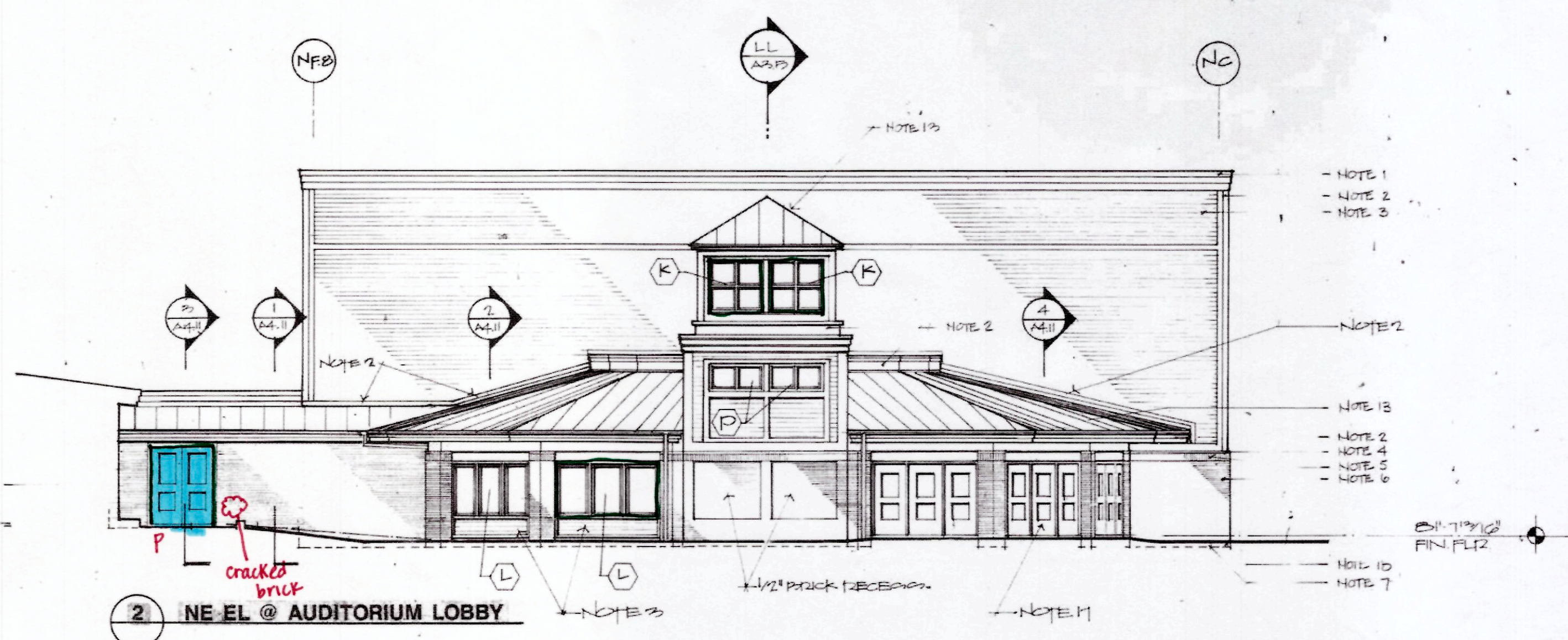
LEGEND

- Broken window - BW -
- Failed window - FW -
- Failed Sealant joint - FSJ -
- Failed mortar joint - FMJ -
- Chipped paint - P -
- Boarded lavers - BL -
- missing screens - MS - X
- missing/broken shingles - BS -

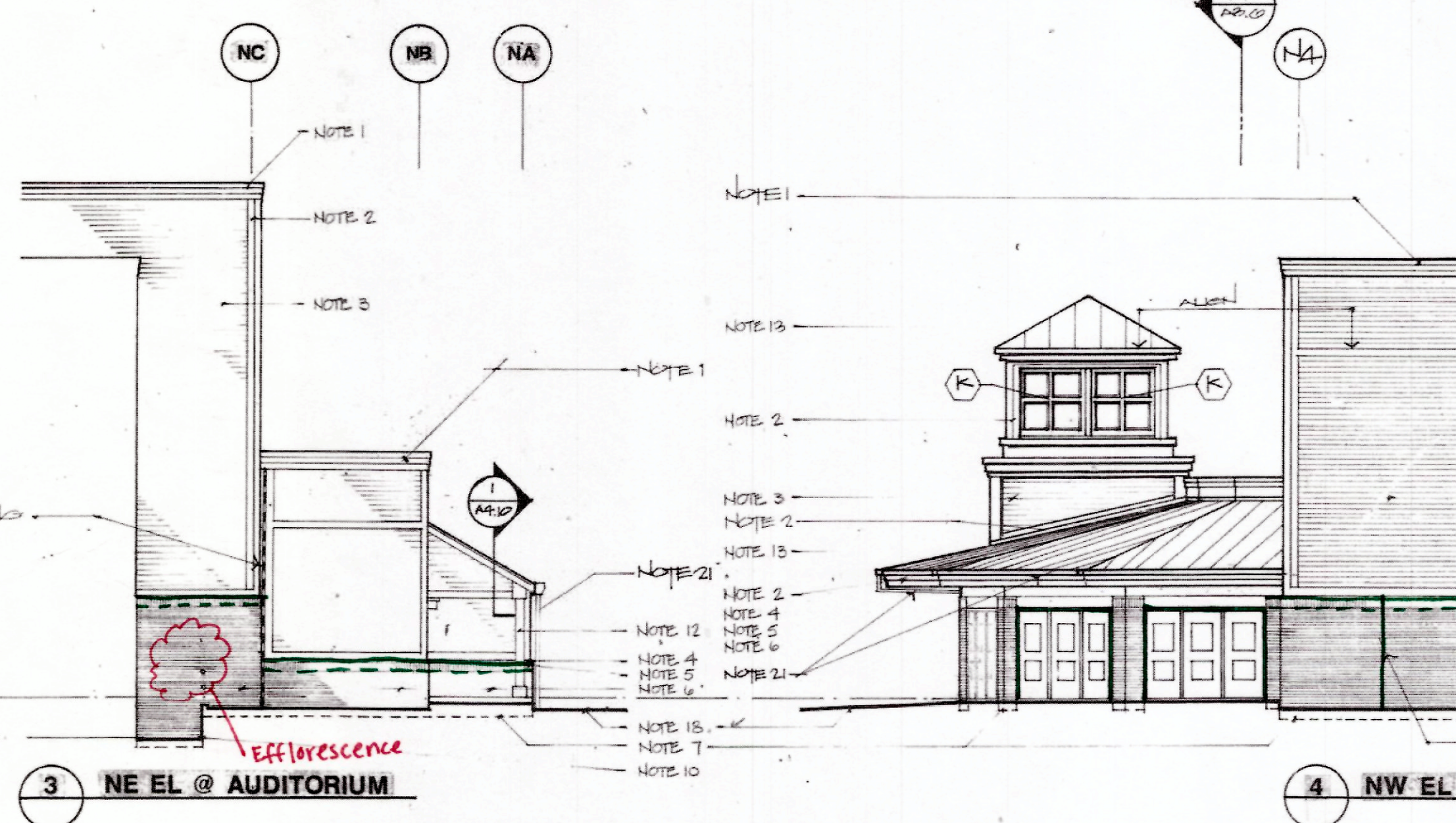
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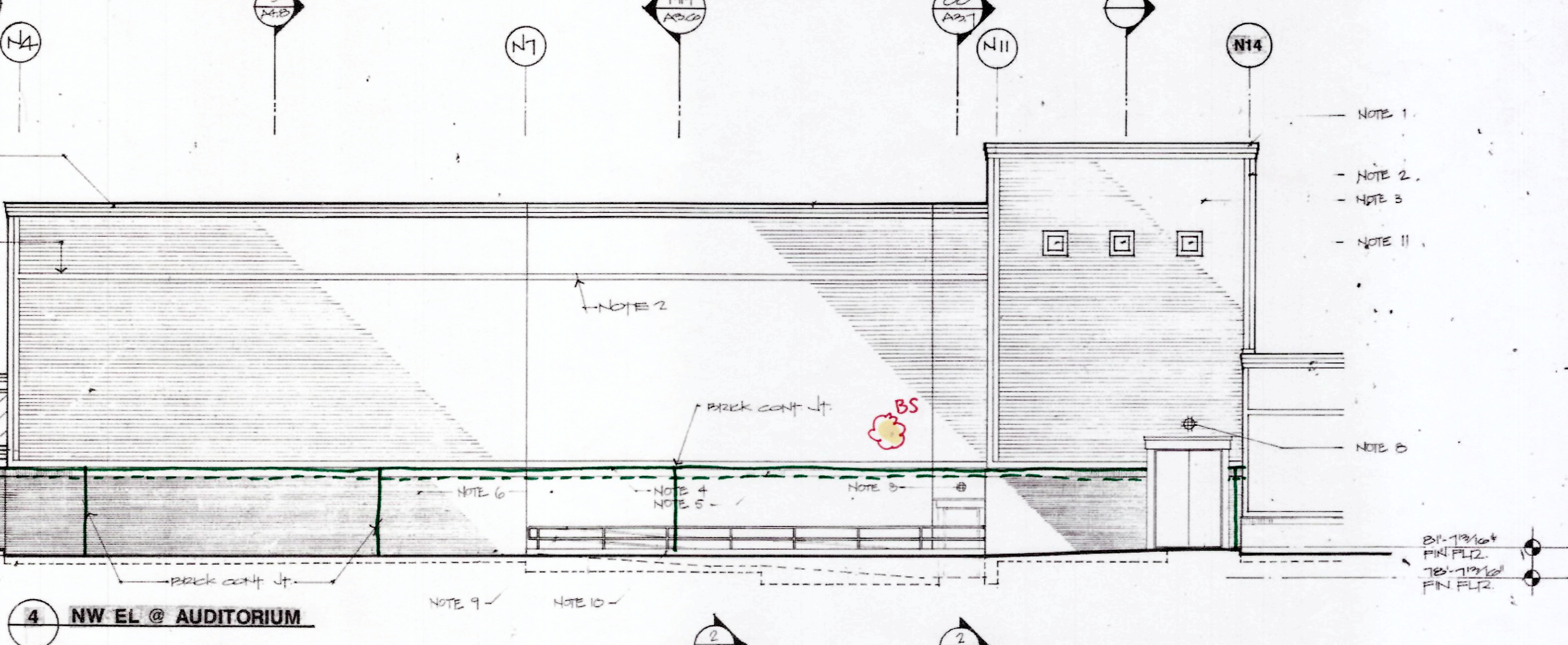
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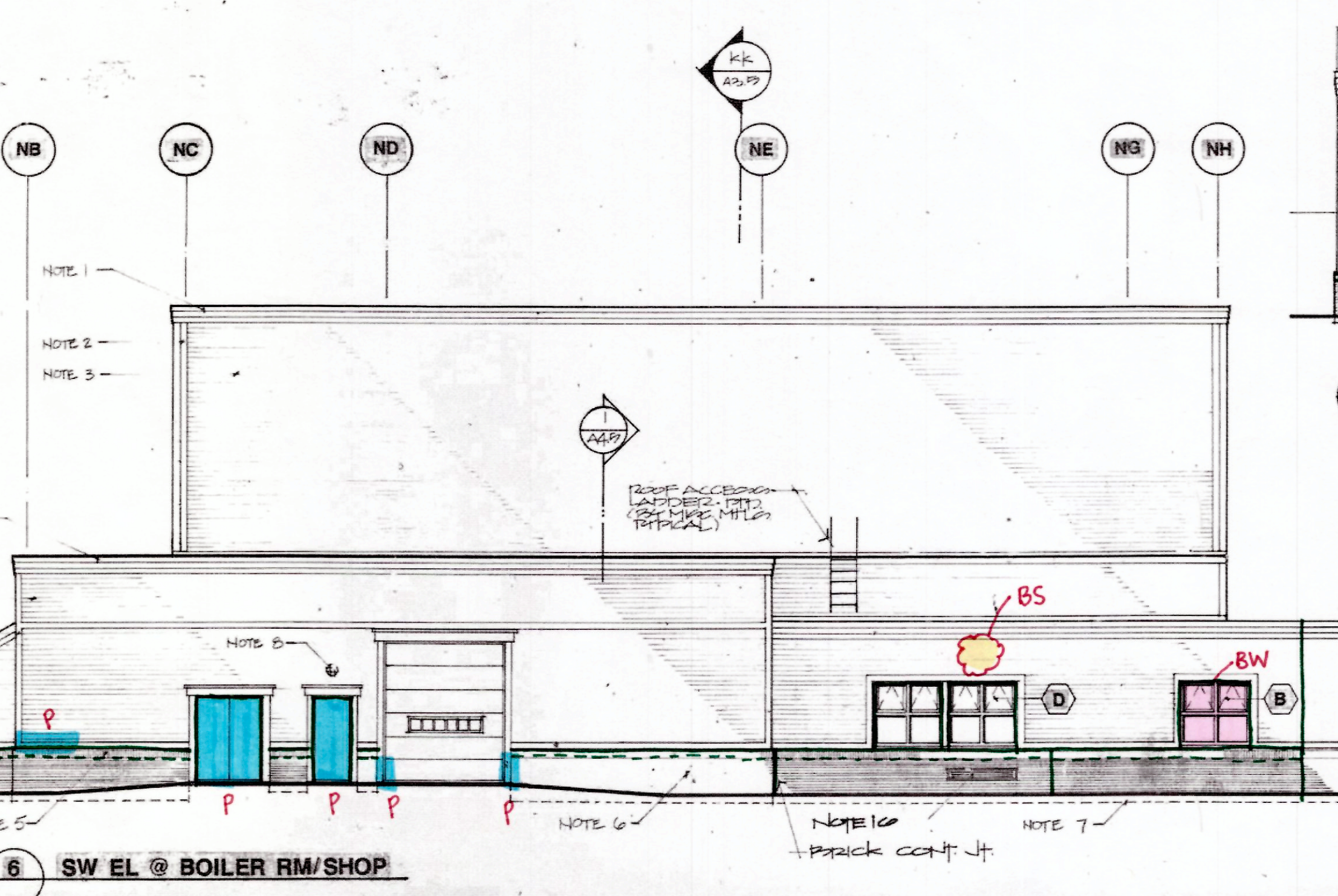
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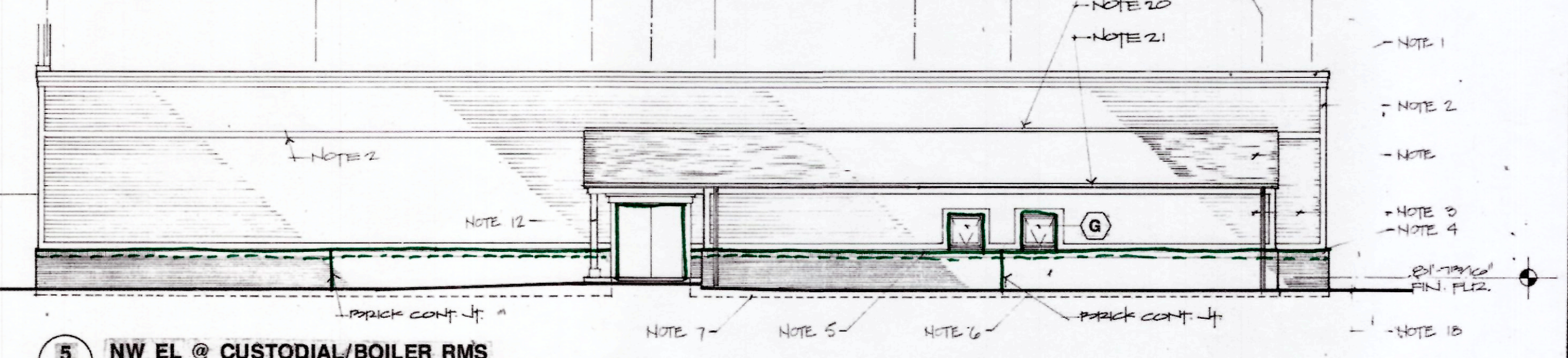
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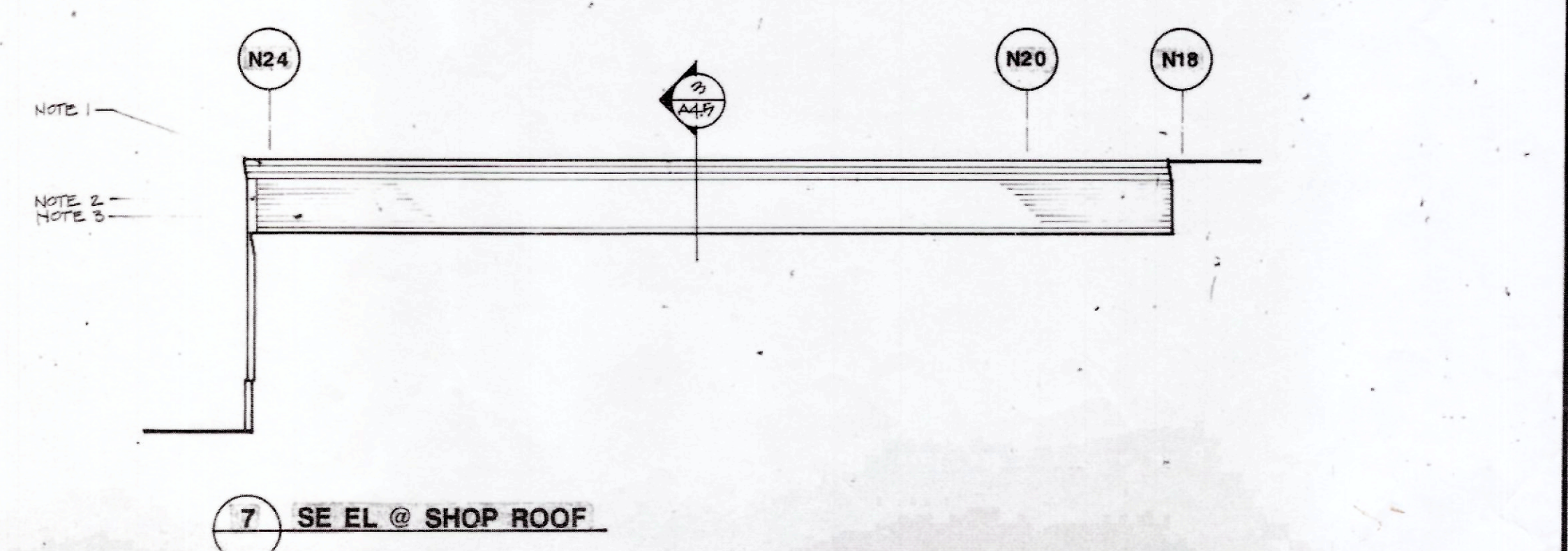
4 NW EL @ AUDITORIUM



5 SW EL @ BOILER RM/SHOP



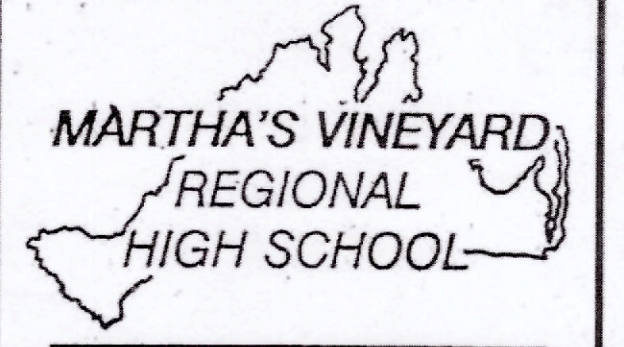
6 NW EL @ CUSTODIAL/BOILER RMS



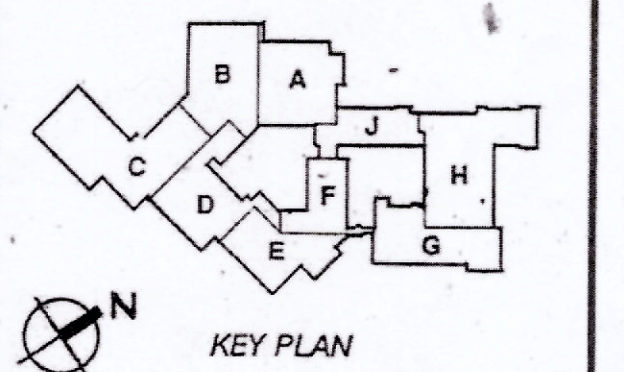
7 SE EL @ SHOP ROOF

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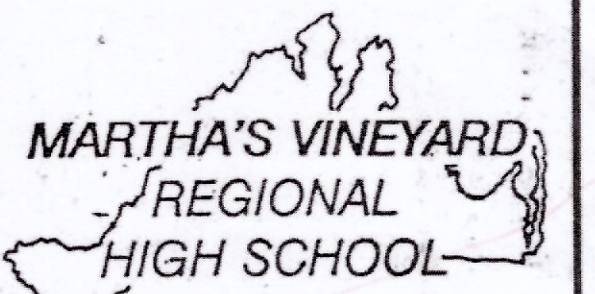


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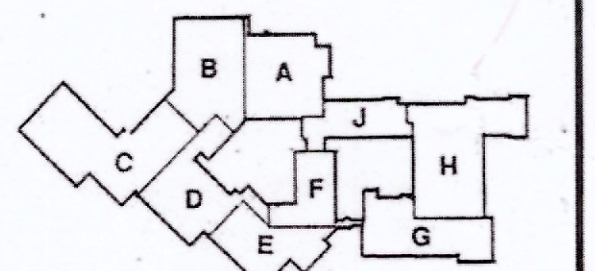
NEW EXTERIOR ELEVATIONS 1 - 7

A2.1

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ADDITIONS
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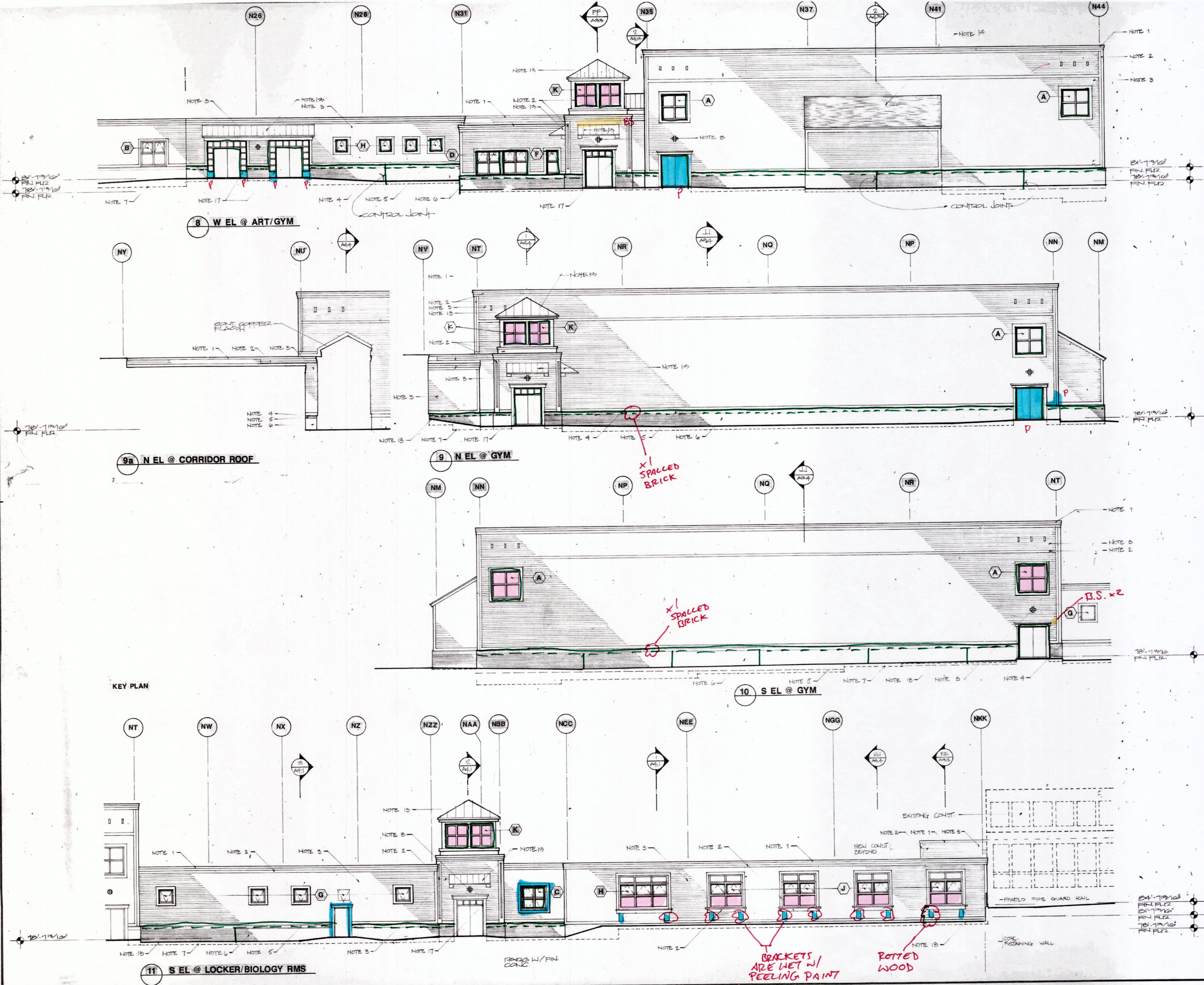


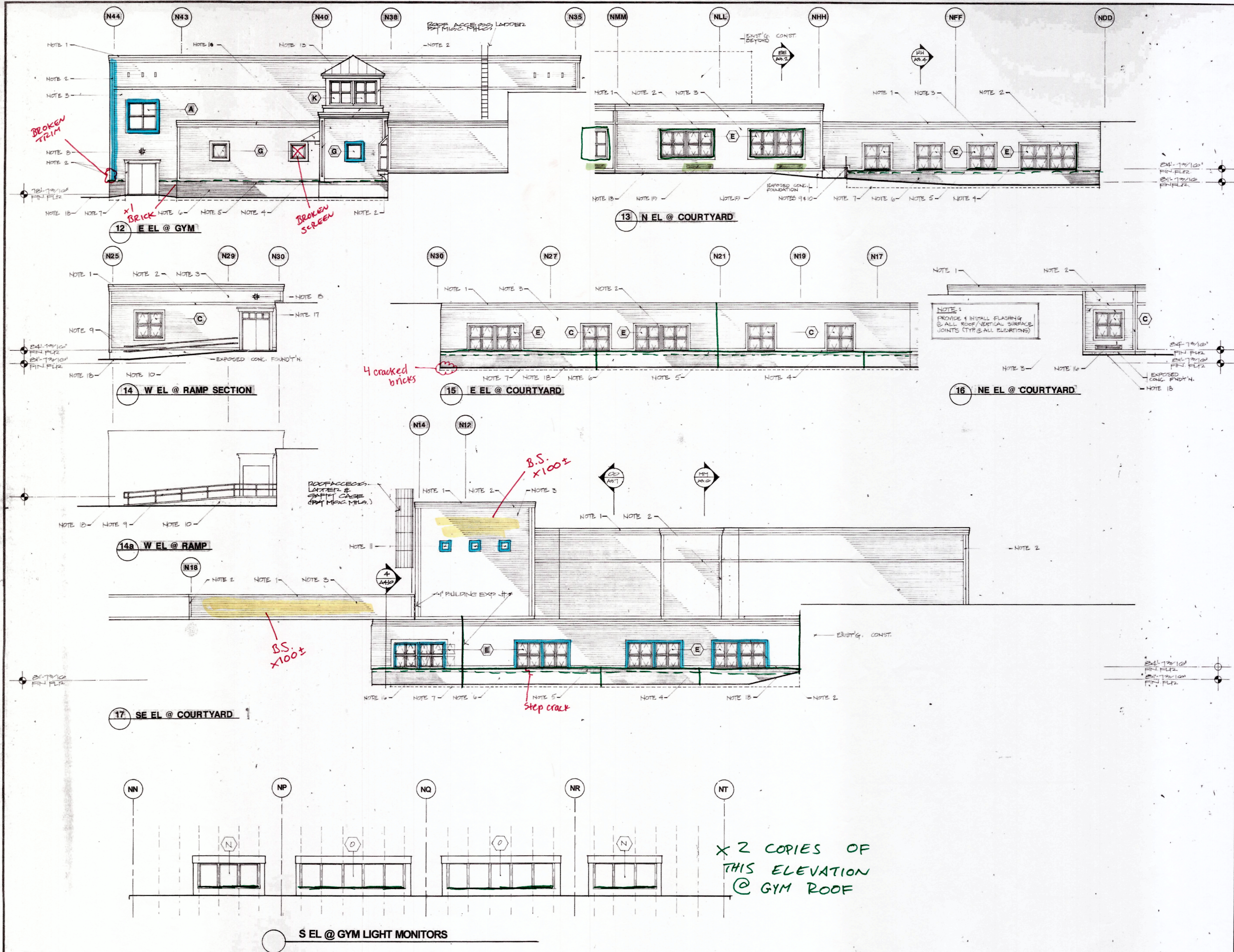
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NEW EXTERIOR
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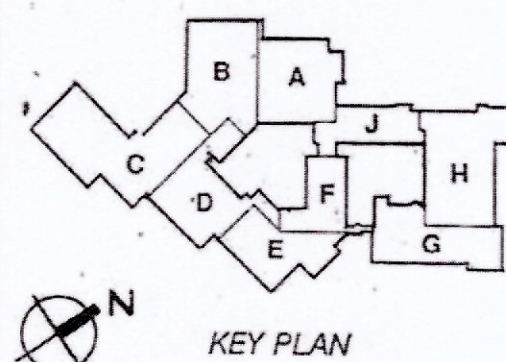


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MARTHA'S VINEYARD
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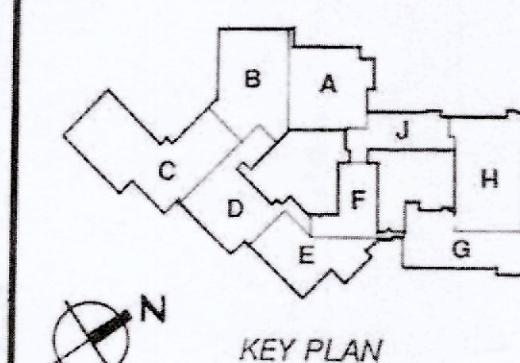
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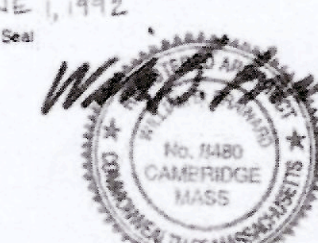
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NEW EXTERIOR
ELEVATIONS 12 - 17

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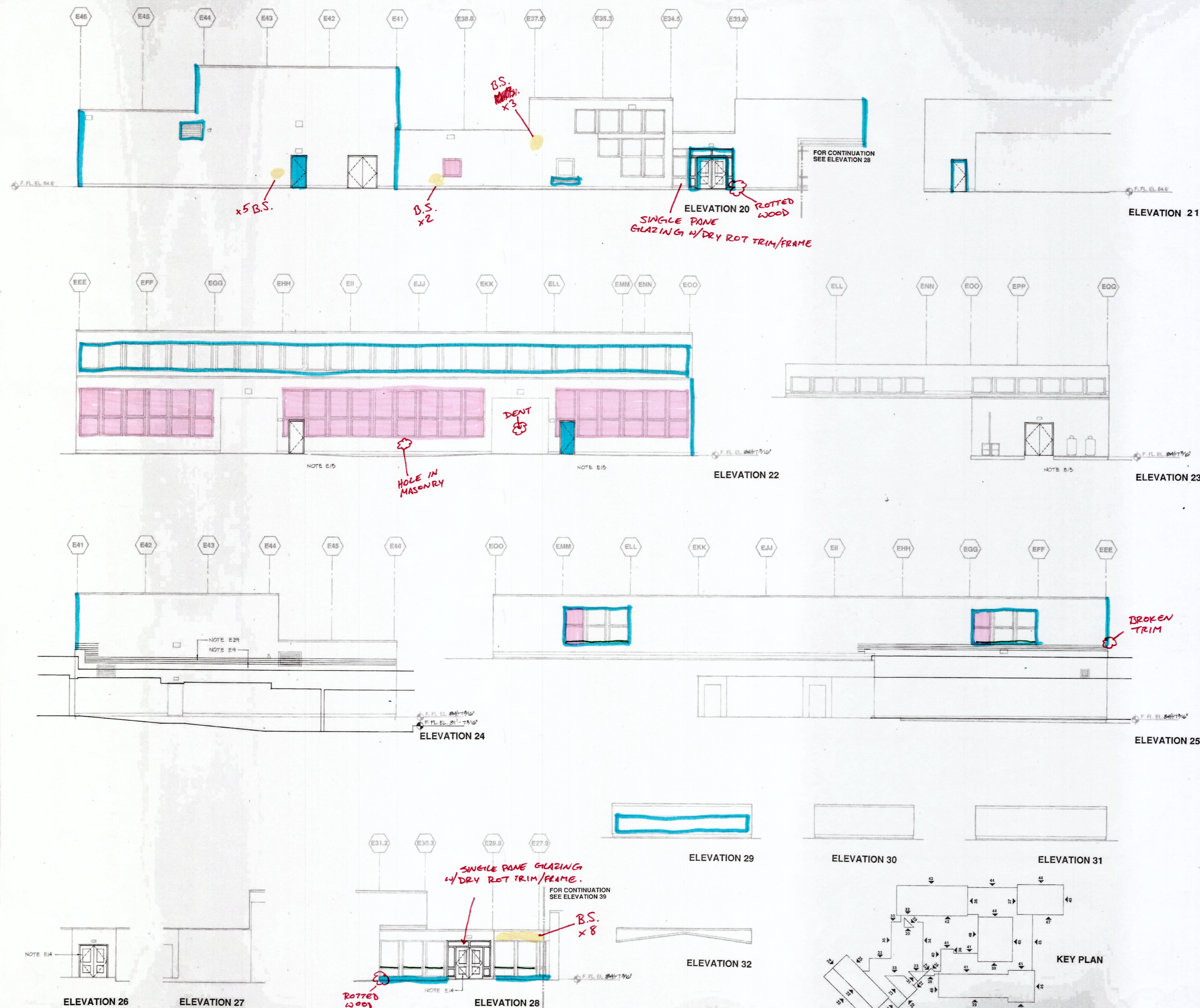


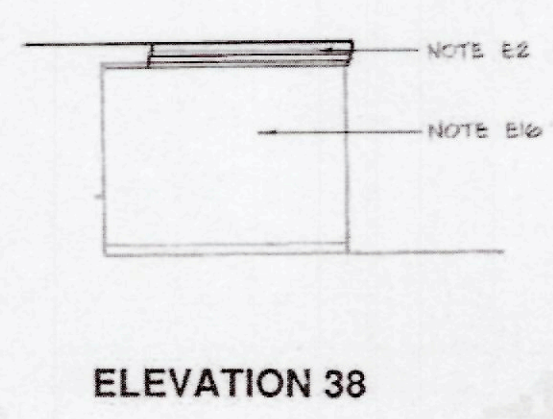
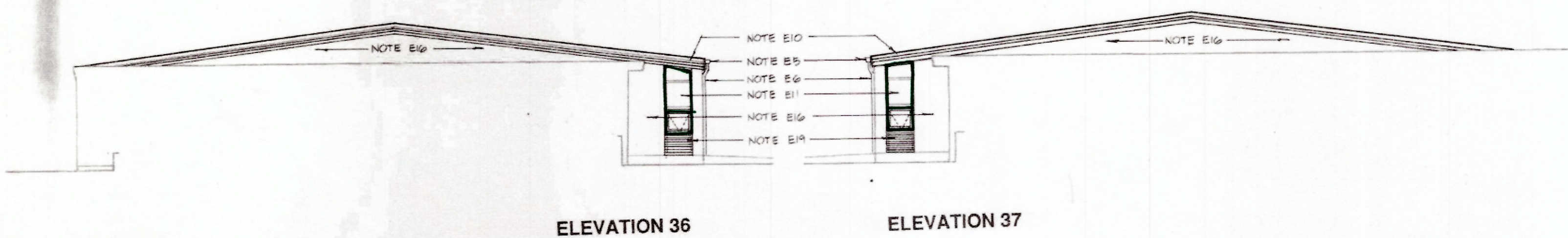
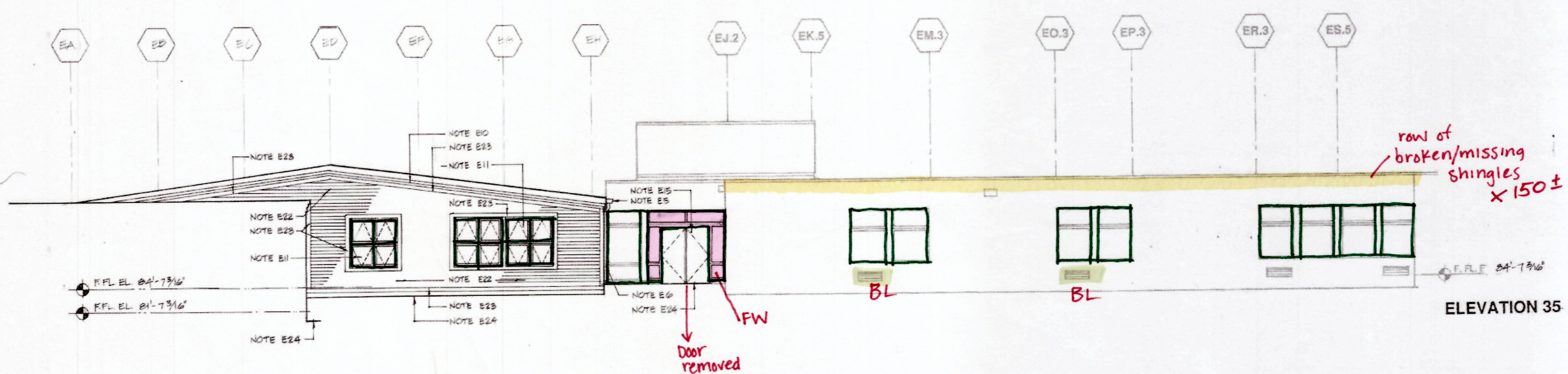
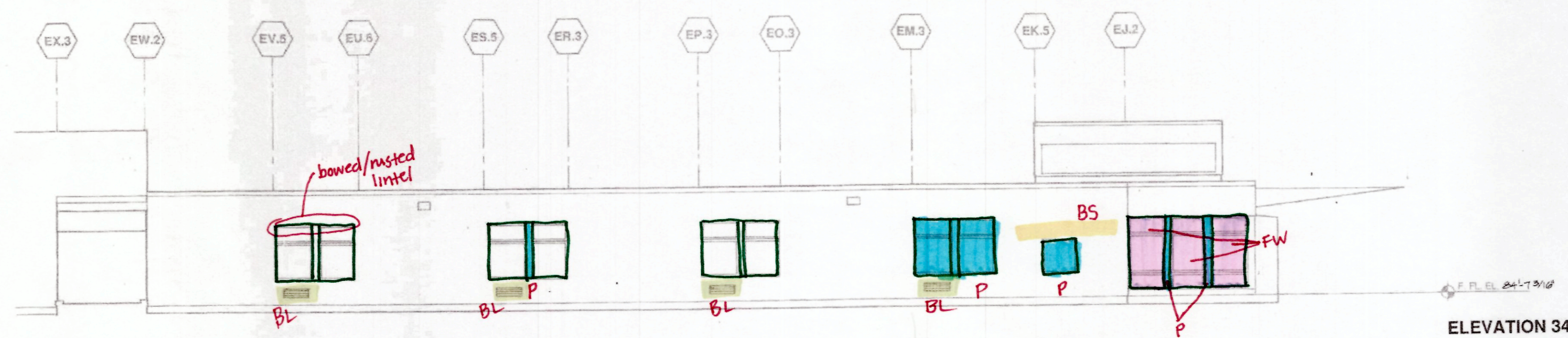
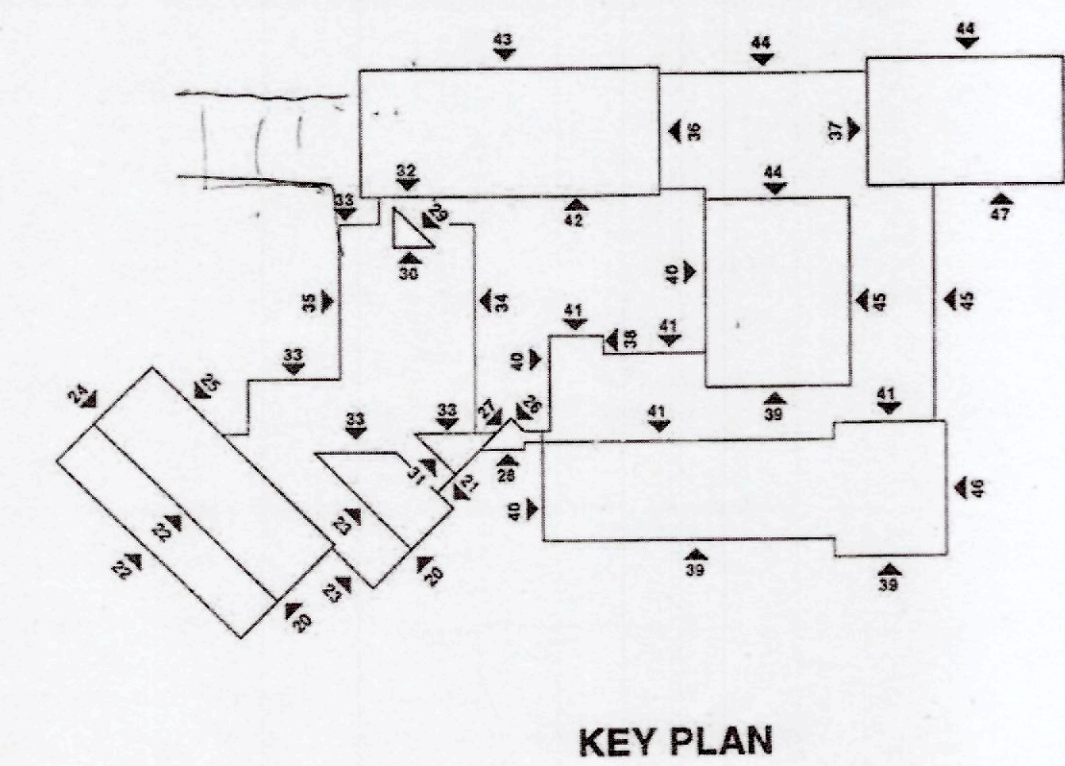
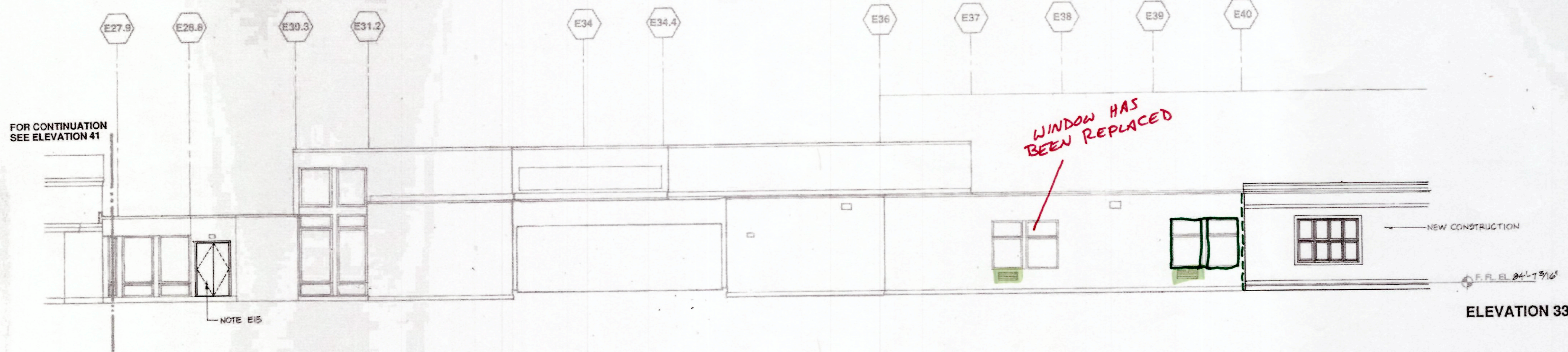
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Professional Seal



EXISTING EXTERIOR
ELEVATIONS 20 - 32

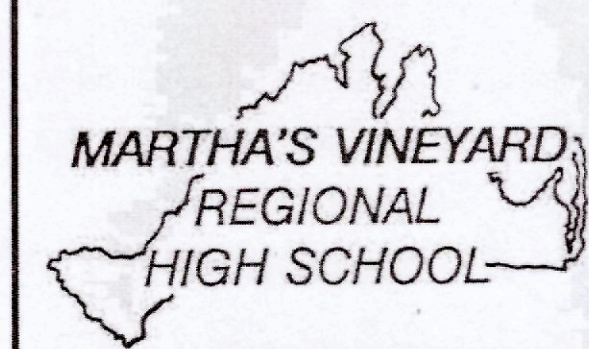
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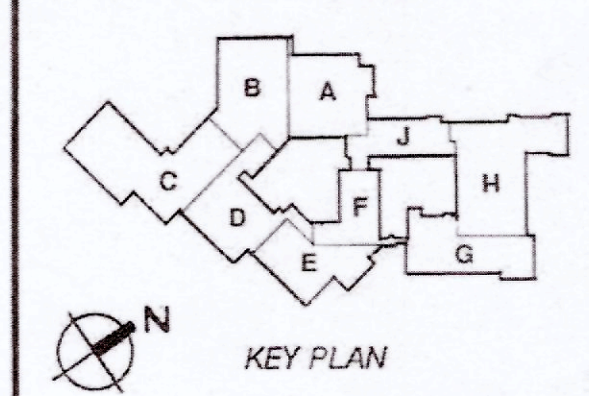


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ADDITIONS
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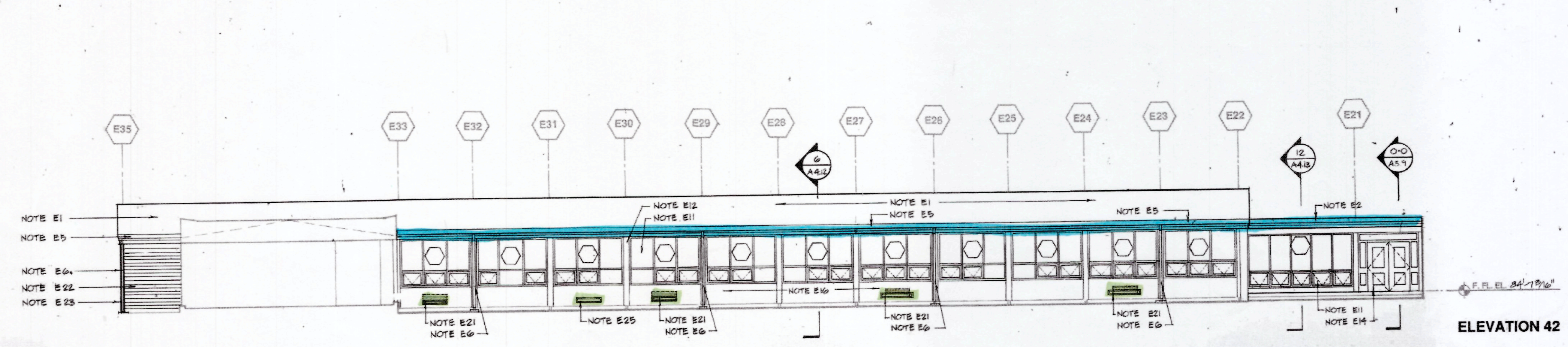
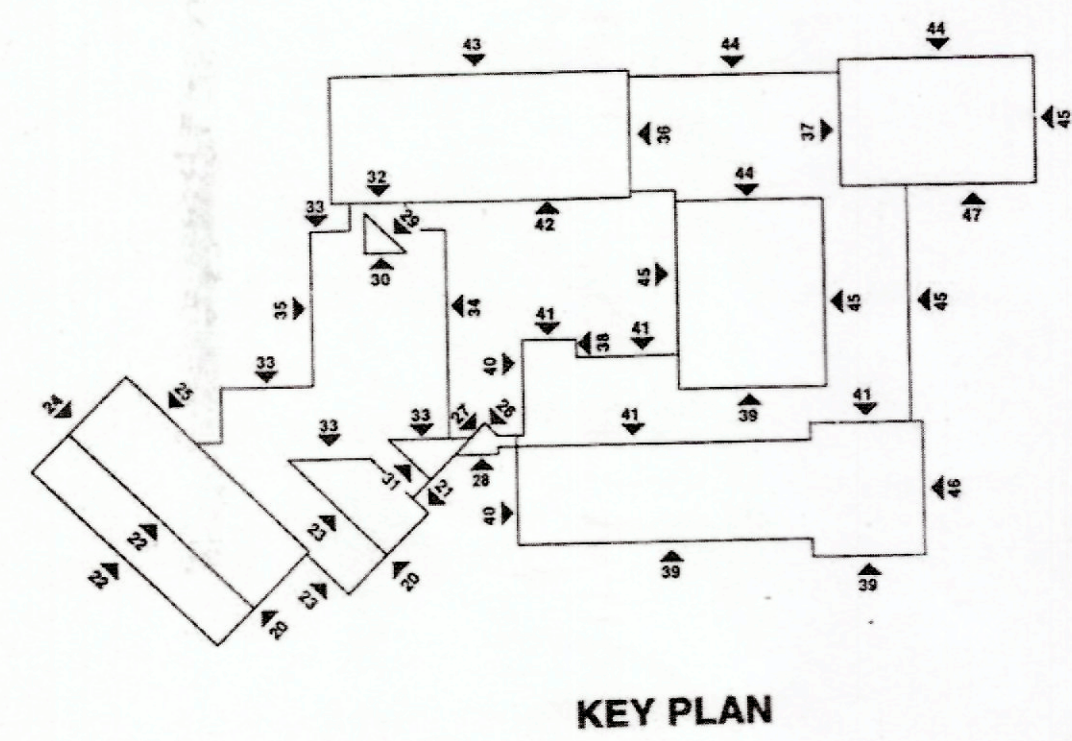
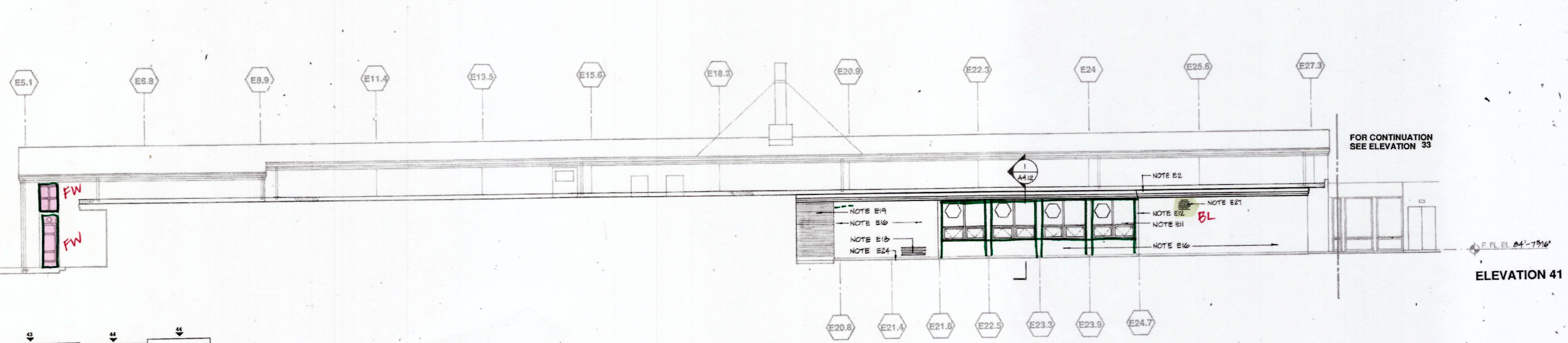
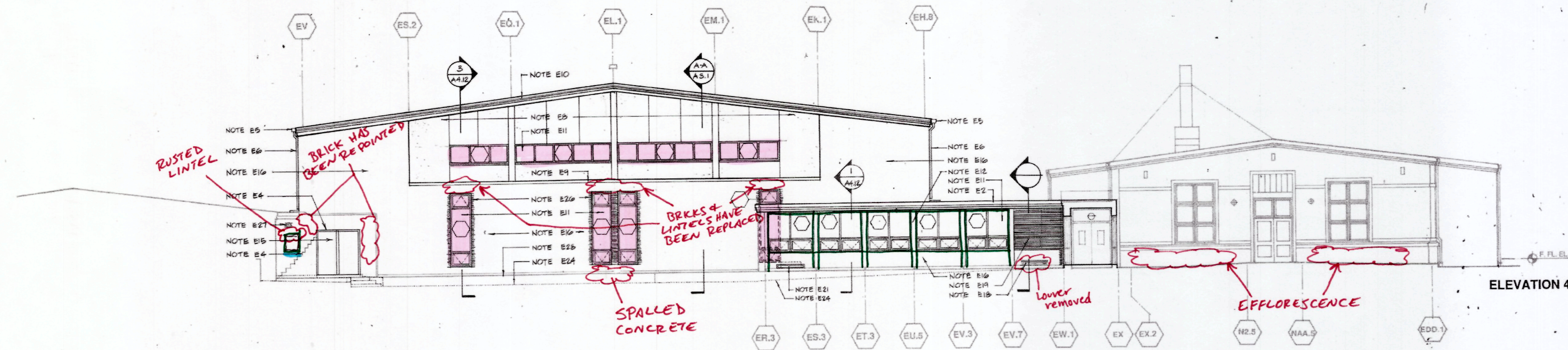
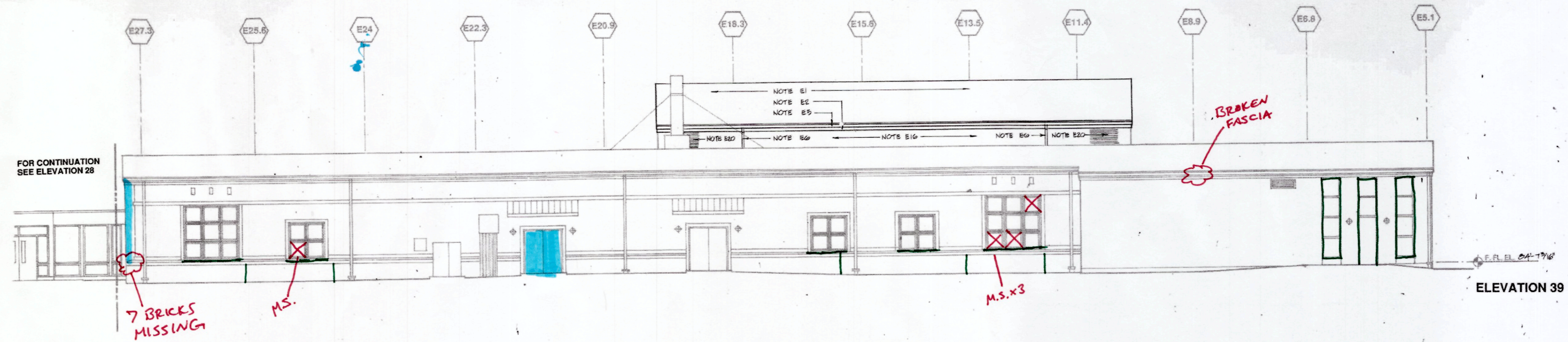
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Professional Seal

EXISTING EXTERIOR
ELEVATIONS 33 - 38

A2.5

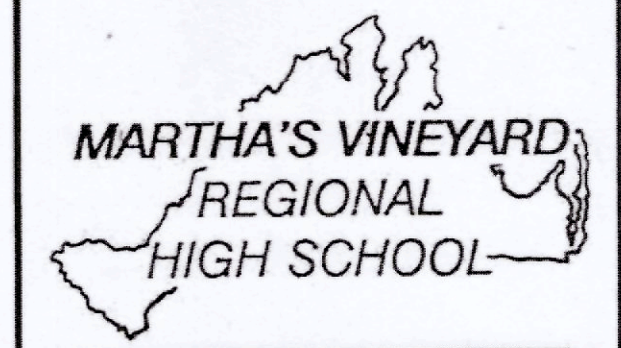
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120 LINE SCREEN DENSITY (100% UNLESS OTHERWISE NOTED)
COMPOSITE CONTENT

Sheet	1 of 1
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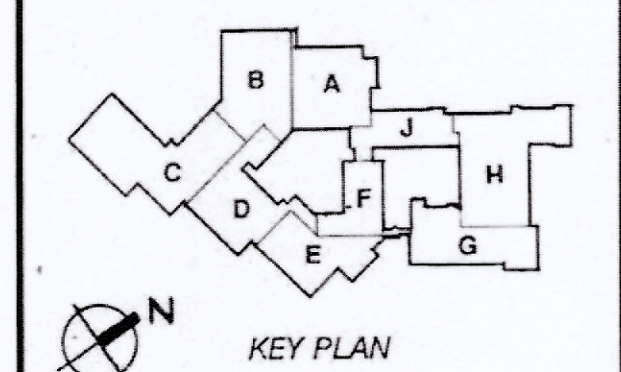


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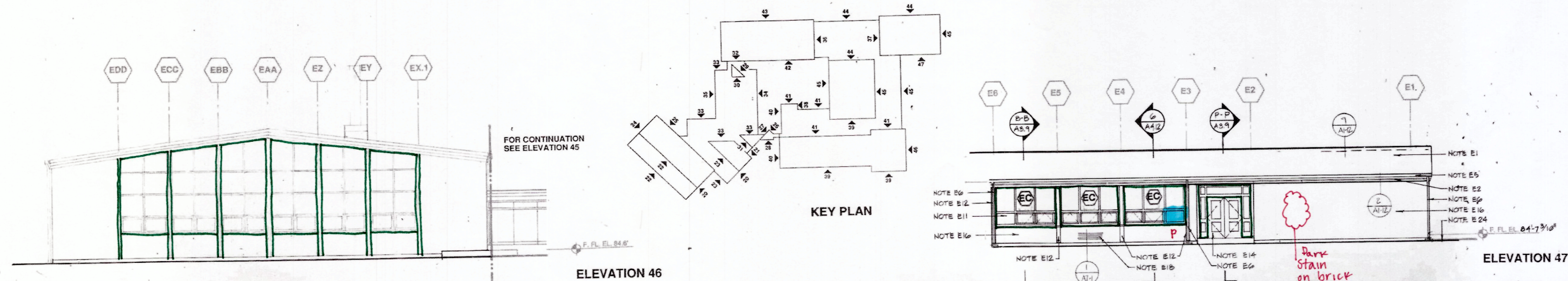
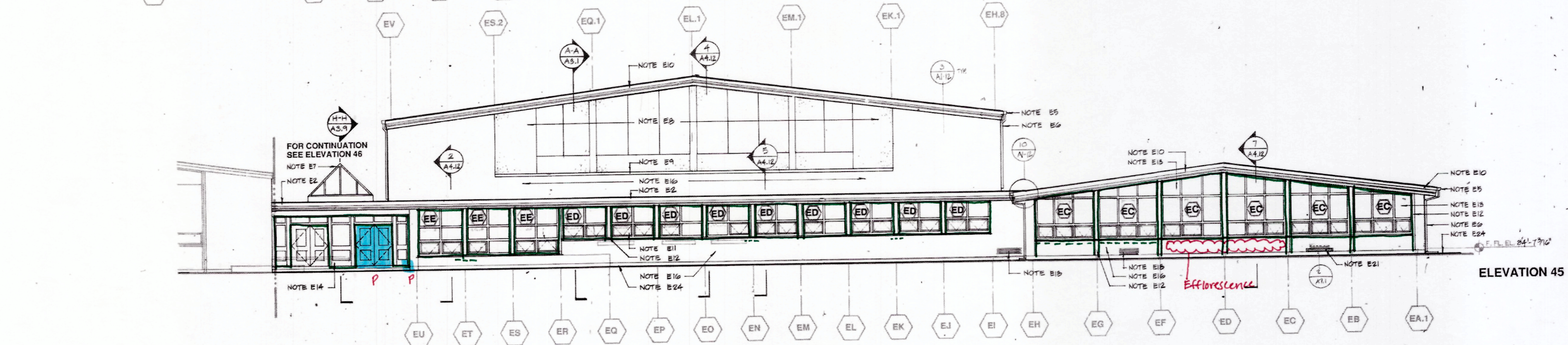
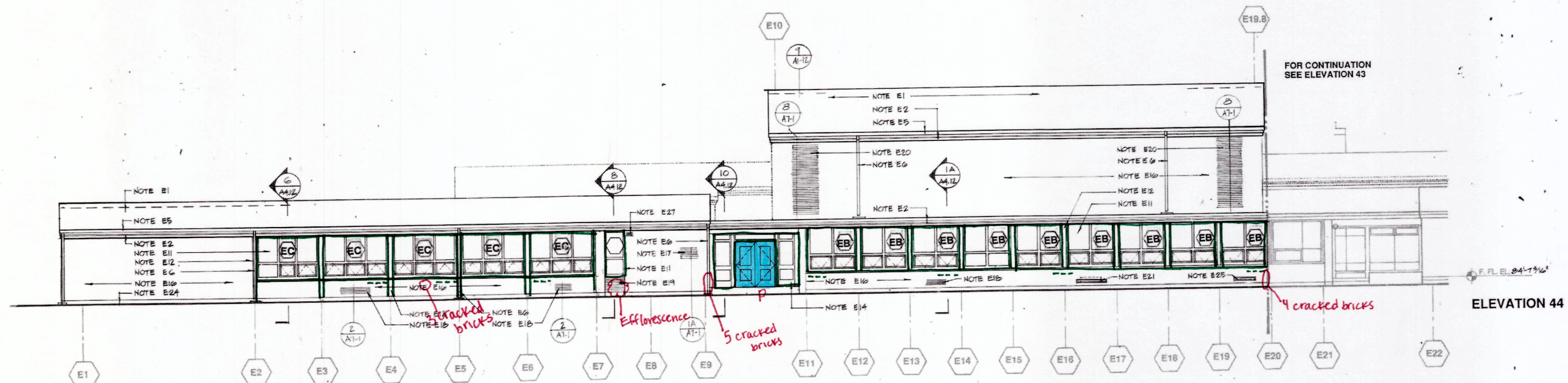
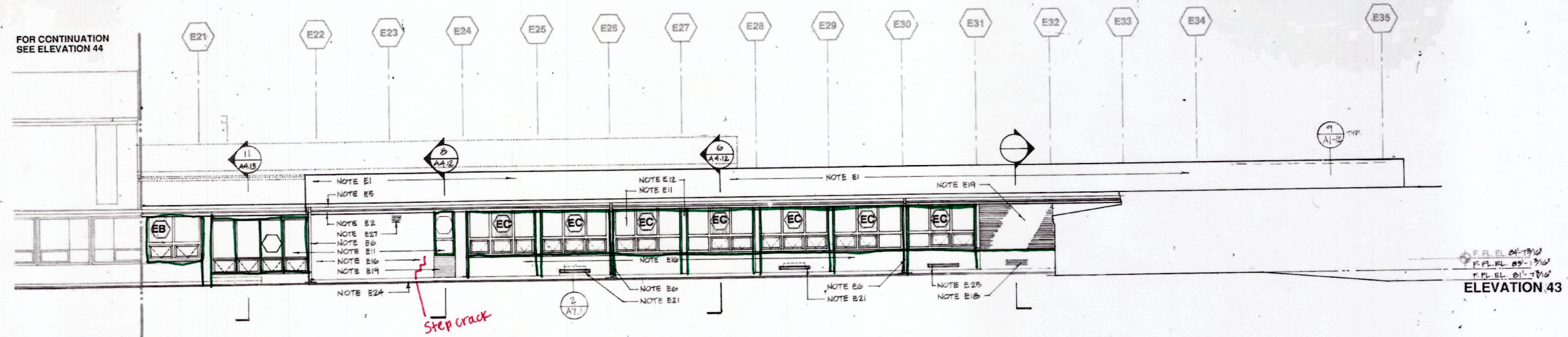
ADDITIONS
&
RENOVATIONS



Drawn
Checked
Scale
Date
Professional Seal

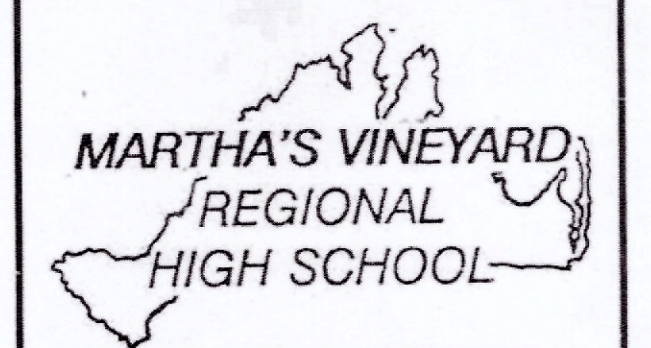
EXISTING EXTERIOR
ELEVATIONS 39-42

A2.6

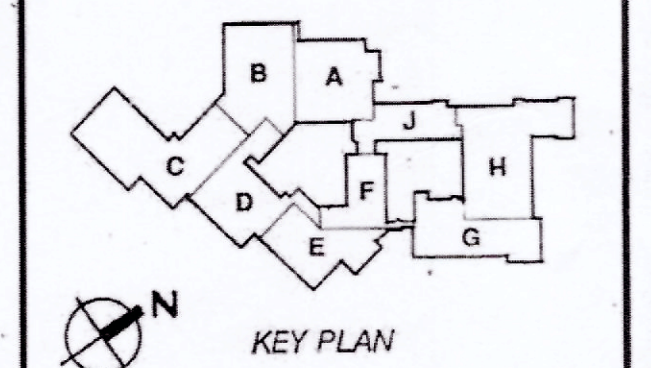


The Design
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Programming
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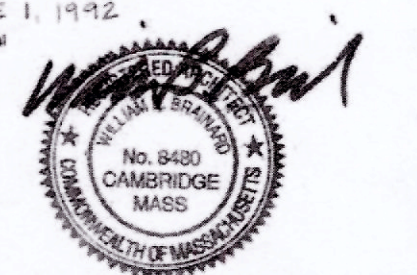
Revision
No. Date Description



ADDITIONS
&
RENOVATIONS



Drawn DWT
Checked LJB
Scale 1/8" = 1'-0"
Date JUNE 1, 1992
Professional Seal



EXISTING EXTERIOR
ELEVATIONS 43 - 47

A2.7