

FINAL STRUCTURAL REPORT

for

Roseland Community Center
12973 Bay Street
Sebastian, Florida 32958

Prepared by:



CIVIL ■ STRUCTURAL ■ SURVEYING ■ ENVIRONMENTAL

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CA#3728

Engineer's Project # 17-0201
August 15, 2017

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1. Executive Summary

MBV Engineering, Inc. is pleased to submit this report following our directed, limited inspection and evaluation of the Roseland Community Center. This study was specifically requested to determine significances and the extent of defects in the roofing system, floor system, windows, wall systems, doors, sidewalks and to determine current ADA and life safety compliance. This report presents our findings, conclusions and recommendations.

2. Introduction

The purpose of our inspection was to review the condition of the structure/elements as they now stand(s), and to determine the elements which are affecting the normal working conditions and do not meet current code requirements.

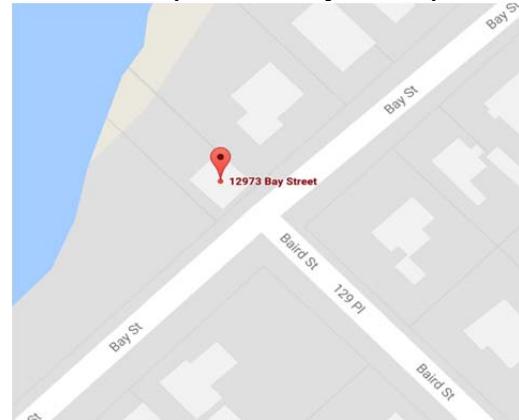
Our visual and preliminary inspections are not expected to reveal elaborate defects, which are not evident by deterioration exposed to view or evident to the trained eye as the elements now stand. It must be understood the Engineer can only provide certification of the conditions of the elements within the limits of the inspection performed; whether the materials have decreased beyond the extent of the inspection performed, is out of the scope of this assessment.

The scope of our investigation was to do a preliminary overall condition assessment of the roofing system, floor system, windows, wall systems, doors, sidewalks and to determine current ADA and life safety compliance. The inspection consisted of a visual survey performed to record signs of deterioration to the elements as well as looking for signs of defective construction. MBV Engineering, Inc. was asked to pay special attention to any termite and moisture damage seen at the time of inspection.

MBV Engineering, Inc. performed an elevation survey of the interior of the structure and of the surrounding sidewalks and parking area to determine current on site elevations. The equipment used to perform this was a Spectra Precision LL300N Transit and a HL450 Laserometer attached to the elevation rod.

MBV performed a qualitative, infrared survey, as well with the attempt to identify and report on thermal patterns associated with trapped moisture in the structures interior walls, roofing, ceilings, and exterior wall sections. This infrared survey also serves to determine existing filled cells in the masonry walls as well as to determine areas of missing or insufficient insulation. This infrared survey is limited to visible areas of the structure's wall assemblies.

A long-wave uncooled micro-bolometer, FLIR E6 with MSX Thermal Imaging Enhancement, radiometric thermal imager with a 45-degree and 34-degree lens was used to scan the interior and exterior sections of the building.



The equipment used in this inspection was a digital camera, thermal camera, 4' long digital laser level, steel tape measure, fiberglass long tape measure, camera scope, laser transit, and a self-leveling laser.

3. Description of Structure

The Roseland Community Center is located on Bay Street in Indian River County and consists of a single story structure with a crawl space and basement storage. The front of the structure faces the south. The building is square shaped and has both a gable roof and two flat roofs. The gable roof utilizes hand framed roof trusses and the flat roofs utilize hand framed roof joists. The structure utilizes a wood subfloor with heavy timber joists supported on heavy timber beams. These beams are sitting on wood piles or masonry piers with reinforced concrete footers. The original walls are wood framing and the west addition utilizes unreinforced masonry units. The basement also utilizes unreinforced masonry units.

The original wood frame structure was constructed in 1926 and is currently classified as a community room with an assembly occupancy rating. The structure was originally constructed at another location and then moved to its current location at a later time. The original porch on the north side of the structure was enclosed and a section of it converted into a bathroom. In the 50's an addition was added on the west side of the structure which included a basement storage area. In 2016 the foundation was reinforced on the east side utilizing helical piers to prevent the continuation of excessive settlement noted on that side of the structure. The total habitable area is 1,404 square feet.

The information in this section was compiled from the Indian River County Property Appraiser, conversations with Roseland representatives and through review of building permit information.

4. Discussion of Site Visit

Representatives of MBV Engineering, Inc. inspected and evaluated the damaged structure on July 7, 2017 and July 28, 2017. The structure was visually observed and non-destructively examined to detect the extent of the damages to the structure. The areas effectively inspected were the roofing system, floor system, windows, wall systems, doors, and sidewalks.

Limitations which were not included in this analysis or report are as follows:

- Concealed items were out of the scope of this work other than what was readily accessible by way of previously exposed elements. Several ceiling tiles were removed in order to determine the framing system for the roof components. It was neither practical nor economical to remove and replace all the existing building components or equipment to review every individual item. Conditional assumptions had to be made to accommodate and not disrupt the existing operations of the building.

5. Findings

The following represents the majority of our findings at the time of inspection:

Roofing System:

- The Roseland Community center has two roofing systems. The monoslope roofs utilize a torch down bituminous membrane over plywood sheathing and the pitched roof utilizes asphalt shingles over 1 x 6 planks.
- The torch down application on the rear of the structure was in good condition and no major defects were detected. This represents 16.3% of the total area.
- The torch down roof on the west side of the structure exhibited multiple air pockets and the seams of the roof need to be resealed. The ceiling underneath the west flat roof showed signs of previous moisture intrusion into the structure in the form of water stains. At one of the laps on the west roof, a section of the torch down roof was peeling away. This roof area represents 34.1% of the total area.
- The asphalt shingles on the gable roof were determined to be in good condition and have a projected life of approximately 5 years. A few bubbles could be seen in the finishes; however, the 1 x 6 planks were determined to be in fair condition with multiple damages found as marked on the plans in Appendix A. This roof area covers the remaining 49.6% of the total area.
- Multiple areas on the overhangs were damaged and are noted on the plans. This damage is seen on the sheathing, members, and fascia.

Floor System:

- The floor system is composed of a wood finish above wood sheathing. This is on 3 x 10 or 2 x 8 members dependent on location. These members bear on 6x6 beams which then bear on either masonry or wood piers.
- Damages seen in the floor system were primarily deteriorated sections of the wood components due to termites. This type of damage was primarily found on the east side of the structure. Some members also exhibited rotting due to fungus accelerated by water damage. This could be seen in the wooden pier noted on the plans as well as a few floor members.
- One 6 x 6 member was not properly shimmed to the masonry pier below.
- One 6 x 6 member was not properly shimmed to the wooden pier below.

Windows:

- The windows appeared to be in good condition with the exception of a few minor damages in the vicinity of their locations as noted on the plans in Appendix A.
- Four windows showed signs of previous moisture damage on the interior.
- On the exterior of the wood walls most of the window trims were separating from the structure showing signs of moisture damage.
- The masonry window wells have a few cracks and the sealant around the edges of the windows was missing or separated from the structure.
- One window was broken at the muntin joints.
- One window has a broken screen.

Wall Systems:

- The drywall on the exterior walls is cracking in multiple areas. The majority of the cracks are limited to the eastern wall with the south showing a few cracks as well. MBV Engineering, Inc. attributes these cracks to the excessive settlement the building experienced as well as to the foundation reinforcement project.
- The lap siding on the exterior of the structure is showing some areas of moisture damage. The majority of the paint which protects the structure is peeling away and will need to be redone.
- The block walls showed a few cracks, but overall are in good condition.
- The interior headers were showing signs of deflection. MBV Engineering, Inc. determined the maximum deflection to be 0.49" which is equivalent to L/218. The next deflection was 0.44" which is equivalent to L/304. The smallest deflection was 0.17" which is equivalent to L/460. The code maximum allowable deflection is L/360 which is exceeded by two out of three of the members reviewed at the time of inspection.
- Multiple areas were found to be missing proper insulation in the frame walls.
- The north gable wall has multiple damaged members, as well as damaged sheathing.
- The exterior paint was found to be elastomeric in nature.

Doors:

- The two entry doors and the bathroom door for the Roseland Community Center were inspected by representatives of MBV Engineering, Inc. The current threshold at the southwest entry door is 3.75". This current threshold does not meet ADA compliance. The ADA code states the maximum allowable threshold is 0.5". At the time of inspection the clear widths of the doors were within allowable code tolerances.
- The main south entry door has a ramp in front of it which currently is not within ADA compliance. The landing in front of the door does not meet proper width or depth dimensions for ADA compliance. The landing at the bottom of the ramp is also not in compliance with the ADA code.
- The main entrance door is not properly sealed when closed due to the settlement issues experienced on the east side of the structure.

Life Safety:

- No items of concern in regards to life safety compliance were discovered at the time of inspection.

Interior Elevations:

- MBV Engineering, Inc. performed an interior elevation survey to determine if the current floor slopes within the structure meet the ADA standards of not exceeding 1 unit vertical for every 48 units horizontal. An attached topographic map of the floor system can be seen and it was noted at the time of an inspection there is a 2" drop off in the southeast corner of the structure. After our investigation MBV Engineering, Inc. has determined the floor slopes are within the ADA tolerances.

Exterior Findings:

- MBV Engineering, Inc. performed an exterior elevation survey at the south side of the structure to determine current ADA compliance with the sidewalk slopes and to determine the current nature in which water drains in this area.
- The stairs to the west of the structure are currently out of level and the risers are not within code tolerances.
- A block structure hiding a water system was found on the west side of the structure between the stairs and the western wall. This system being on the exterior of the building with no entry door and no permanent roof is not code compliant.

6. Proposed Repairs

The following is recommended for proper repair:

Roofing System:

- MBV Engineering, Inc. proposes an entire reroof be performed. The Florida Building Code – Existing Building section 706.1.1 states, “Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12-month period unless the entire existing roofing system or roof section is replaced to conform to requirements of this code.” MBV Engineering, Inc. believes the amount of damages to the members and sheathing will encompass more than 25% of the roof area and due to this an entire reroof is necessary. Where marked on the plans roof sheathing needs to be replaced and nailed per the schedule on sheet S3 in Appendix B. We recommend keeping the same type of roofing systems on the different areas. Roofing materials shall be installed in accordance with current code requirements.

Floor System:

- All rotted floor framing components shall be removed and replaced with new code compliant members. All floor sheathing in these areas shall also be removed and replaced appropriately. In order to have full access a great portion of the sheathing will have to be removed.
- Shims need to be installed at the locations noted on the plans in Appendix A.
- While the drywall is removed from the interior walls MBV Engineering, Inc. recommends jacking up the structure to bring the interior floor slopes within 0.5% slope. MBV Engineering, Inc. recommends bringing the structure up until no point is less than 1.25 inches beneath the zero set during the original investigation. The areas which need to be lifted are marked on the plans seen on sheet S6 in Appendix B.

Windows:

- All windows need to be resealed or remounted to ensure no future leaks occur in the structure.
- Window trims need to be removed and replaced accordingly.
- The masonry cracks in the window wells need to be properly sealed to prevent moisture from intruding into the structure.
- The window with the broken muntin needs to be properly repaired or replaced.
- A new screen needs to be installed at the window marked on the plans.

Wall Systems:

- MBV Engineering, Inc. recommends the complete removal and replacement of all interior drywall on the east and south wall. During this process all wall members should be reviewed for any possible damages due to termites or moisture and should be removed and replaced as deemed appropriate. Also, any areas missing insulation shall have insulation installed.
- The north gable wall shall be repaired and if appropriate retrofitted per the Florida Building Code – Existing Buildings 5th Edition. The sheathing on this gable end has been determined to be of poor condition and will require an entire replacement. An entire rebuild of this wall should be considered.
- The lap siding on the wood framed structure is damaged in many areas and will need to be removed and replaced in these areas. Also, all of these walls will need to be repainted. We estimate 35% of the siding will require replacement. All of the walls shall be water blasted, cleaned, sealed and then repainted with an acrylic paint.
- The cracks in the masonry walls shall be patched with appropriate epoxy materials per manufacturer's recommendation based on crack width and depth at each area. Caulking the cracks smaller than 1/8" with an appropriate sealant is very important in reducing potential damage to the structural components and also in preventing moisture from entering the structure.
- The interior headers need to be retrofitted or new code compliant headers installed. Two of the three headers are currently deflected well beyond code tolerances.

Doors:

- The main entrance door needs to be reset so it is plumb and properly seals the structure when closed. This should be done after the structure has been raised.
- The existing landing and ramp in front of the main entrance shall be completely removed. The existing sidewalk shall also be removed. A new sidewalk shall be installed at an elevation to bring it flush with both doors. The area of new concrete can be found in Appendix B.

Exterior Findings:

- The exterior findings show the adjacent parking lot and sidewalks are all sloping towards the structure. It appears this is contributing to the rotted sheathing at the bottom of the structure as well as the erosion of the slope seen at the southeast corner of the structure at the time of inspection. MBV Engineering, Inc. proposes installing a block retaining wall or concrete curb and leveling off the parking area. This wall will also aid in preventing water from sheet flowing towards the structure and down the adjacent slope to the back of the structure. MBV Engineering, Inc. also proposes adding a storm water inlet and piping system to carry water past the eastern slope to help combat future erosion problems. The location of these items can be seen on sheet S7 in Appendix B.
- The stairs on the west side of the structure shall be removed and properly redesigned and built to meet all of today's codes and standards. As they currently stand, the stairs are not code compliant and also un-level.

Roseland Community Center

Project # 17-0201

August 15, 2017

- The water system on the exterior of the building needs to have a code compliant roof installed over the block enclosure which it sits in. An entry door will also need to be installed so the water system can be accessed for proper maintenance.

Appendix B contains repair schematics providing location and scope of work for repairs.

MBV Engineering, Inc. estimates the cost of repairs will be \$275,312.88. This price and the estimate seen in Appendix D are considered PRELIMINARY in nature and shall be used for budgetary purposes only. MBV Engineering is not a construction company and we cannot provide guaranteed estimates. Licensed contractors can provide fixed prices once the inspection, scope of work, and repair specifications are complete.

These findings are my unbiased, professional opinion, and are limited by the information available to me at this time. I reserve the right to update my recommendations at any time based upon further evidence or additional inspection findings.

Should you have any questions regarding the above subject, please do not hesitate to contact our office.

Very truly yours,

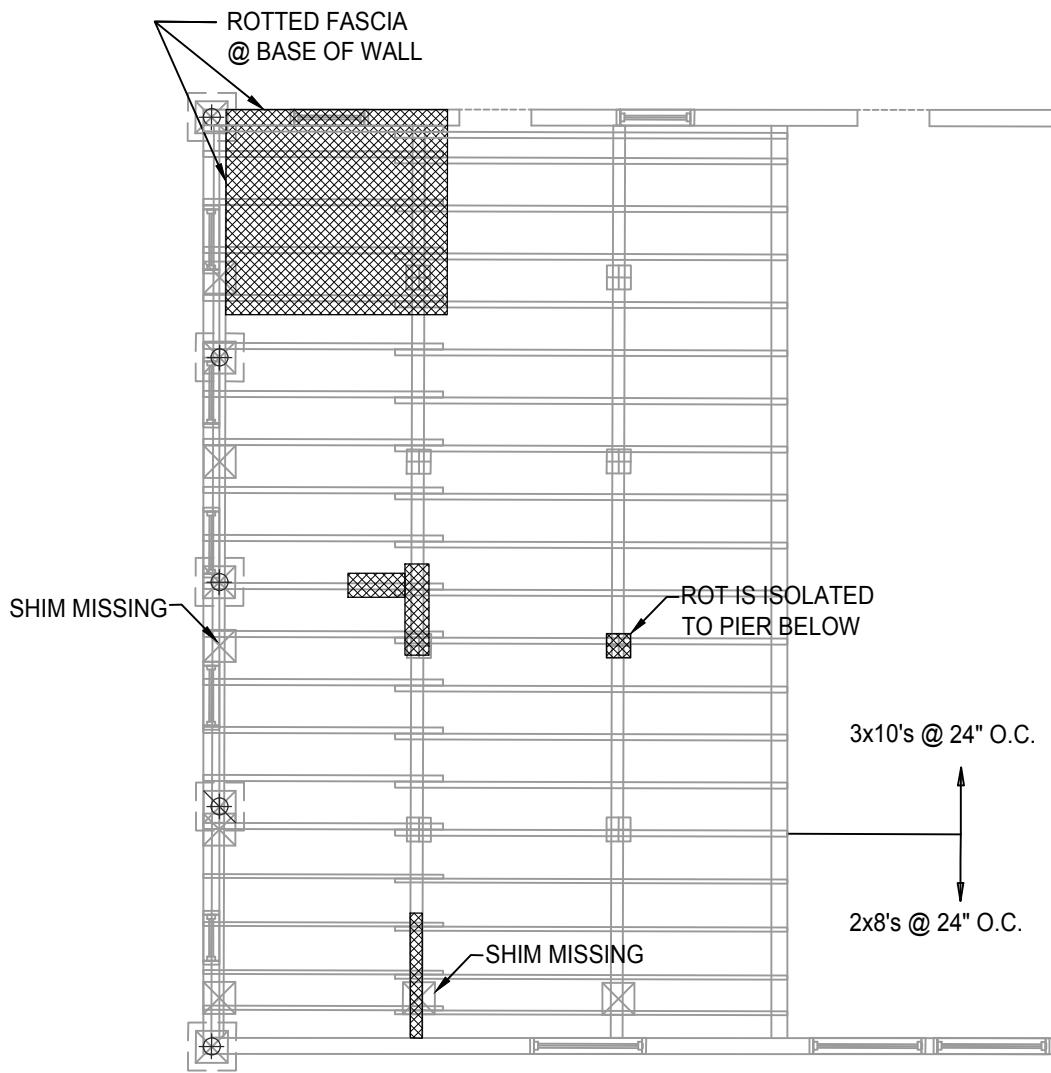


Rodolfo Villamizar, P.E.
FL PE# 61000

RV/cw

Appendix A

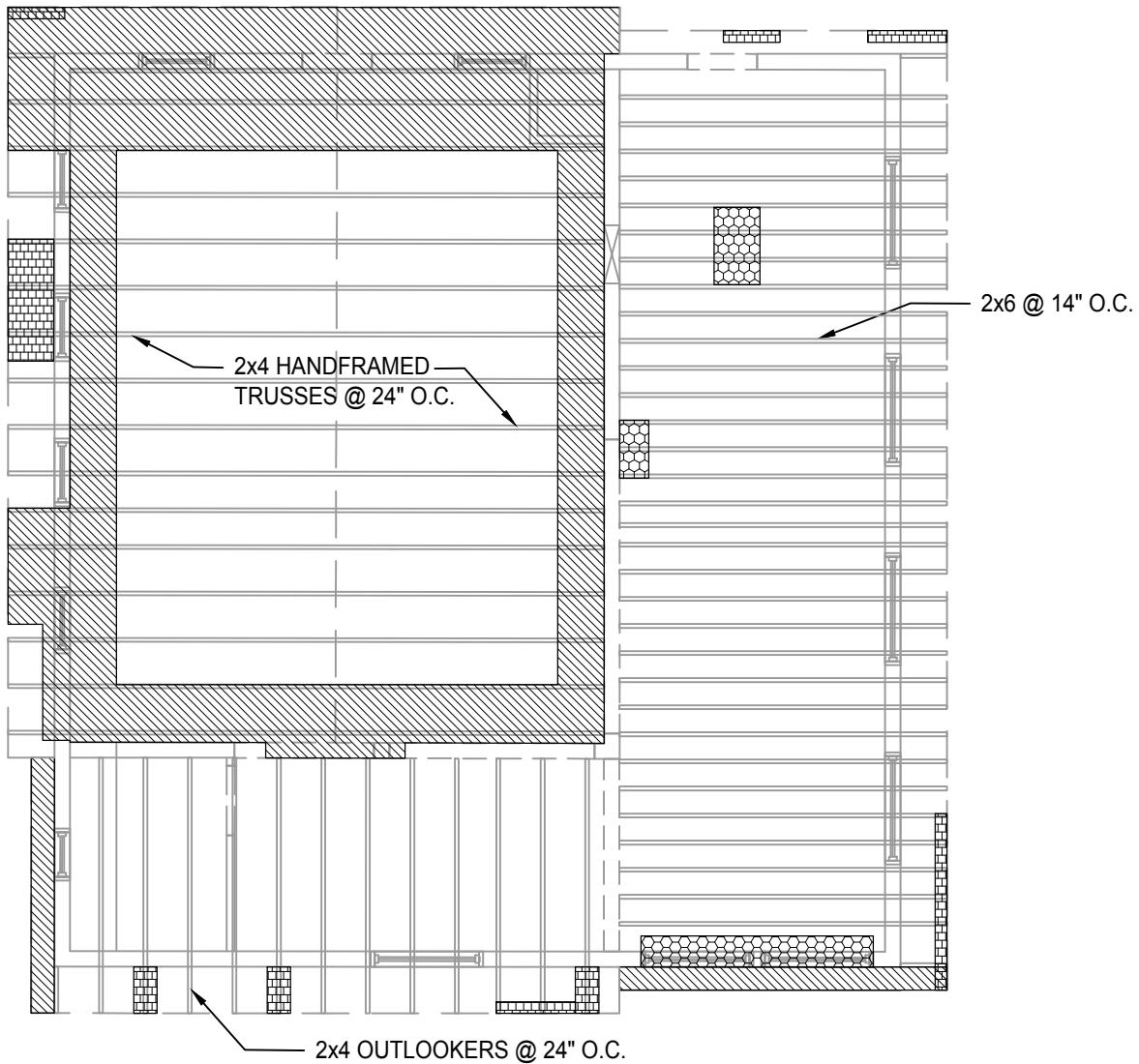
Findings



FLOOR FRAMING PLAN



- 16"x16" CMU
- 12"x12" WOOD
- 16"x16" CMU W/ HELICAL PIER
- ROTTED MEMBERS/SHEATHING



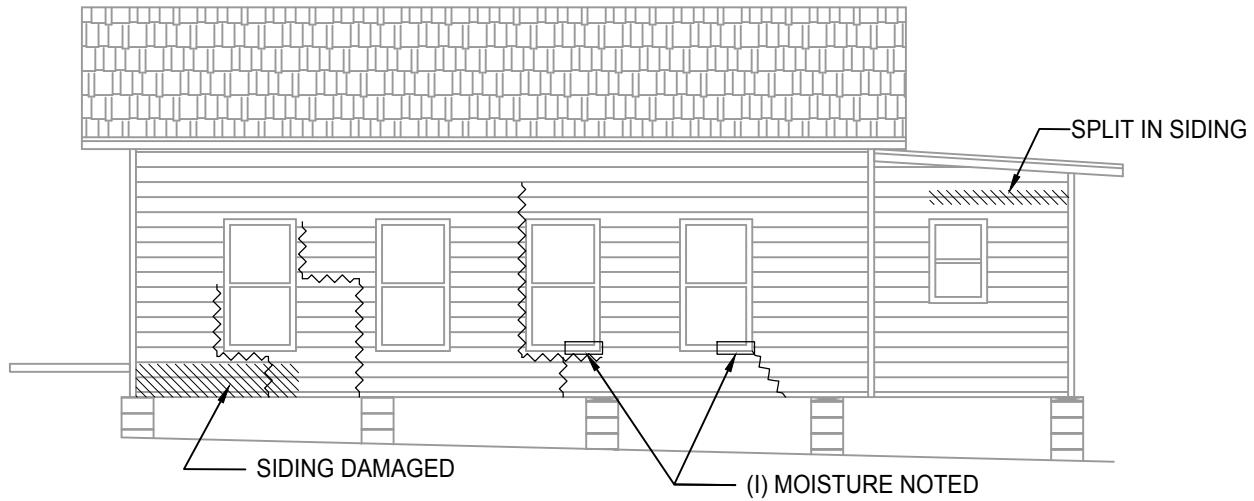
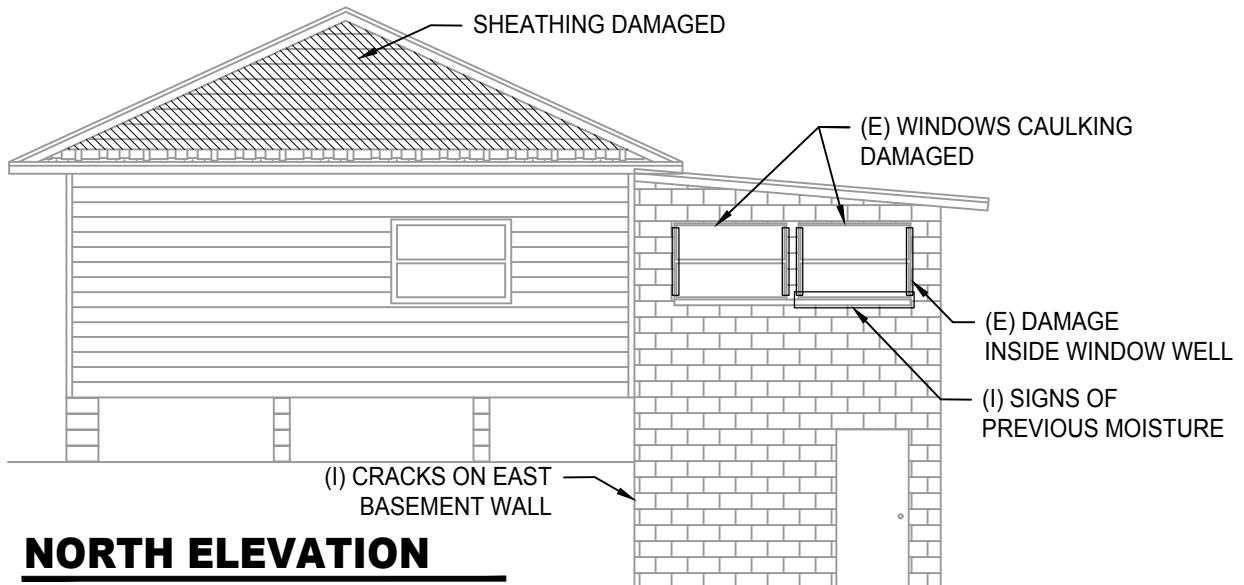
ROOF FRAMING PLAN



ROTTED MEMBERS/FASCIA

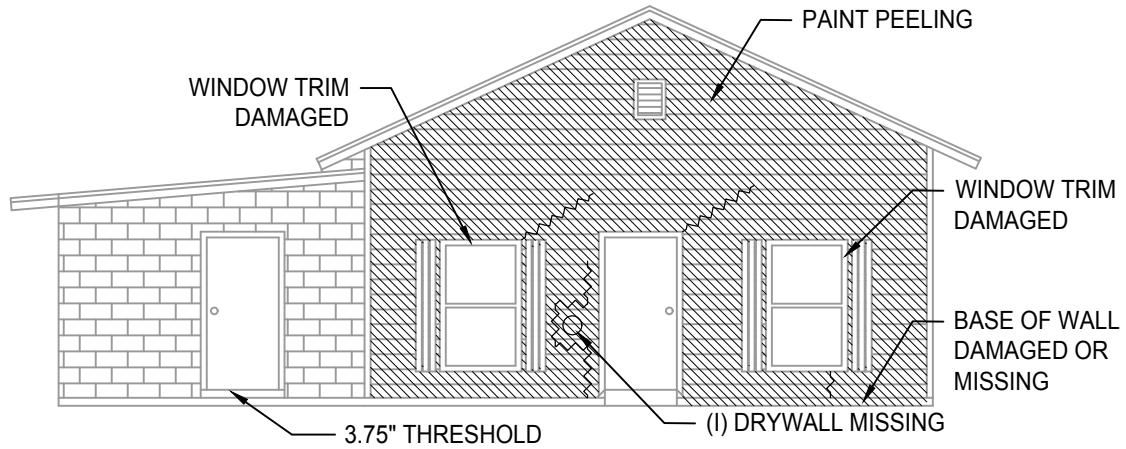
ROTTED SHEATHING

PREVIOUS MOISTURE DAMAGE

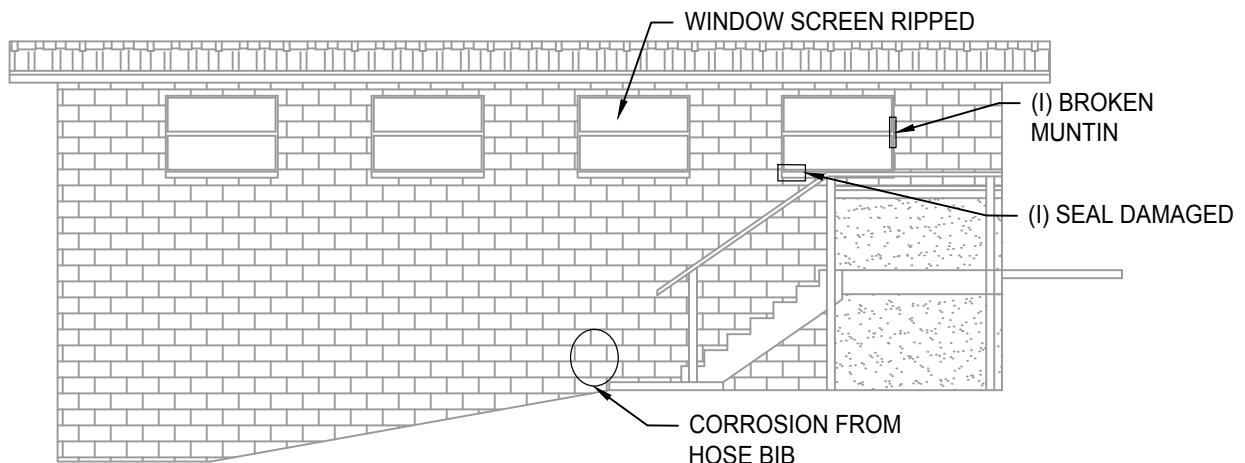


LEGEND:

(I)	INTERIOR
(E)	EXTERIOR
~~~~~	INTERIOR CRACKS
~~~~~	EXTERIOR DAMAGES



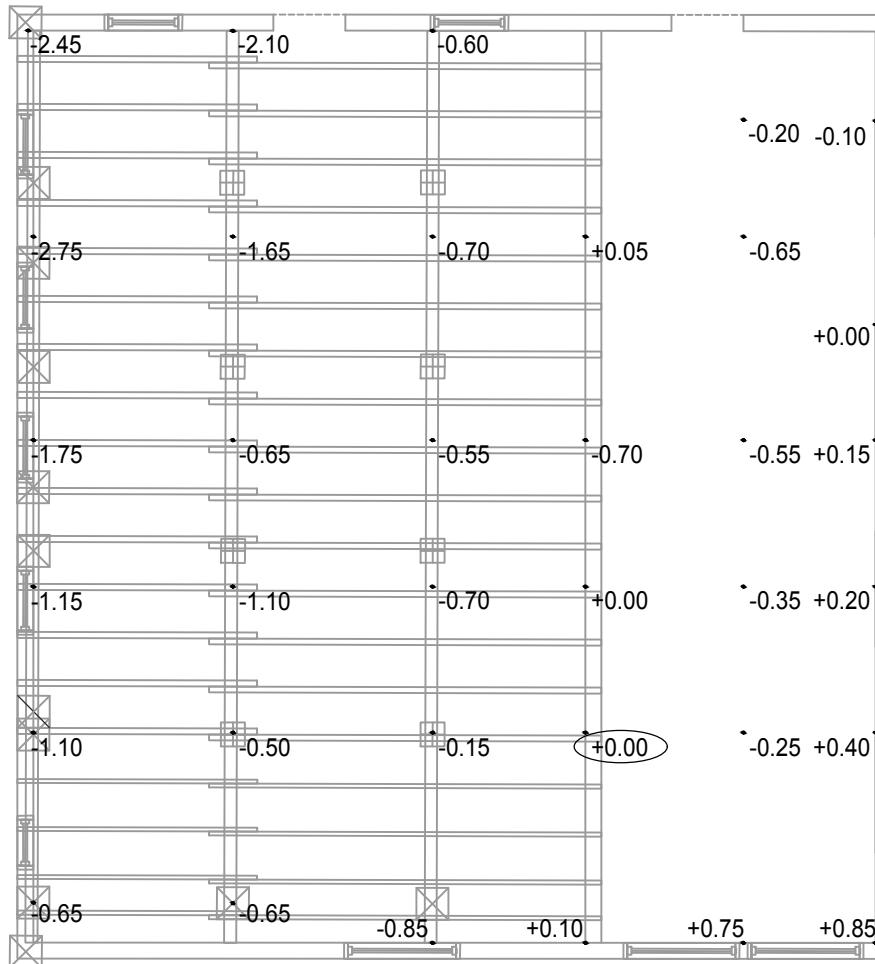
SOUTH ELEVATION



WEST ELEVATION

LEGEND:

(I)	INTERIOR
(E)	EXTERIOR
~~~~~	INTERIOR CRACKS
~~~~~	EXTERIOR DAMAGES



VALUES ARE IN INCHES
 BENCHMARK

INTERIOR ELEVATION PLAN



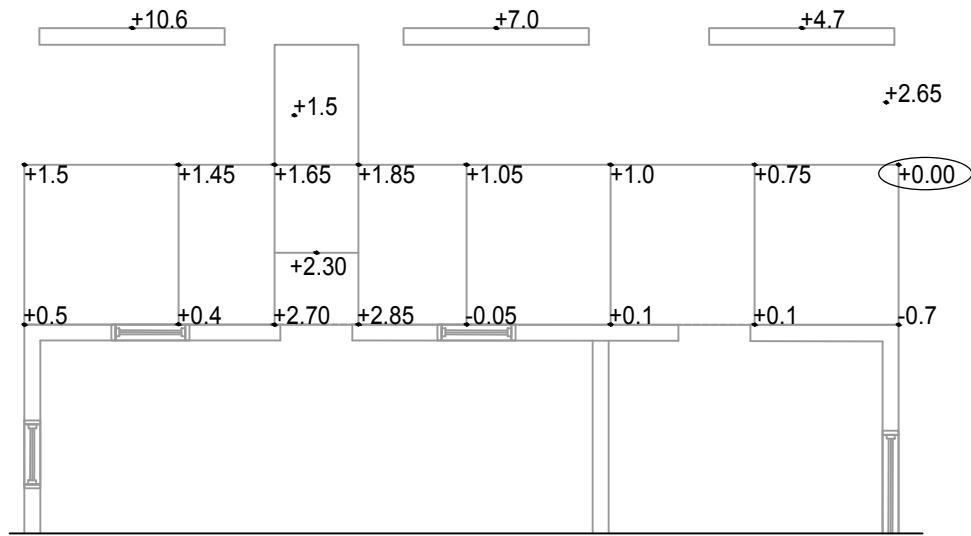
STRUCTURAL
INSPECTION
12973 83rd AVENUE
SEBASTIAN, FL

INTERIOR
ELEVATION PLAN

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CONSULTING ENGINEERING CA #3728

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SHEET	5 OF 8



VALUES ARE IN INCHES
 BENCHMARK

EXTERIOR ELEVATION PLAN



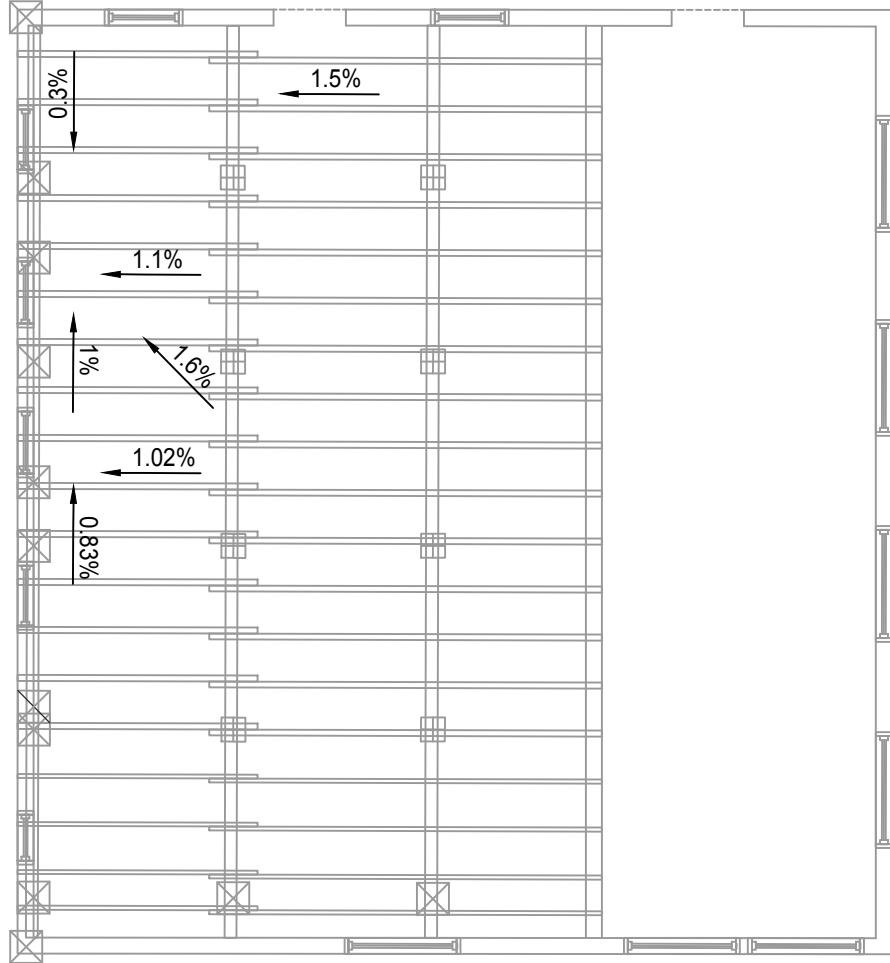
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ADA LIMIT IS 2%

AREA THAT EXCEEDS THE
LIMIT

INTERIOR SLOPE PLAN



STRUCTURAL
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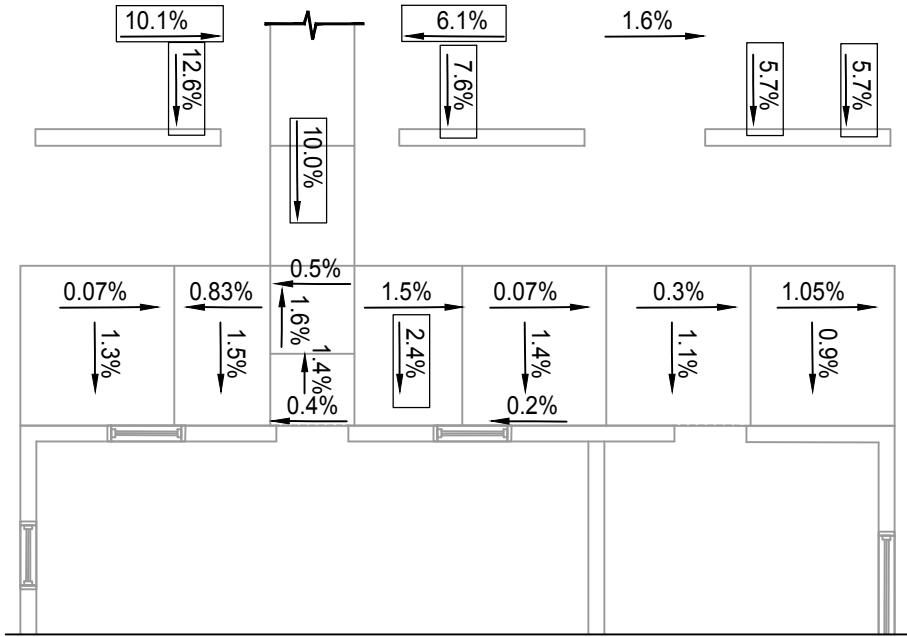
INTERIOR
SLOPE PLAN

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ADA LIMIT IS 2%
 AREA THAT EXCEEDS THE
 LIMIT

EXTERIOR SLOPE PLAN



STRUCTURAL
INSPECTION
12973 83rd AVENUE
SEBASTIAN, FL

EXTERIOR
SLOPE PLAN

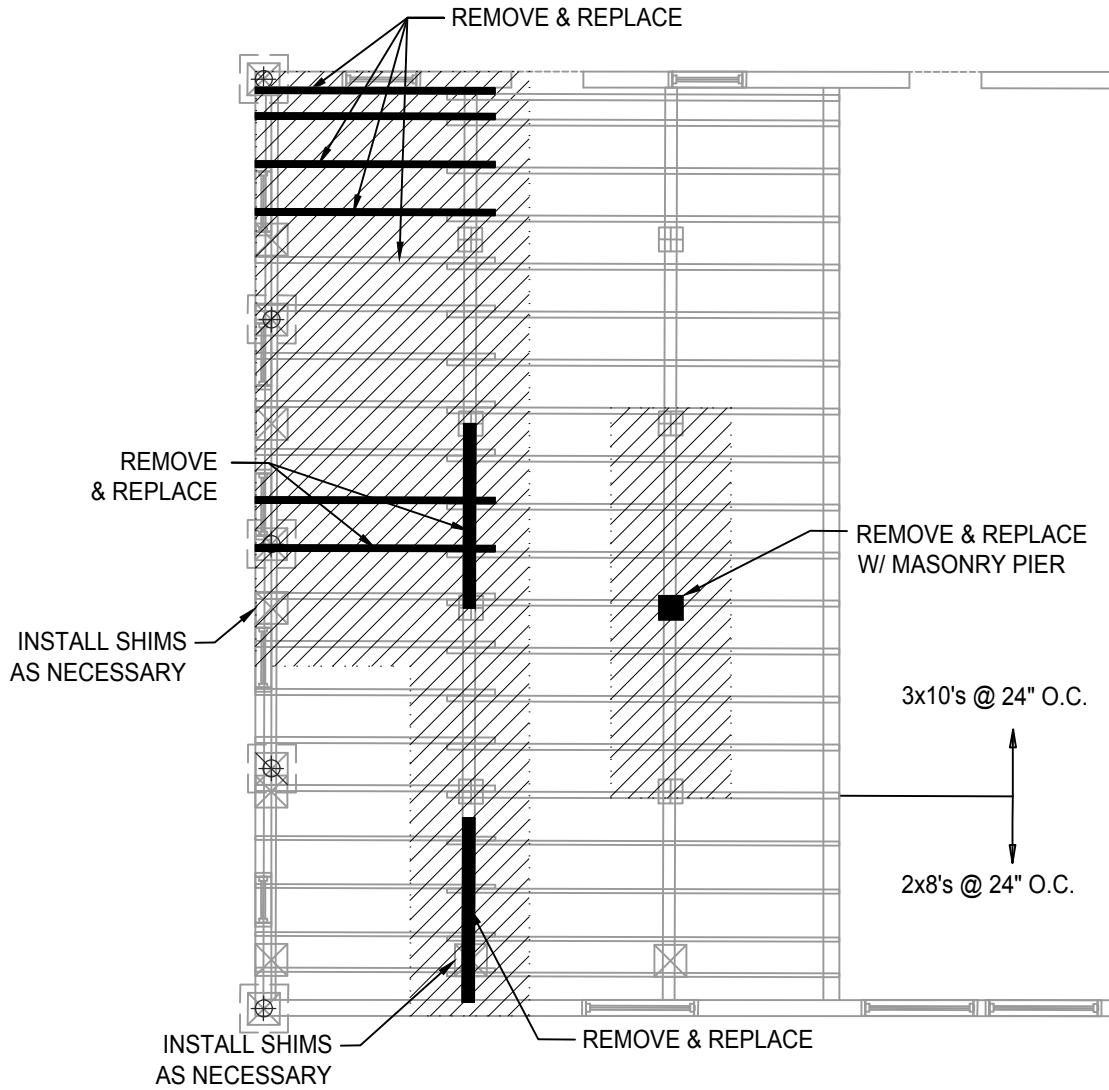
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Appendix B
Proposed Repairs

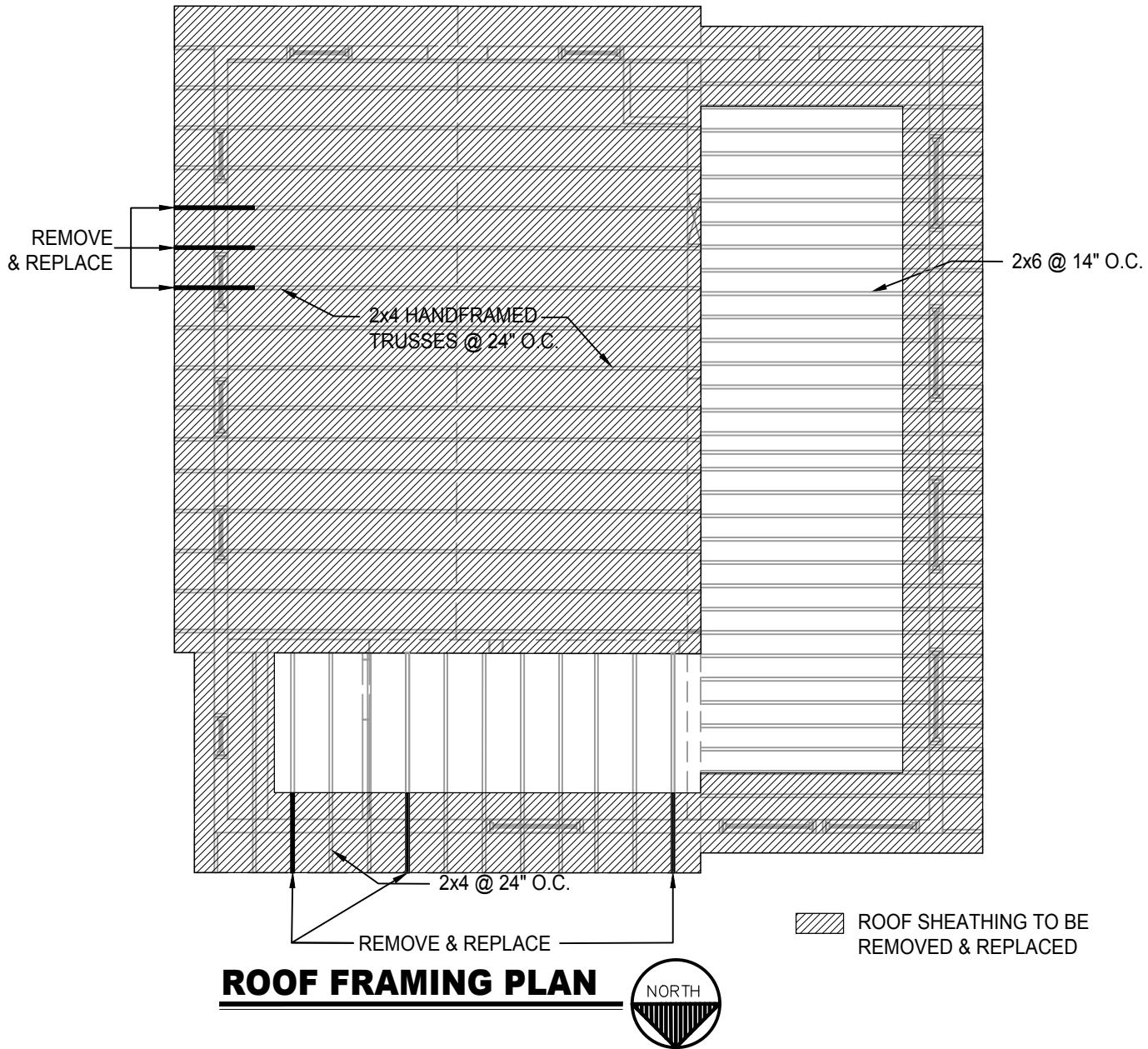


FLOOR FRAMING PLAN



- 16"x16" CMU
- 12"x12" WOOD
- 16"x16" CMU W/ HELICAL PIER
- FLOOR SHEATHING TO BE REMOVED & REPLACED

NOTE: OTHER MEMBERS MAY NEED
TO BE REMOVED & REPLACED ONCE
SHEATHING IS REMOVED



STRUCTURAL
INSPECTION
12973 83rd AVENUE
SEBASTIAN, FL

ROOF FRAMING
REPAIR PLAN

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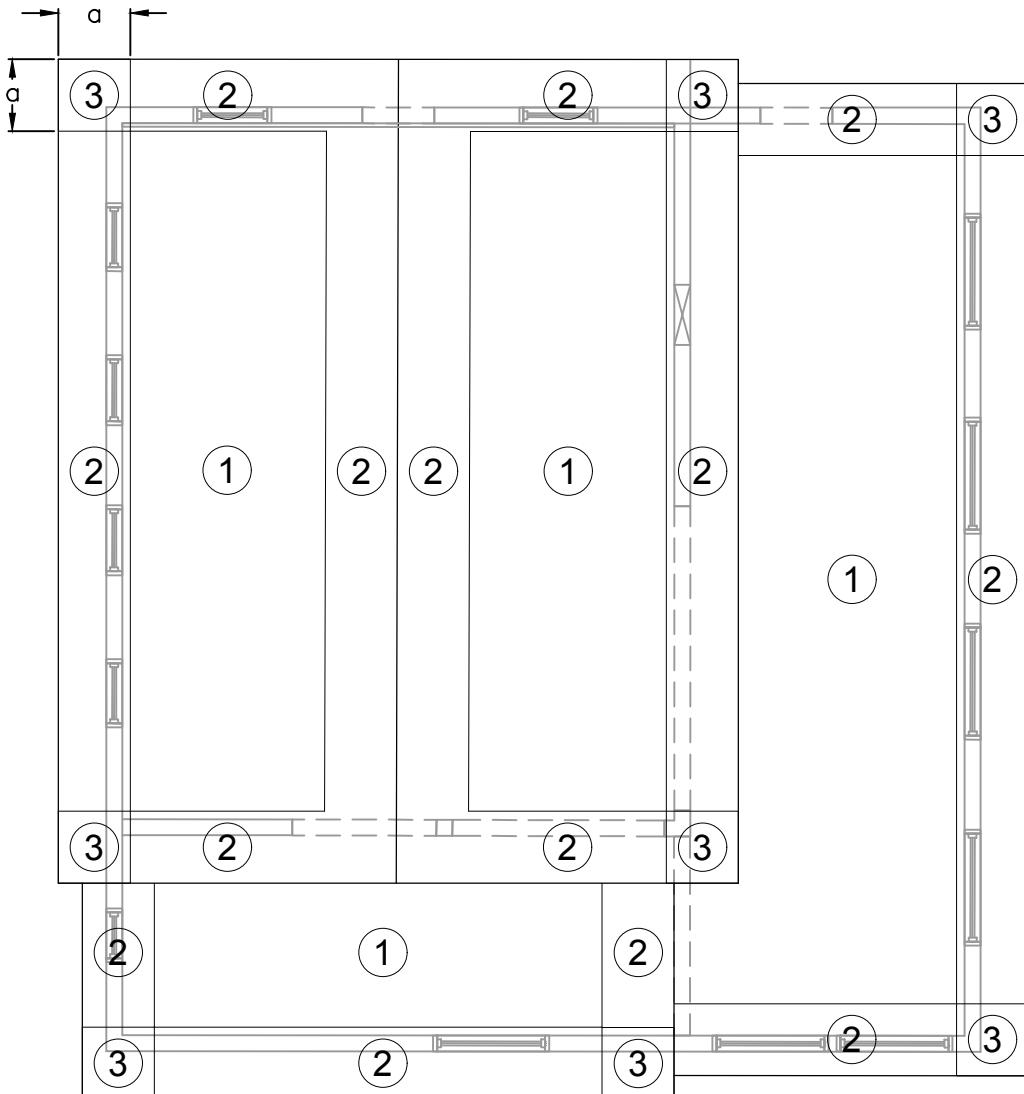
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**ROOF SHEATHING FASTENING SCHEDULE WITH 19/32" PLYWOOD
SPACING REQUIRED FOR 8d COMMON NAILS**

BUILDING	ZONE 1	ZONE 2	ZONE 3
ENCLOSED	6" O.C. @ EDGES 6" O.C. @ FIELD	3" O.C. @ EDGES 6" O.C. @ FIELD	3" O.C. @ EDGES 6" O.C. @ FIELD
DESIGN PRESSURE ALLOWABLE	-30 PSF	-68 PSF	-93 PSF
DESIGN PRESSURE ULTIMATE	-49 PSF	-113 PSF	-155 PSF

* a = 4 FEET EDGE DISTANCE



ROOF ZONES



STRUCTURAL
INSPECTION
12973 83rd AVENUE
SEBASTIAN, FL

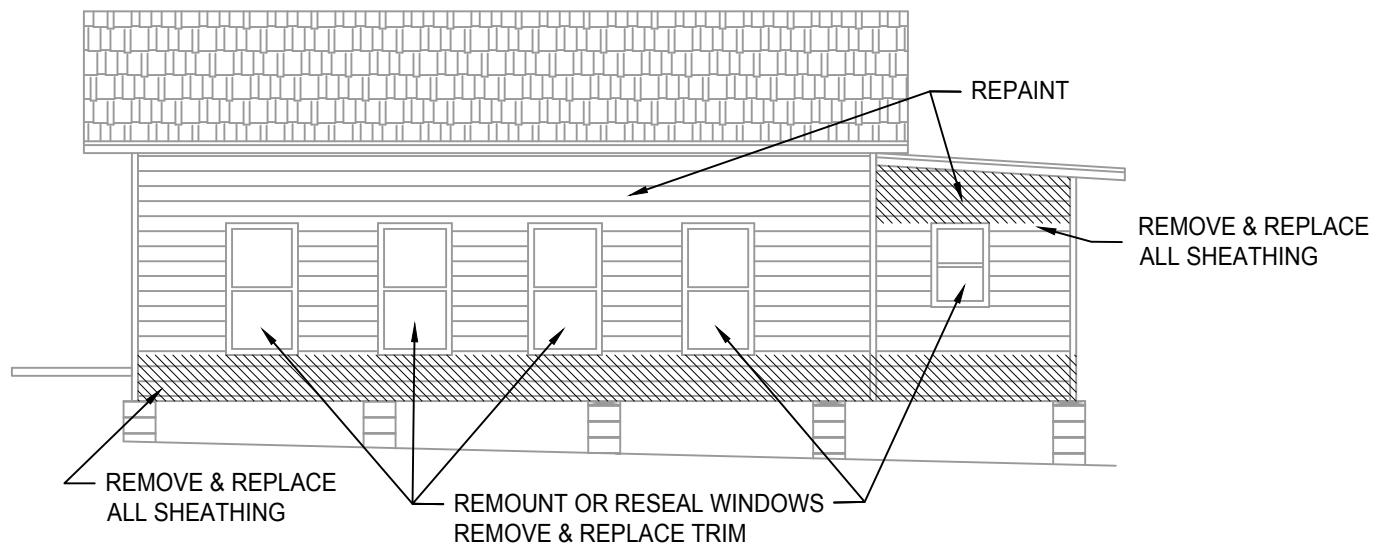
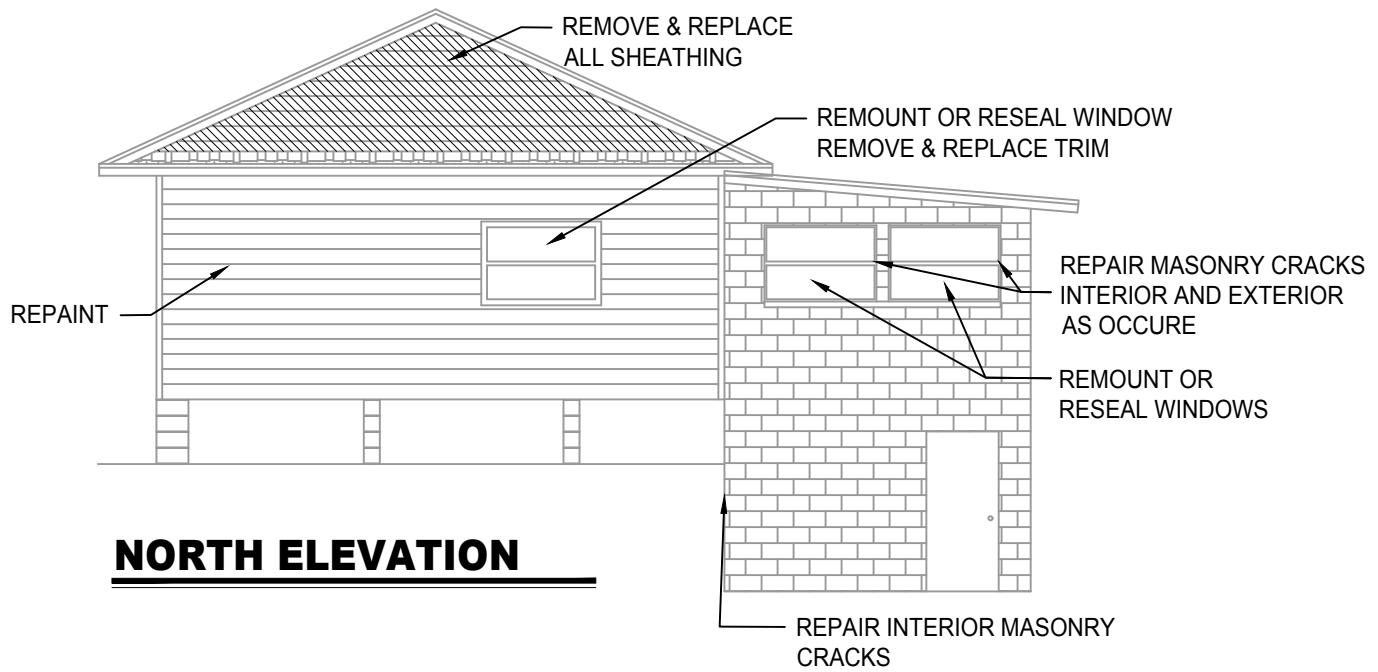
ROOF ZONES

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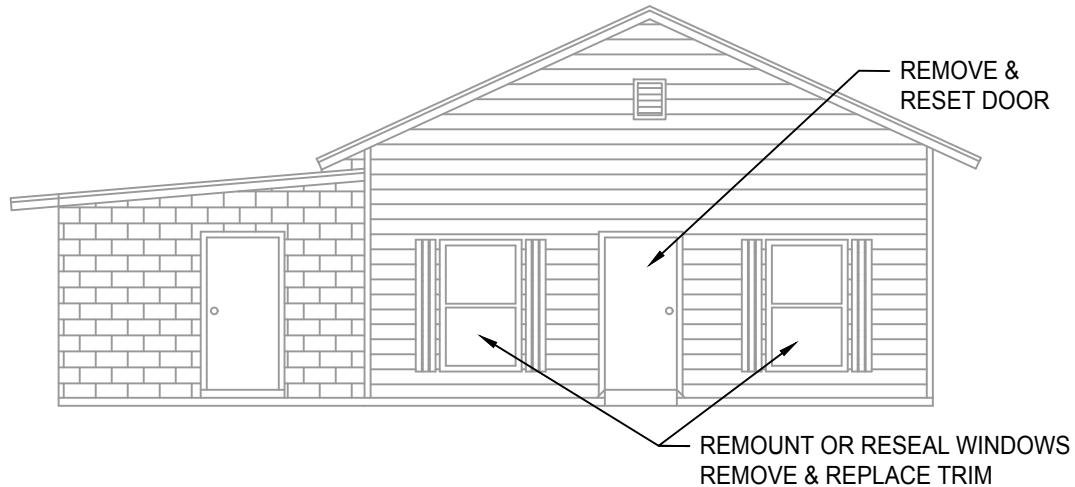
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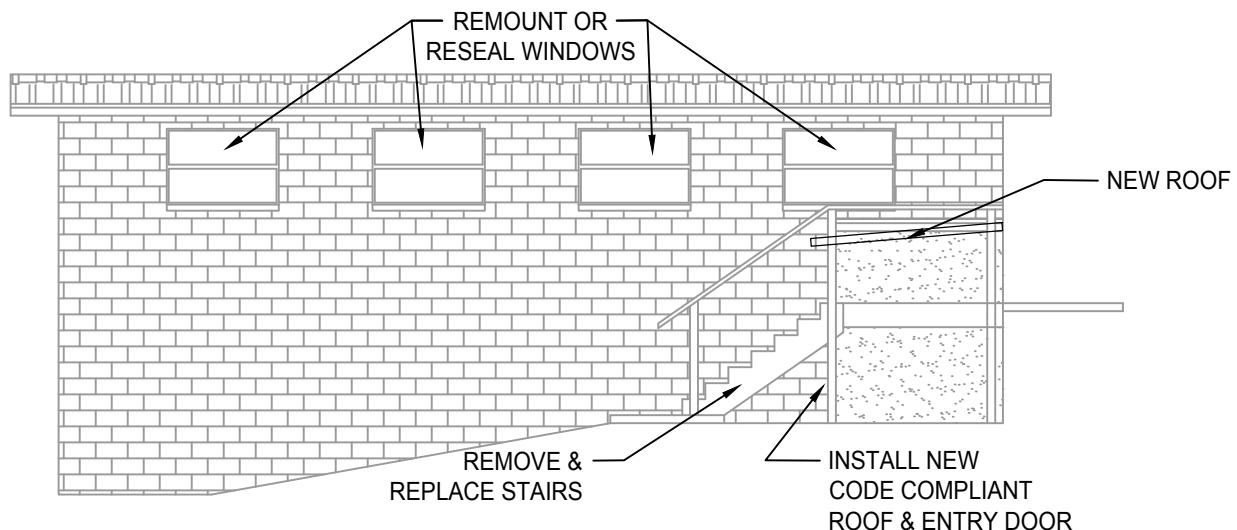
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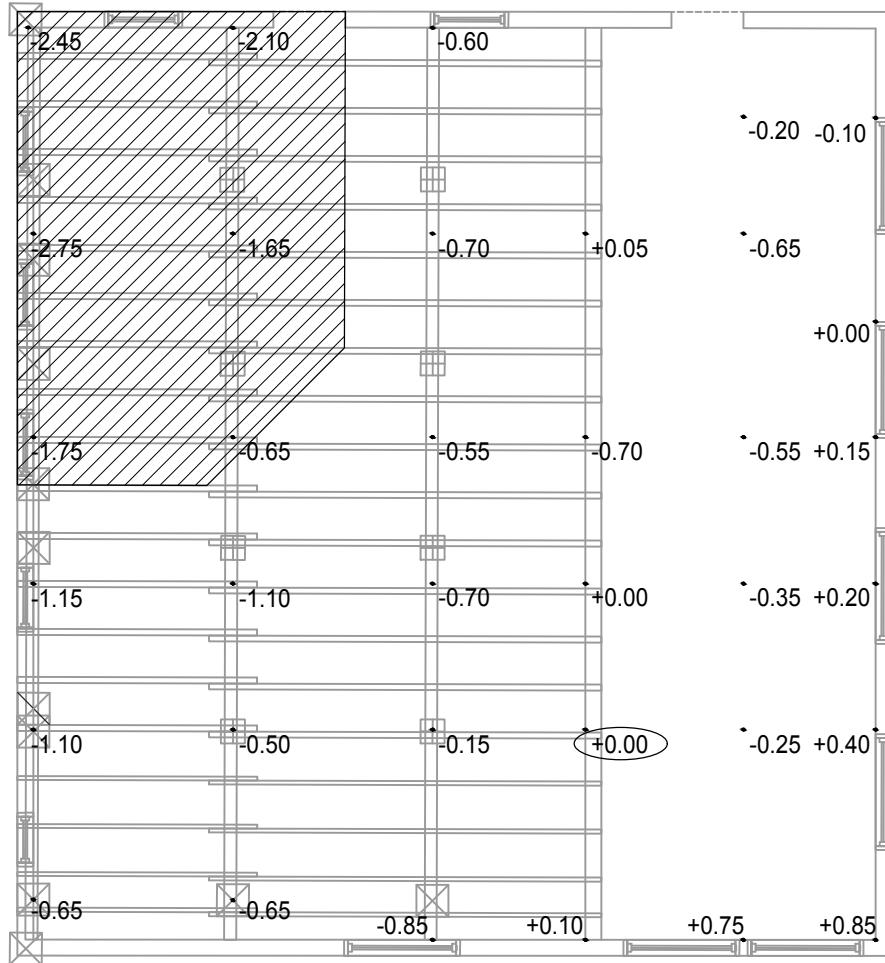
EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION



VALUES ARE IN INCHES

BENCHMARK

AREA OF FLOOR TO BE RAISED

INTERIOR ELEVATION PLAN



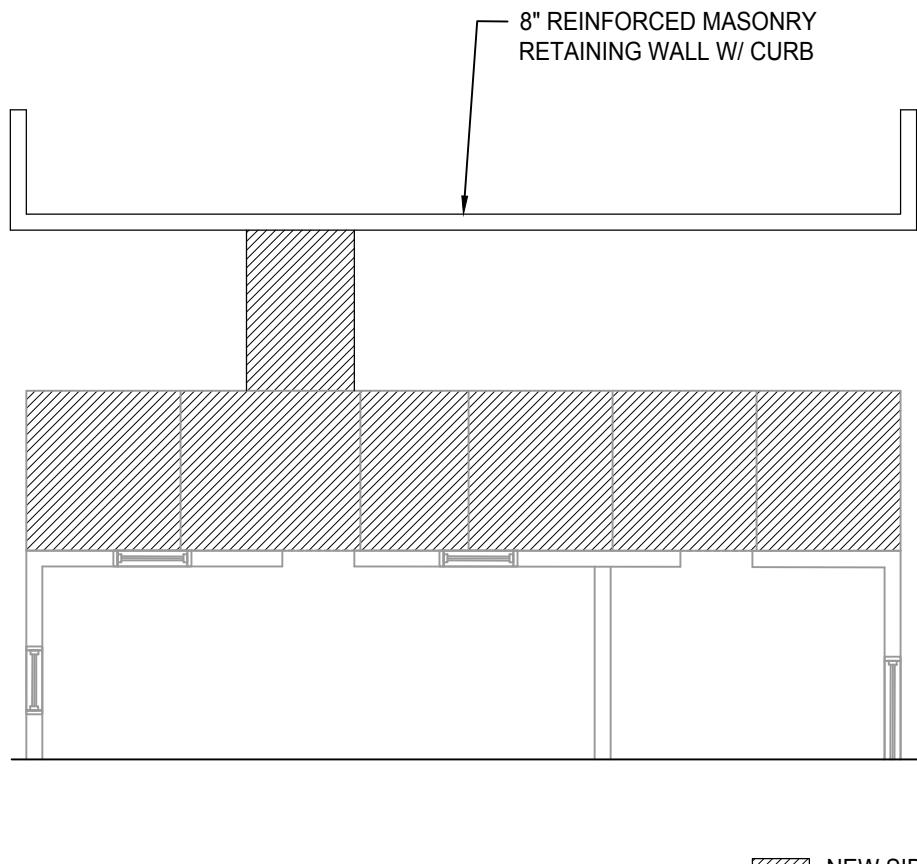
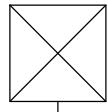
STRUCTURAL
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INTERIOR
ELEVATION
REPAIR PLAN

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■ NEW SIDEWALK

■ NEW CONTROL STRUCTURE

EXTERIOR REPAIR PLAN



STRUCTURAL
INSPECTION
12973 83rd AVENUE
SEBASTIAN, FL

EXTERIOR
ELEVATION
REPAIR PLAN

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DATE	AUG 2017
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DATE ISSUED	
SHEET	7 OF 7

Appendix C

Photographs

Picture No.: 1	DESCRIPTION: Damaged roof sheathing and member
 A close-up photograph showing damaged roof sheathing and a member. The sheathing is made of vertical wooden planks, some of which are missing or damaged. A horizontal wooden beam or member is visible, showing signs of decay or damage. The overall condition appears deteriorated.	

Picture No.: 2	DESCRIPTION: Damaged roof member and sheathing
 A close-up photograph showing a damaged roof member and sheathing. The member is a horizontal wooden beam that appears to be partially collapsed or broken. The surrounding sheathing is made of vertical wooden planks, some of which are missing or damaged. The overall condition appears deteriorated.	

Picture No.: 3	DESCRIPTION: Damaged north gable wall
	

Picture No.: 4	DESCRIPTION: Missing shim at wood pier
	

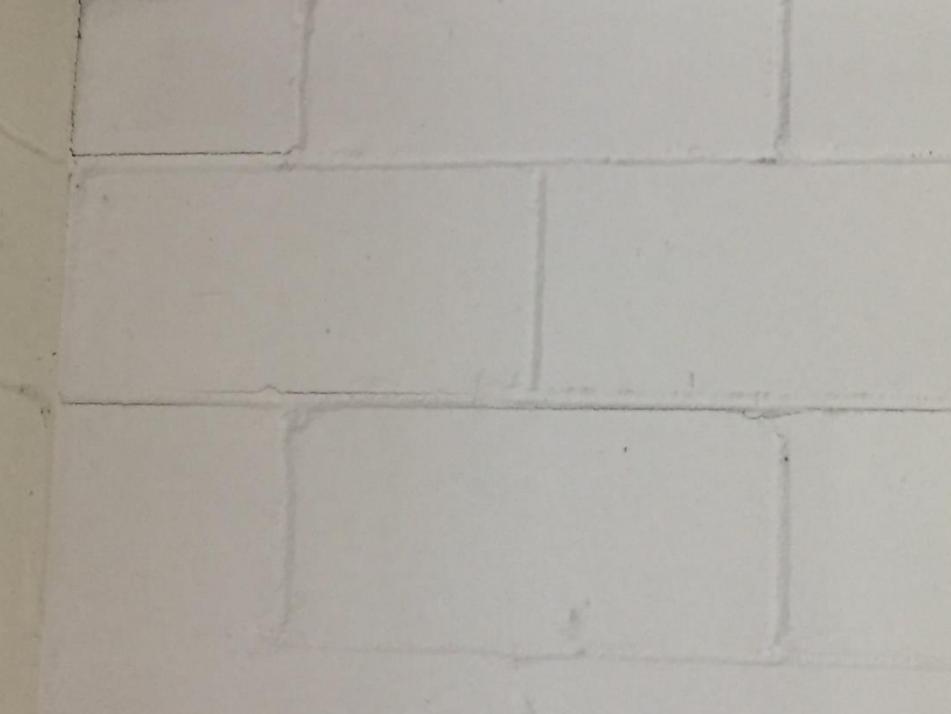
Picture No.: 5	DESCRIPTION: Damaged wall sheathing, signs of erosion and settlement in sidewalk
	

Picture No.: 6	DESCRIPTION: Signs of moisture intrusion
	

Picture No.: 7	DESCRIPTION: Water stained window sill
 A photograph showing a close-up of a window sill and the adjacent wall. The sill is white and shows significant water staining and discoloration, particularly towards the bottom right. The wall is a light-colored, textured material, possibly drywall or plaster, with some minor staining at the base where it meets the sill.	

Picture No.: 8	DESCRIPTION: Interior masonry wall crack
 A photograph of a masonry wall, likely made of concrete blocks, with a prominent vertical crack running down its center. The wall is covered in a light-colored, textured stucco or plaster. The crack is deep and appears to be a structural issue. The base of the wall shows some horizontal lines, possibly from a foundation or a different type of wall.	

Picture No.: 9	DESCRIPTION: Window broken at muntin
	

Picture No.: 10	DESCRIPTION: Cracks in basement wall
	

Picture No.: 11	DESCRIPTION: Damaged stucco and peeling sealant
	

Picture No.: 12	DESCRIPTION: Damaged fascia
	

Picture No.: 13	DESCRIPTION: Damaged fascia
	

Picture No.: 14	DESCRIPTION: Damaged roof members and sheathing
	

Picture No.: 15	DESCRIPTION: Damaged sheathing, damaged fascia, and peeling paint
	

Picture No.: 16	DESCRIPTION: Peeling torch down roof
	

Appendix D

Cost Estimate

Item	Cost
A. Exterior Site:	
1. Remove and replace wooden stairs, 44" in height	\$ 4,000.00
2. Level parking area	\$ 1,500.00
3. Install block retaining wall around parking area	\$ 12,000.00
4. Remove ramp and sidewalk	\$ 9,000.00
5. Add new sidewalk	\$ 28,000.00
6. Add control structure for stormwater and piping	\$ 7,000.00
Exterior Site Subtotal	\$ 61,500.00
B. Exterior Structure:	
1. Repaint structure on lap siding elevations	\$ 5,000.00
2. Remove and replace window trim (wood walls)	\$ 2,000.00
3. Replace damaged siding	\$ 15,000.00
4. All roofing	\$ 45,000.00
5. Repair masonry cracks	\$ 600.00
6. Add entry and roof to water tank enclosure	\$ 5,000.00
7. Doors and Windows replacement	\$ 22,000.00
8. Rotted Wood Pier, Remove and Replace	\$ 4,000.00
9. Rotted 6 x 6, Remove and replace	\$ 4,000.00
10. Rotted rafters, Remove and replace	\$ 6,000.00
11. Floor sheathing, Remove and replace	\$ 2,000.00
Exterior Structure Subtotal	\$ 110,600.00
C. Interior Structure:	
1. Flooring Replacement	\$ 15,000.00
2. Drywall Replacement	\$ 8,000.00
3. Missing wall Insulation	\$ 2,000.00
4. Missing Floor Insulation	\$ 1,600.00
5. Remove moisture damaged ceiling finishes	\$ 5,000.00
6. Remove and replace headers	\$ 4,000.00
7. Retrofit or rebuild north gable end wall	\$ 10,000.00
8. Lift Structure	\$ 5,000.00
Interior Structure Subtotal	\$ 50,600.00

Overall Subtotal \$ 222,700.00

Contingency 15% \$ 33,405.00

Engineering 7.5 % \$ 19,207.88

TOTAL BUDGET \$ 275,312.88