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St. Anthony School Building Assessment - Volume I

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Executive Summary

01

BACKGROUND, SUMMARY OF SCOPE, LIMITATIONS, DELIVERABLES, AND ADDRESS OF FACILITY

After having been selected by the Peñasco Valley Historical Preservation Society (PVHPS), CSR Architects with Francisco Uviña-Contreras was asked to provide architectural services for the restoration of the historic adobe St. Anthony School Building in the community of Peñasco, New Mexico. The building was recently given a historic designation by the New Mexico Historic Preservation Division in April, 2023.

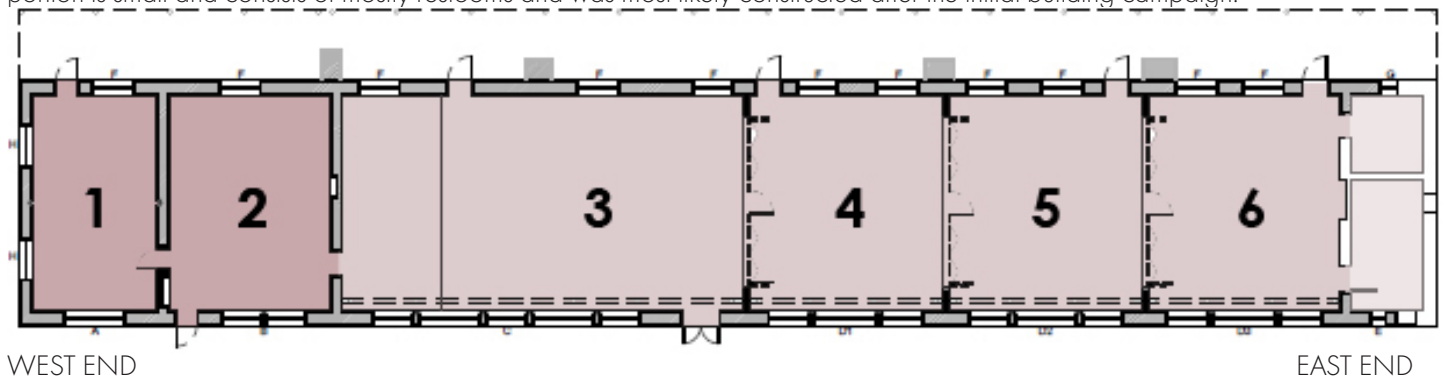
The building was constructed in 1931. To our knowledge, the condition of the building was last assessed in 1997 by Karen Lewis, Historic Preservation, funded by National Trust for Historic Preservation Johanna Favrot Fund and prepared for Cornerstones Community Partnerships.

Francisco Uvina-Contreras, as part of his historic preservation class at the University of New Mexico School of Architecture + Planning, led his students and instructed them to analyze and conduct studies of the site for reuse in February, 2022.

The CSR Architects Team held their first site visit on April 27, 2023, where they spent the day taking photographs and assessing the condition of both the interior and exterior of the building. Window conditions were analyzed and small holes were dug at the south and west perimeter to assess the depth of the concrete footing. An additional site visit was held on June 15, 2023 with William Druc, to assess the structural elements for their repair and/or replacement. He later visited the site one more time on September 24, 2023. The window head, sills, and columns between windows were assessed. The roof structure was also reviewed. The ultimate goal will be to rebuild the existing walls and structure as needed, so that the interior temporary column and beam supports can be removed along the west side of the building.

01.a BACKGROUND

Construction of the St. Anthony's School began on or about 1931. The school was built in three periods of construction. The building is oriented in a northwest to southeast direction, but for simplicity's sake, the portal side of the building will be considered the "north" side of the building. Therefore, the "western" portion was originally a house, the construction date of which is unknown. This is likely because the house was already located in this location and that the school was built to include it. This house or western section includes classrooms 1 and 2. The central and largest portion of the building includes the remaining classrooms 3 through 6. The easternmost portion is small and consists of mostly restrooms and was most likely constructed after the initial building campaign.



The designer and builders are unknown, but it is likely that the Building was built by local craftsmen using mostly locally available materials such as adobes and vigas. The Building is a 5,400 square foot rectangle measuring approximately 30'x180'. It has two roughly square rooms at the west end and the remainder of the building is a single large chamber. The floor in the large chamber steps down along its long axis to follow the slope of the lot on which it is built. Historically, the large chamber was separated into individual classrooms by large wooden accordion doors. Originally, the Building had a shed roof sloped to the north and massive, exterior adobe or stone buttresses supported the long straight wall. Over time, a pitched roof was built over the original shed roof and many of the buttresses were removed.



St. Anthony's School closed on or about 1986 and the Building was abandoned.

In 1997, members of the community engaged Cornerstones Community Partnerships (Karen Lewis, Preservation Consultant) of Santa Fe to produce a conditions assessment report of the school. The recommendations from that report determined that the Building required repair of the walls, doors, windows, and floors. A structural upgrade of the roof was recommended. A new mechanical system should be designed by a mechanical engineer. The restrooms and a kitchen were proposed by Father Ortega. The building needed to be adapted for accessibility in accordance with the American with Disabilities Act (ADA).

Historically, the school had a detached kitchen and lunchroom that was a converted military barracks building, which was known simply as the "Hot Lunch". Even today, former students still affectionately refer to the old lunchroom as the Hot Lunch. The Hot Lunch was razed decades ago.

In 2017, the Peñasco Valley Historic Preservation Society (PVHPS) was formed to prevent the demolition of the building. This 501 (c)(3) non-profit organization, is goverend by a five-person Board of Directors and 15 active members and many more volunteers.

Late in 2021, the PVHPS acquired the Building on approximately three acres with the intent to restore the building for the use and benefit of the community. There is also a goal to reinstate the Hot Lunch building. A programming session for the use of the existing school building and site will determine the size and placement of the new Hot Lunch building.

At the PVHPS's request, in the spring semester of 2022, a class from the University of New Mexico School of Planning and Architecture under the direction of Instructor Francisco Uviña, made a project of the Building and grounds. The class generated imaginative landscaping ideas that the PVHPS believes can be helpful for CSR's future work.

In late 2022, the PVHPS and Steven Moffson, State and National Register Coordinator, filled out a National Register of Historic Places Registration Form. In January 2023, the Peñasco High School or St. Anthony Parochial School was listed on the National Register of Historic Places by the United States Department of the Interior, National Park Service.

01.b SUMMARY OF SCOPE

1. Site Assessment - During the Site Assessment, our team identified the priorities for repair of the historic building. We have included advice and recommendations in the Section 2 of this deliverable.

Priority #1 - Building Envelope and Site

1. Regrade around the building to ensure that water is flowing away from the building
2. Commission an environmental assessment (for identifying hazardous materials on site prior to any demolition work , i.e. asbestos and lead paint)
3. Commission a pest inspection
4. Commission a percolation test as part of a Geo-technical study for leach field size determination.
5. Carefully remove Elm and other plant growth from perimeter of building
6. Carefully shore the southwest corner of the building, remove deteriorated adobe, rebuild adobe wall
7. Carefully shore up lintels above windows, remove rotted wood columns between windows and provide new structural support
8. Design and implement strategy for window restoration

Priority #2 - Building Interior, Systems, Life Safety, and Accessibility (dependent on Program and building use)

1. Remove interior columns and footings that were previously used to shore up the south side (only once exterior walls are stabilized)
2. Remove wood flooring and repair floor joists. Replace wood flooring with original wood members, adding new to fill in gaps
3. Add ramps between differing floor levels for accessibility.
4. Replace all doors
5. Restore windows
6. Remove/replace north portal
7. Remove pitched roof and reinstate shed, "flat", roof and parapets
8. Repair/replace exterior plaster
9. Repair wall plaster, filling cracks and adding a new smooth surface



01.c LIMITATIONS or EXCLUSIONS

1. Boundary Survey of Catholic School Property provided by Owner was stamped and dated June, 2012
2. No Materials Testing was conducted, only visual inspection
3. No Design and Construction Phase Services are provided, however we updated the UNM AutoCad floor plan and elevations
4. Civil, Mechanical and Electrical engineers will go out on a separate site visit after the Program and Masterplan portion of the contract are complete. It will be more beneficial to have a better idea of what is proposed for the site so that the engineer's recommendations can provide more realistic information.

01.d DELIVERABLES

1. Site Assessment - Final Assessment Report with opinion of construction costs. One reproducible hard copy, bound, with a digital copy on a flash drive. Site evaluation photos, building plans, elevations, or other miscellaneous information collected will be provided.

01.e ADDRESS OF FACILITY

Street & number: 15086 75 State Highway
City or town: Peñasco
State: New Mexico
County: Taos
Zip Code: 87553



01.f GOALS

1. Make recommendations for immediate stabilization of the historic adobe building.
2. Make recommendations for the structure.
3. Make recommendations for the restoration of the historic windows.
4. Coordinate stabilization efforts with the Peñasco community (and Cornerstones).

01.g OPINION OF CONSTRUCTION COST

The building has elements under some or all of the categories listed below:

Site & Landscape Improvements
Exterior Building Envelope Repairs
Doors & Window Improvements
Interior Repair / Interior Surfaces / Finishes
Electrical and Mechanical Upgrades (not included in this assessment)

Study - projects are those items included in the list above that involve more in-depth analysis and knowledge than is in the purview of this evaluation. They are listed as the first step in addressing the inadequacy observed. A study is called for usually within the 1-year time frame, and the remedy will occur at some time in the future, depending on the results of the study. The cost of any study includes NO monies for the remedy.

Issue - projects identify a need that is usually beyond the scope of normal project work. They involve major building renovation, work by others, that provides a specific service or work that would be handled on a case-by-case request basis as the needs of a specific person arise in an existing space. Issues contain NO monies for the remedy.

The Opinion of Construction Cost totals

Priority #1 - Stabilization \$401,460

Priority #2 - Rehabilitation \$1,685,268

Please note: these amounts do not include any site or grading work.





Site and Building Assessment

02

ST. ANTHONY SCHOOL BUILDING
Peñasco, New Mexico

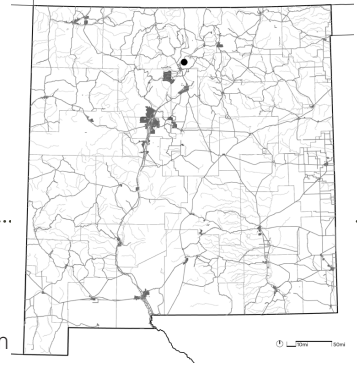
02.a Site Condition

The St. Anthony School Building, also known as San Antonio de Padua Parish School, is located on the Historic Site in Peñasco, New Mexico at the intersection of State Road 518 and Route 75. With the fundraising efforts being undertaken by the Peñasco Valley Historic Preservation Society (PVHPS), the beloved St. Anthony School Building will be able to receive significant and prioritized investments to augment its role as a site for community enrichment. Preserving the St. Anthony School Building is critical to ensuring that future generations can appreciate and understand the unique cultural history of the region. The site's building has been well-preserved over the years, but ongoing maintenance and repair work is necessary to ensure its continued longevity. This Site and Building Assessment will serve as a tool towards the building's preservation treatment plan providing guidance for preserving the site's historic features and materials, as well as recommending any necessary repairs or restoration work. The Assessment focuses on the 5,340 square foot one-story school building on an 2.817 acre site. This structure is contributing within the Peñasco Valley National Register Historic District. Treatment recommendations included in the report adhere to Preservation and Rehabilitation standards in the School Building. Further discussion of preservation treatment standards are provided in the Appendix.



The site was originally left untouched after the demolition of the Hot Lunch building and an old shed on the East side of the building, remnants of its demolition, still on site. During the 1997 assessment, repair work was underway to remove the cementitious plaster.

Recently the site was graded for a Farmer's Market in front of the School Building in the hopes of raising money for and awareness of the project.



Historic Preservation Standards

The Secretary of the Interior's Standards for the Treatment of Historic Properties contain guidelines for modification and treatment of historic resources. These are the federally recognized standards for treatment of buildings on the National Register and would be utilized by the State Historic Preservation Office to review proposed changes to the buildings if state or federal grants were awarded for capital projects.

There are four unique approaches which are summarized below. Additional standards specific to sustainability and cultural landscapes are found in corollary documents and may also be relevant. Typically, a single approach is selected, rather than picking and choosing from each, however a significant project like this may demand flexibility for a more carefully considered approach. Text in italic is copied directly from the Standards. Text in bullets (*) under the approaches is project specific.

PRESERVATION

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property, generally focused upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make the properties functional is appropriate within a preservation project.

- * "Preservation" approach is recommended for the St. Anthony School Building as a whole, as this treatment strategy is applicable to projects that are limited in scope to the repair of historic building materials.
- * "Preservation" standards should be applied to interior finishes in significant spaces.

STANDARDS FOR PRESERVATION

1. *A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.*
2. *The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*
3. *Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.*
4. *Changes to a property that have acquired historic significance in their own right will be retained and preserved.*
5. *Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.*
6. *The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.*
7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*
8. *Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*



REHABILITATION

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, and architectural values.

- * The "rehabilitation" approach is recommended for the St. Anthony School Building as a whole. This recommendation is being made due to the fact the proposed functional changes and new building systems would be evaluated under the rehabilitation standards. Conversion of rooms into exhibit galleries or event spaces and installation of new mechanical, electrical, plumbing, and fire alarm systems would certainly fall into this category.

STANDARDS FOR REHABILITATION

1. *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.*
2. *The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*
3. *Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.*
4. *Changes to a property that have acquired historic significance in their own right will be retained and preserved.*
5. *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*
6. *Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*
7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*
8. *Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*
9. *New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.*
10. *New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

RESTORATION

Restoration is defined as the act or process of accurately depicting the form, features, and characteristics of a property as it appeared at a particular period of time, by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems, and other code-required work to make the properties functional is appropriate within a restoration project.

- * "Restoration" is not recommended for the treatment of the St. Anthony School Building as a whole. Some specific recommendations that have been put forward in this report would, however, be assessed under the restoration standards, as summarized below:
- * Recommendations for the complete removal of cementitious stuccoes and/or gypsum plasters, and replacement with mud plaster systems would be assessed under restoration standards. These recommendations have been put forward primarily out of consideration of best practices for the treatment of historic adobe. If



- undertaking such restoration efforts, additional research is recommended into the evolution and history of exterior stucco/plaster systems in the treatment history.
- * Recommendations related to the treatment of exterior windows would also be assessed under restoration standards if replication of historical paint finishes and color schemes is pursued.

RECONSTRUCTION

Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of times and in its historic location.

- * This approach is reserved for replicating buildings that are no longer extant. Accordingly it is not appropriate to the St. Anthony School project at this time.



Character Defining Features

It is essential to identify those elements that provide a structure with its character in order to preserve important features which may become lost or damaged through weathering, rehabilitation, and maintenance. Character refers to all those visual aspects and physical features that comprise the appearance of a structure. Character defining elements include the overall shape of the structure, materials, craftsmanship, decorative features and aspects of site and landscape context.

The period of significance for the Peñasco High School, as it was named on its nomination to the National Register of Historic Places Registration Form, is 1932-1948. (NEW MEXICO, TAOS COUNTY, Peñasco High School, 15086 NM 75, Peñasco, SG100008588, LISTED, 1/26/2023)

Special effort should be made to retain and preserve the character defining features, as these are the elements that give the building its architectural significance. The following is a list of the character defining features of St. Anthony School Building in Peñasco. In any maintenance, repair, or construction project these features should be preserved.

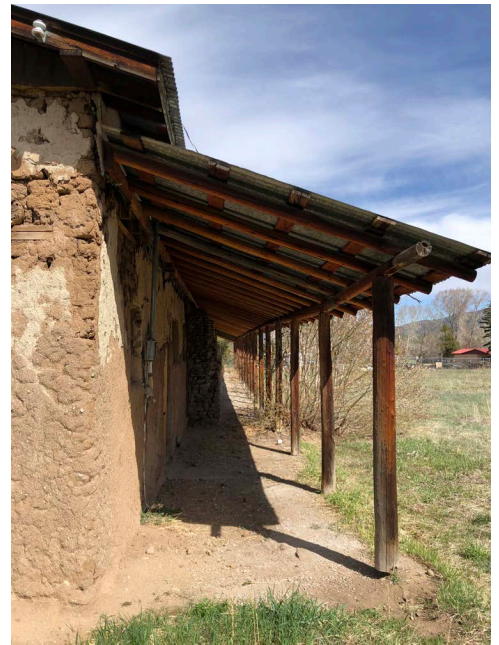
1. Building massing and undulation of walls
2. Articulation of divided light windows
3. Restoration of the original shed roof (discuss with HPD)
4. Interior panel doors and classroom partitions
5. Wood floors
6. Viga and plank ceilings
7. Change in floor levels
8. Stone buttresses (including restoration of buttresses on south side?? discuss with HPD)
9. Timber window heads
10. Portal on north elevation (not part of its period of significance, but useful to the community, discuss with HPD)



02.b. Existing Building Condition

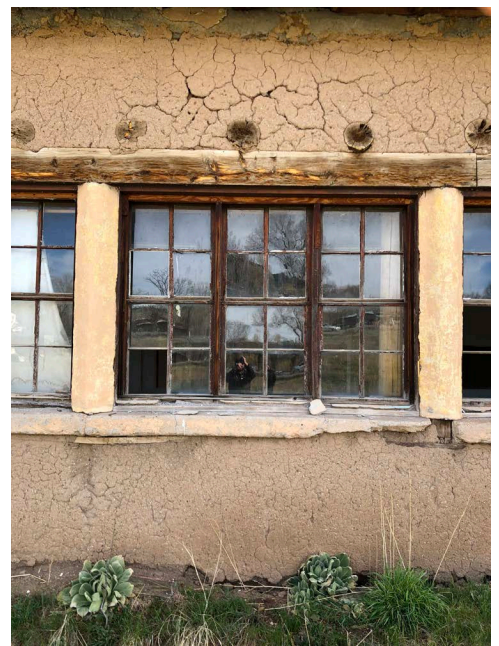
02.b.1.0 ADOBE WALLS

The walls are in fair to poor condition. The cementitious plaster has been removed in most areas and several layers of mud plaster remain in various areas along the facade. There is a large structural crack at the corner of the south and west elevations. There were buttresses on both walls at this corner, but according to a previous report, they fell apart when the plaster was removed. A large concrete buttress is located at the northwest corner. It appears to have stabilized the wall, but it is unfortunate that a dissimilar material was used for this repair.



There is basal (rising damp) erosion along the west, south and east elevations, the north elevation is protected by a portal. The erosion has been most detrimental below the windows where the use of concrete sills have not provided a sufficient drip edge to carry water away from the adobe wall below.

Most of the buttresses on the south elevation were removed when the cementitious plaster was removed. It appears that some of these were constructed of stone and that they were being held together by the plaster. Remnants of an adobe buttress remains on this elevation, faintly visible by the cracks in the mud plaster between windows. The buttresses on the north elevation are constructed of stone and are in good condition. These buttresses have been protected by the portal.



02.b. Existing Conditions - continued

There are floor vents along the exterior of the building which were covered with plaster. When the cementitious plaster was removed, these vents were reopened.

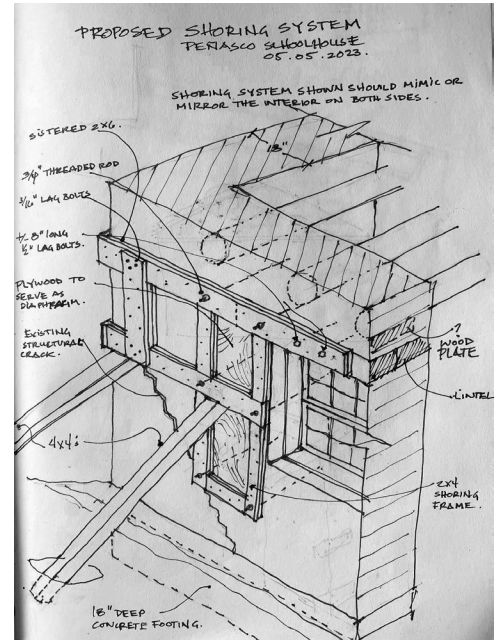
Along the south elevation, to the west of the double door, the previous report witnessed an ant colony in residence in the wall. They were located at the base of the wall and presumed to have tunnels running throughout this area of the building. No ants were visible during our visits, but it is recommended that a pest inspection be conducted before any repair work begins.

There are no apparent site design features in place to ensure positive drainage of water associated runoff from the roof. Surface runoff should be directed away from the building perimeter in order to avoid exacerbating the natural tendency of moisture in the soil to move vertically through masonry walls via capillary action. Capillary rise is a common source of basal deterioration in adobe walls and wall finishes.

02.b.1.1. STABILIZATION RECOMMENDATIONS

The southwest corner is in critical need of stabilization. It is recommended that the corner be shored so that the damaged adobe bricks can be removed. New adobe bricks should be made to match the existing, not only in width, height, and depth, but also of the same material. Testing the adobe for its clay, sand, and straw content might be necessary. It is important that the repair or replaced adobe building materials are the same types of materials used originally and use the same construction techniques. See adjacent sketch by Francisco Uviña for proposed repair work.

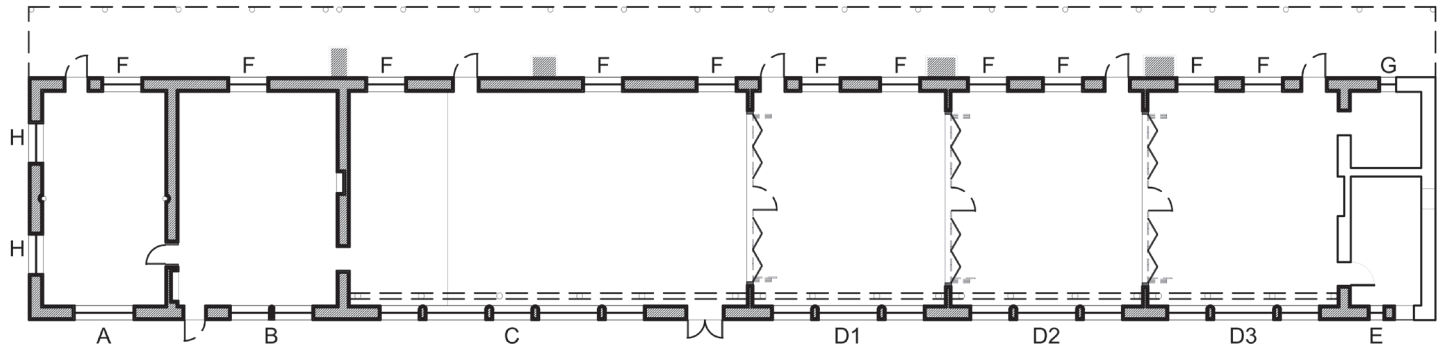
ISSUE/STUDY NEEDED: The wood lintel and sill at the longest span window shows signs of deterioration or sagging due to lack of structural support. The columns between window bays do not have a stable base support. The wood members are weathered and deteriorating. There may be some settling beneath the window caused by ground water rising damp as the grade and vegetation has accumulated at the base of the wall beneath the window. Site grading work will be needed before a further structural assessment can be done to study this area. It is possible that the adobe underneath the window may have to be removed and replaced in order to correct this issue.



02.b.2. WINDOWS

The window units on the south elevation are in fair to poor condition. They are single glazed with full divided lights. The wood in all the windows is dry and in need of care. Some of the mullions and sills have dry rot and are beginning to deteriorate. Many of the units are not hanging plumb. Many of the glazing units have been removed.

While we were on site, we salvaged several glazing units that had fallen without breaking and placed them inside the building near their original locations. It is recommended that any other loose glazing units be removed and placed inside for safe keeping. It may also be necessary to cover the windows with plexi-glass to prevent further breakage, but still allow daylight into the space.



FLOOR PLAN with WINDOW TYPES LABELED "A" THROUGH "H"

Each window has been photographed and documented as part of the assessment. The repair work needed will be further defined during subsequent construction document phases.





"D3"

A detailed 3-D drawing has been developed and labeled as well as a sketch model built so we can better understand the individual window components.



The windows on the north elevation have been filled in. The outline of where the units were located can be seen on the wall.



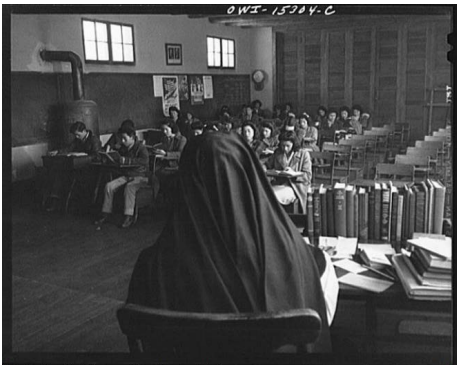
"F"

02.b.3. DOORS

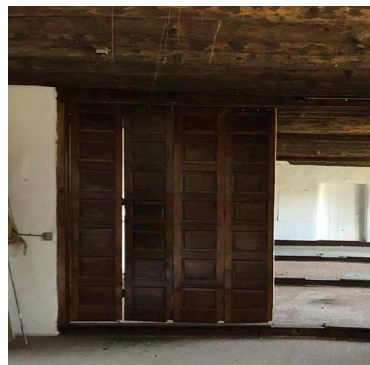
All exterior doors are wood and in poor condition. They are very weathered and do not latch or lock easily. The thresholds do not meet ADA accessibility, nor does the door hardware. (Knobs instead of levers).



Historically, the classrooms had folding panels serving as room dividers with nine panels each with one operable door in the center. Currently, there is only one set of four panels on the north side between Rooms 3 and 4. (Double check with PVHPS, if the other panels and doors are being stored off-site somewhere)

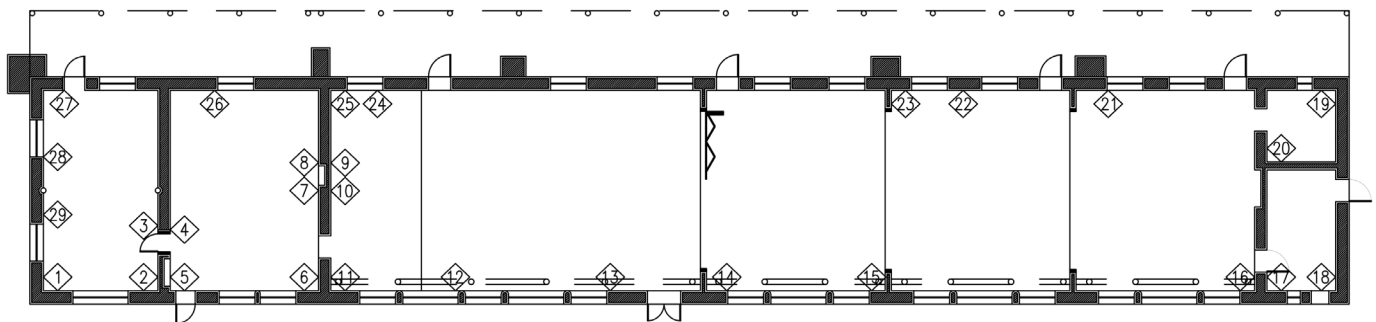


John Collier, Jr., "Penasco, New Mexico. High school supported by the state but administered by the Catholic church," 1943



02.b.4. WALLS

The interior walls are plastered over the adobe. There are several large cracks appearing in walls that also reflect the deterioration on the exterior. The floor plan below shows the number of cracks and their locations. The most sizable are shown in the photographs below.



Crack Locations #1



#11



#17



#25



#26



02.b.5 FLOORS

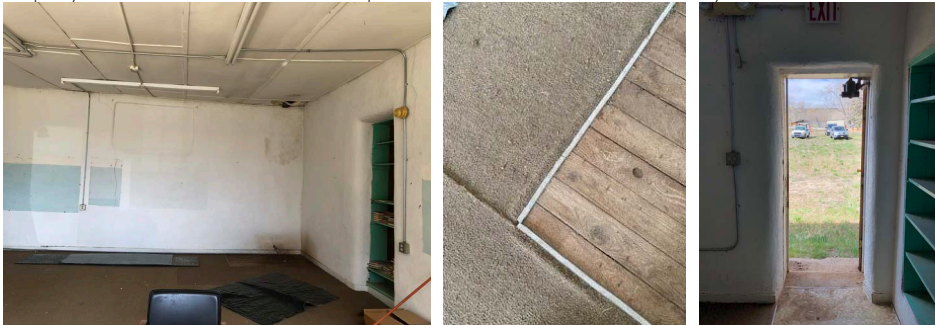
All the interior floors are wood. However, there are small areas of concrete that have been leveled with the adjacent floor, i.e. at the base of the new wood columns along the south side of the building, and in Room 1 near the base of the column.



In Room 1, the floor is presumed to be pressed wood (but concrete was uncovered) with linoleum and carpet. The floor seems fairly level and in good condition. The linoleum and carpet should be removed.

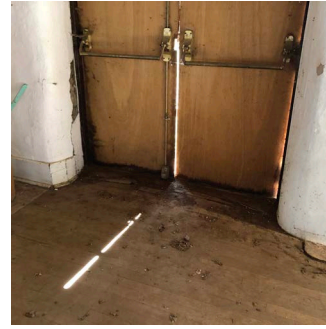


Room 2 has 3 1/2 inch wide tongue-and-groove flooring and appears to be level and in good condition. There is brown carpet covering the majority of the room. There is a small portion of linoleum at the south entry door. The linoleum and carpet should be removed.

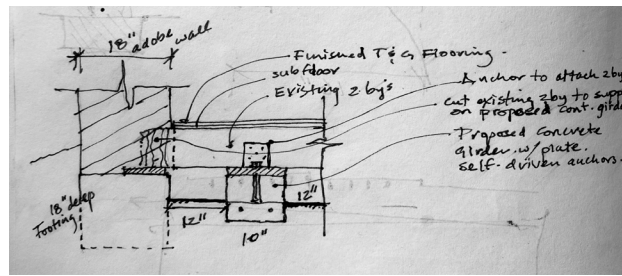
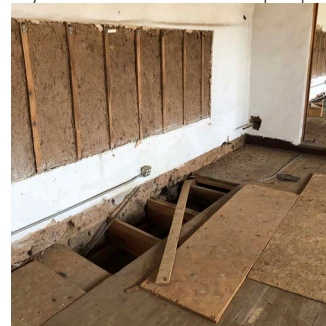
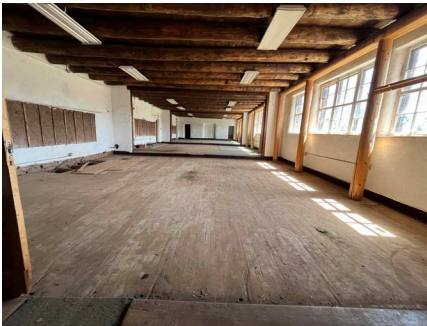


Room 3, the main room with stage, has 2 1/2 inch wide tongue-and-groove floor. This floor is unfinished, except for a small area of blue carpet on the south side of the stage. The wood flooring is in good condition. There appears to be a slight crown at the center of the room. This may be caused by the deterioration of the ends of the floor joists or by settling in the exterior walls. More study is recommended.





Room 4 has 2 inch wide wood flooring. The floor is in good condition. This room is also showing signs of crowning. The north side of the floor has had some selective demolition done to examine the end condition of the floor joists. See sketch by Francisco Uviña for proposed repair work.



Room 5 and 6 have 2 inch wide wood flooring. The floor is in good condition. Room 5 is also showing signs of crowning. Rooms 5 and 6 have remnants of carpet padding. Rooms 3, 4, 5, and 6 all step up an average of 6" from west to east. All rooms have doors exiting north to the portal which slopes with the grade. Internal ramps will need to be designed for ADA accessibility. As noted earlier, Rooms 3, 4, 5, and 6 all have 18 inch squares cut through the flooring to provide a footing for the shoring supports along the south side of the building.



The two eastern rooms are restrooms opening onto Room 6. The northernmost room has an old linoleum floor which is in poor condition. The south restroom has a built-up floor with a wood subfloor covered with concrete.



02.b.6 CEILINGS

Room 1 has a sheet rock and plaster ceiling. There are some portions of the ceiling that has been removed either from a roof leak or selective demolition to review the structure above. Room 2 has what appears to be a plywood ceiling in a board and batten layout based on the plywood sheet size. This ceiling is in good condition. Rooms 3 through 6 and the easternmost rooms have exposed vigas with +/- 8 inch wood planks above. These ceilings are in good condition.



02.b.7 ROOF

The roof is corrugated metal and appears to be in good condition. The only evidence of potential water damage on the interior was in Room 1 where the ceiling had fallen. The roof also takes a step down to the west, which may have designated the original two room building of the school.



The portal shed roof was added at a later date (unknown).

The pitched roof was added in the 1970's. It was added by removing a portion of the parapets and removing the shed roof. The north side of the building was framed up to support the new corrugated pitched roof.



Rooms 3, 4, 5, and 6 have a log column and beam shoring system which serves as the primary structural system for the roof along the south wall. These columns rest on concrete footings which were constructed by cutting an 18 inch square through to the flooring. The top of the footings are flush with the floor.





Standards and Regulations

03

This section includes building code, accessibility code, permitting, and approvals considerations for the St. Anthony School Building

03.a Building Code Analysis

The building is subject to Chapter 12 of the 2021 International Existing Building Code (IEBC), which is the current building code enforced by the State of New Mexico. While the Existing Building Code will be the primary evaluation tool, it references the IBC in numerous places. It is not certain if the historic adobe structure and its repair will be required to conform to Section 2109 Empirical Design of Adobe Masonry in the 2021 IBC and to the requirements of Appendix A of The Masonry Society (TMS) Section 402. The authority having jurisdiction (AHJ) in northern New Mexico is the Construction Industries Division (CID) with whom the construction documents will need to be submitted and permitted before construction work may begin.

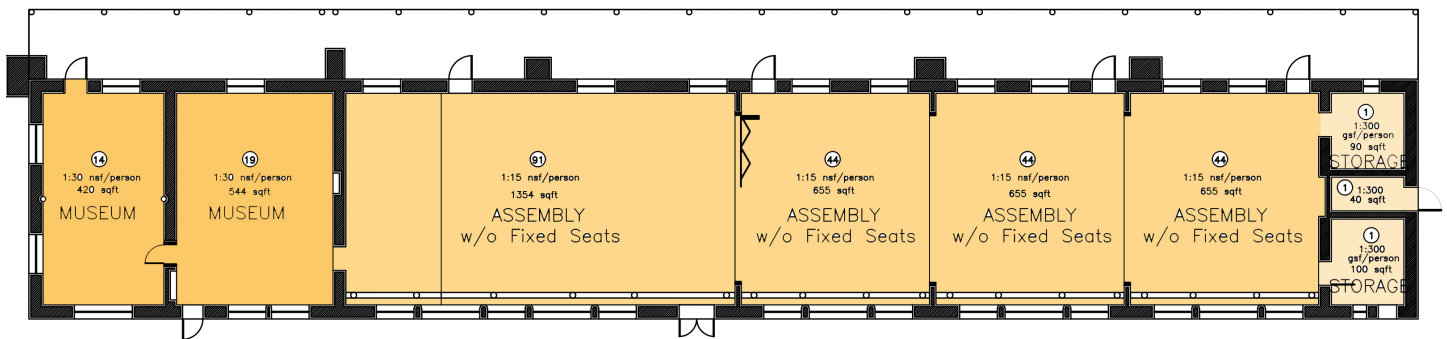
03.b Use Group

Based on the initial Programming session held on November 2, 2023, the proposed use for the building will be as an event space for weddings, musical concerts, readings, community gatherings, workshops, certification testing, museum and an art gallery. The majority of spaces in the building will be evaluated as A3-Assembly. Portions of the building that will be utilized for storage or offices, will be considered accessory uses.

03.c Occupant Load and Egress Capacity

This is one of the most important life safety factors to consider in order to ensure that occupancy loads are established, relative to the number of available exit doors. The St. Anthony School Building has multiple exits at grade swinging out on both the north and south sides of the building.

The occupancy and use plan below shows the west end of the building or former office/classrooms as proposed museum/gallery space (33 occupants). The central areas formerly classrooms are now shown as assembly spaces without fixed seating (223 occupants). The usable area may need to be adjusted based on adding ramps for circulation, therefore, causing the occupancy to be reduced. The east end of the building formerly restrooms and storage will be reserved for storage (3 occupants). The total occupancy load shown at this time for the building is 259 occupants. **This is subject to change as ramps or other occupancy usage is defined during Programming.**



03.d Other Life Safety Considerations

- * A new addressable fire alarm system should be installed that would notify the local fire department if smoke or heat is detected in the structure.
- * An automatic fire suppression system would NOT likely be required because the structure is adobe.
- * Exit signs and emergency lighting will likely be required by the building code official. These should be carefully located to provide mandated life safety while minimizing the impact on the historic integrity of the structure.



03.e Accessibility Analysis

Accessibility requirements for historic sites are defined by two related but different sources: ADA (the Americans with Disabilities Act and the 2010 ADA Standards for Accessible Design) and ANSI (the American National Standards Institute ANSI A117.1-2017). ADA is a civil rights law and ANSI is part of the building code. Regarding historic buildings built before 1990, there are exemptions for historic buildings within the IEBC. Accessibility improvements should be implemented where achievable and no adverse affects to the historic integrity of the building will occur.

The EXTERIOR of the building has a covered portale on the north side. It slopes up from west to east at a 2% slope.



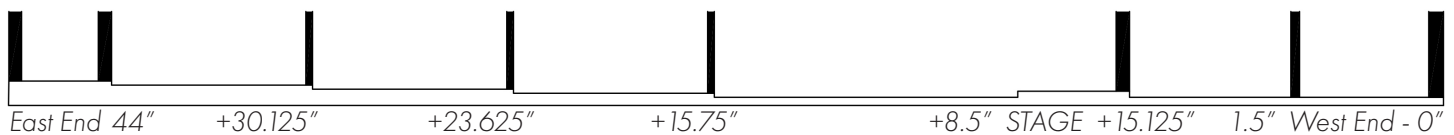
East

West

There is a 4" concrete stoop at the west door. The rest of the grade is dirt, gravel, and a +/- 3'-0" strip of concrete under the portale columns. There is not an accessible path to the building or any of the entries from the front or back of the lot.



The INTERIOR of the St. Anthony Building has several level changes. The floor between level changes also slopes up from west to east. Single steps were included and divide each classroom space. There is a "stage" at the west end of the large classroom space. These elevations changes will affect accessibility between one proposed assembly space to another. See partial section below showing steps and elevation difference from one end to the other.



Rather than forcing a visitor to go outside where the grade slopes from door to door and re-enter each interior space at another level, it is recommended that interior ramps be considered for ease of circulation within the heated space.



The DOORS are set near flush with the exterior of the building, so that when exiting from the interior, the width/depth of the wall inhibits the clear approach for accessibility. None of the doors are original to the historic building. Door placement within the wall and door frame will need to be studied in design.

At designated historic properties, only one accessible TOILET FACILITY is required, and it may be an all gender restroom. The building has two rooms that appear to have been toilet facilities. One included a step up to the toilet area and cannot be made accessible. The other may have the clearances, but further study will be required by the design team.



03.f Permitting and Approvals Process

The repairs and modifications to the St. Anthony School Building is likely to be phased over the next several years. Based on conversations with the PVHPS, it is assumed that the stabilization of the adobe portion of the building is of the highest priority to be addressed. A Master Plan for the site is in process and future buildings to support the proposed function of the rehabilitated school building are being developed. The following regulatory agencies will need to be contacted for design and construction permitting:

Peñasco Vally Historic Preservation Society

It is recommended that the PVHPS review the planned improvements as soon as they are finalized. PVHPS must approve each phased scope of work to ensure that funding is available.

Grant Funding

We understand that PVHPS is writing Grants for potential funding of future projects. The PVHPS should be aware of any drawing package reviews and submittals required for approval necessary or required before funding can be disbursed.

New Mexico Historic Preservation Division (HPD)

The HPD must approve modifications if state or federal funding is utilized towards construction. If private funds are used, it may still be recommended to seek their consultation for making changes to the existing structure (i.e. the roof). They hold a wealth of information regarding restoration practices and materials compatible with adobe structures.

Taos County Planning and Zoning Department

Peñasco is located in Taos County and falls within the Taos County Planning and Zoning Department's jurisdiction. As the AHJ (Authority Having Jurisdiction), any construction work proposed will need to be discussed with Taos County to determine if they wish to defer permitting authority to CID.

State of New Mexico Construction Industries Division (CID)

Prior to beginning the rehabilitation work on the St. Anthony School Building, it should be confirmed whether a formal change of use from educational to assembly is approved with CID and the local fire marshal. Representatives of both parties should be invited to the site to review general operations and the life safety improvements that are planned. If utility service upgrades are required, CID will issue and review electrical, mechanical, and plumbing permits with state inspections independent from the AHJ review.





Opinion of Construction Cost

04

Opinions of Construction Cost for Stabilization, Rehabilitation, and New Construction

04.a Stabilization

The following is the opinion of construction cost for the stabilization of the building in its current condition. The work focuses on the southwest corner of the building and the south windows C, D1, D2, and D3 where the lintels and sills are sagging.

St. Anthony School Building - Stabilization - Cost Estimate								
St. Anthony School Building - Adobe Repair at SW Corner and at South Windows C & D1, D2, D3								
R.S. Means 2024								
pg	section	div	description	unit	cost including O&P (2017)	inflation adjustment	quantity	subtotal
170	06 0505	.10	Selective Demolition Wood Framing					
		3120	Beams, 8" x 12"	l.f.	\$12.60		178	\$2,242.80
		5440	Posts, 6" x 6"	l.f.	\$2.90		50	\$145.00
268	08 0505	.20	Selective Demolition of Windows					
		2000	Wood, including trim, to 50 S.F.	Ea.	\$44.50		700	\$31,150.00
324	09 0505	.10	Selective Demolition, Ceilings					
		1000	Plaster	s.f.	\$1.66		100	\$166.00
114	04 0505	.10	Selective Demolition for Masonry					
		2060	Walls, adobe (Columns 16" x 16", soft old mortar	V.L.F.	\$36.50	sf	638	\$23,287.00
326	09 0505	.30	Selective Demolition, Walls and Partitions					
		3450	Interior Plaster	s.y.	\$9.65		78	\$748.41
326	09 0505	.30	Selective Demolition, Thermal and Moist. Protection					
		3000	Mud Plaster/Stucco	s.f.	\$1.45	5	638	\$4,625.50
			Stucco: Repair and Re-Coat					
			with mud plaster	s.f.	\$10.00		2160	\$21,600.00
333	09 2313	.10	Interior Surface Preparation					
		1200	Plaster walls, light sanding (walls) 3 coats on metal lath	s.y.	79.50	1.50	78	\$9,275.00
		1300	Plaster walls, light sanding (ceiling) 3 coats on metal lath	s.y.	89.00	1.50	78	\$10,383.33
371	09 9123	.72	Interior Painting, Walls & Ceilings					
		0840	Paint, 2 coats roller, smooth finish plaster	s.f.	\$1.22	1.00	3628	\$4,426.16
		0840	Paint, 2 coats roller, smooth finish plaster	s.f.	\$1.22	1.00	3628	\$4,426.16
		1800	for ceilings, add 25%					\$1,106.54
294	08 5210	.20	Double Hung Wood Windows					
			Window Restoration (operable awning)	Ea.	\$1,425.00	1.50	35	\$74,812.50
			Window Restoration (fixed)	Ea.	\$1,075.00	1.50	35	\$56,437.50
185	06 1110	.10	Wood Header Repair					
		3540	Beam and Girder Framing, 2" x 10"	M.B.F.	\$3,175.00	1	178	\$3,175.00
		0460	Posts and Columns, 6" x 6"	M.B.F.	\$5,100.00	1	50	\$5,100.00
114	04 2416	.06	Adobe Wall Repair					
		0080	Adobe brick, 12" x 4" x 16", 2.3/S.F.	s.f.	\$15.75	\$1,507.28	638	\$11,555.78
			SCHOOL BUILDING REPAIR SUBTOTAL					\$264,662.68
			CONTINGENCY @ 15%					\$39,699.40
			Subtotal					\$304,362.08
			Overhead @ 10%					\$30,436.21
			Subtotal					\$334,798.29
			Profit @ 10%					\$33,479.83
			Subtotal					\$368,278.12
			Bond @ 2%					\$7,365.56
			Subtotal					\$375,643.68
			NMGRT @ 7.01%					\$25,816.30
			SCHOOL BUILDING REPAIR GRAND TOTAL					\$401,459.98



04.b Rehabilitation

The following is the opinion of construction cost for the rehabilitation of the building in its current condition. The work consists of the building envelope and interior finishes, and a new roof. No site work or grading is included. New mechanical, plumbing, and electrical costs are based on our engineering consultants recommendations.

St. Anthony School Building - Rehabilitation - Cost Estimate								
St. Anthony School Building - Rehabilitation								
R.S. Means 2024								
pg	section	div	description	unit	cost including O&P (2017)	inflation adjustment	quantity	subtotal
170	06 0505	.10	Selective Demolition Wood Framing					
		3120	Beams, 8" x 12"	l.f.	\$12.60		178	\$2,242.80
		5440	Posts, 6" x 6"	l.f.	\$2.90		168	\$487.20
268	08 0505	.20	Selective Demolition of Windows					
		2000	Wood, including trim, to 50 S.F.	Ea.	\$44.50		700	\$31,150.00
324	09 0505	.10	Selective Demolition, Ceilings					
		1000	Plaster	s.f.	\$1.66		1194	\$1,982.04
114	04 0505	.10	Selective Demolition for Masonry					
		2060	Walls, adobe (Columns 16" x 16", soft old mortar	V.L.F	\$36.50	sf	638	\$23,287.00
326	09 0505	.30	Selective Demolition, Walls and Partitions					
		3450	Interior Plaster	s.y.	\$9.65		133	\$1,280.23
326	09 0505	.30	Selective Demolition, Thermal and Moist. Protection					
		3000	Mud Plaster/Stucco	s.f.	\$1.45		5 638	\$4,625.50
			Stucco: Repair and Re-Coat					
			with mud plaster	s.f.	\$10.00		5400	\$54,000.00
333	09 2313	.10	Interior Surface Preparation					
		1200	Plaster walls, light sanding (walls) 3 coats on metal lath	s.y.	79.50	1.50	600	\$71,550.00
		1300	Plaster walls, light sanding (ceiling) 3 coats on metal lath	s.y.	89.00	1.50	600	\$80,100.00
371	09 9123	.72	Interior Painting, Walls & Ceilings					
		0840	Paint, 2 coats roller, smooth finish plaster	s.f.	\$1.22	1.00	9913	\$12,093.86
		0840	Paint, 2 coats roller, smooth finish plaster	s.f.	\$1.22	1.00	9913	\$12,093.86
		1800	for ceilings, add 25%					\$3,023.47
294	08 5210	.20	Double Hung Wood Windows					
			Window Restoration (operable awning)	Ea.	\$1,425.00	1.50	19	\$40,612.50
			Window Restoration (fixed)	Ea.	\$1,075.00	1.50	19	\$30,637.50
185	06 1110	.10	Wood Header Repair					
		3540	Beam and Girder Framing, 2" x 10"	M.B.	\$3,175.00		1 178	\$3,175.00
		0460	Posts and Columns, 6" x 6"	M.B.	\$5,100.00		1 50	\$5,100.00
114	04 2416	.06	Adobe Wall Repair					
		0080	Adobe brick, 12" x 4" x 16", 2.3/S.F.	s.f.	\$15.75	\$2.00	638	\$20,097.00
274	08 1413	.10	Carved Wood Doors or Hollow Metal					
		3030	Mahogany, 3'-0" x 7'-0", six panel, with two lites	Ea.	\$2,375.00	\$2,500.00	8	\$20,000.00
192	06 1110	.42	Furring					
		0300	Wood strips, 1" x 2", on walls, on masonry	l.f.	\$1.81		2 420	\$1,520.40
	07 1326		Water-proofing sheet (self-adhering)					
			membrane, primer, mastic at gap btwn stucco and grade	l.f.	\$7.50	\$472.50	420	\$3,622.50
236	07 2613	.10	Crawl Space Encapsulation					
			20 mils sheet wrap, taped, 2" rigid insul @ stem, labor	s.f.	\$4.50	\$3,645.00	5400	\$27,945.00



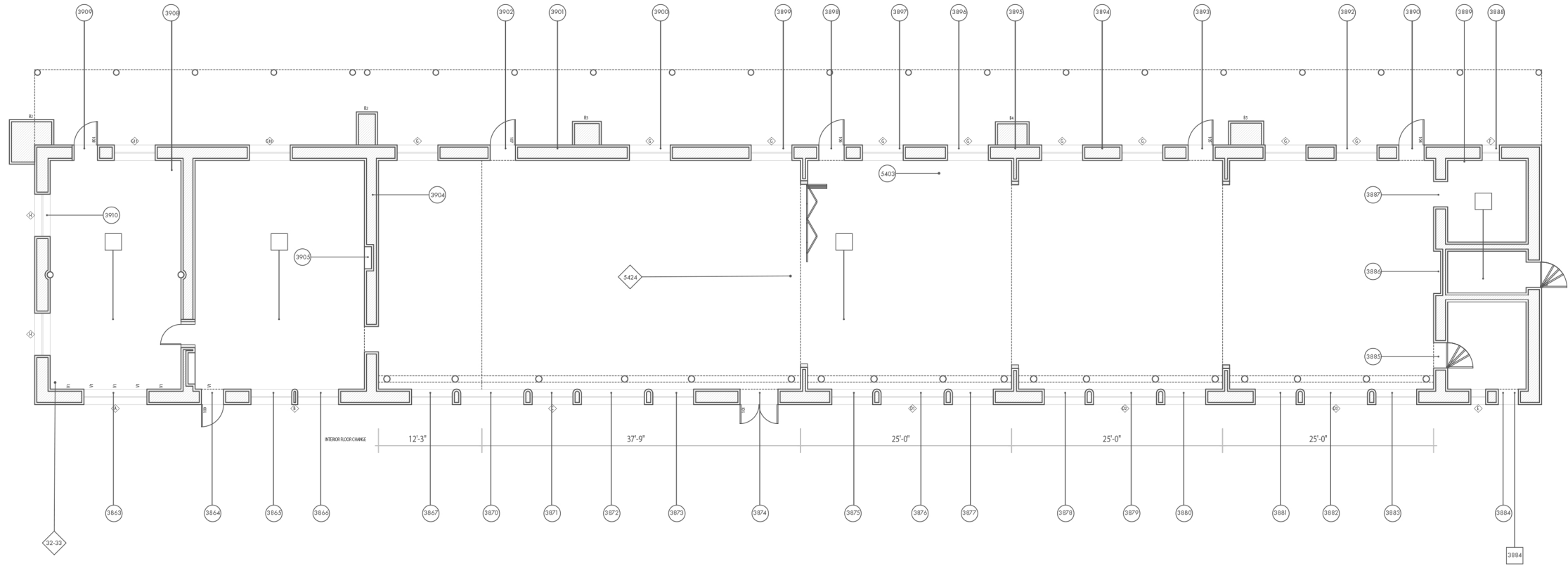
04.b Rehabilitation (continued)

350	09 6429	.10	Wood Flooring						
		7500	Refinish wood floor, sand, 2 coats poly, wax, hardwood	s.f.	\$4.78	7	665	\$	22,250.90
250	07 5419	8890	PVC Roofing	sq	\$365.00	3	74		\$81,030.00
253	07 6510	9900	Sheet Metal Flashing	l.f.	\$29.50		106		\$3,127.00
256	07 7123	5400	Gutter/Downspout	l.f.	\$16.20		100		\$1,620.00
189	06 1110	1240	Wood ceiling on porch	s.f.	\$17.45		1800		\$31,410.00
252	07 6119	1008	Metal Roof - zinc flat seam	sq	\$1,650.00		43		\$70,950.00
			SCHOOL BUILDING REPAIR SUBTOTAL						\$661,013.76
	22 0000		Plumbing - expansion from street						\$100,000.00
			Septic System - Site Utilities						\$85,000.00
	23 0000		Mechanical (HVAC)						\$110,000.00
			Propane system-outside utilities - 1000 gallon tank						\$15,000.00
	26 0000		Electrical						\$50,000.00
			Electrical utility work 3 phase system with transformer						\$65,000.00
			Civil Site Work - grading for access road for septic/propane						\$25,000.00
									\$1,111,013.76
			CONTINGENCY @ 15%						\$166,652.06
			Subtotal						\$1,277,665.82
			Overhead @ 10%						\$127,766.58
			Subtotal						\$1,405,432.40
			Profit @ 10%						\$140,543.24
			Subtotal						\$1,545,975.64
			Bond @ 2%						\$30,919.51
			Subtotal						\$1,576,895.16
			NMGRT @ 7.01%						\$108,372.89
			SCHOOL BUILDING REPAIR GRAND TOTAL						\$1,685,268.05





PVHPS - ST. ANTHONY PAROCHIAL SCHOOL

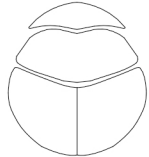


A1
A-101

FLOOR PLAN

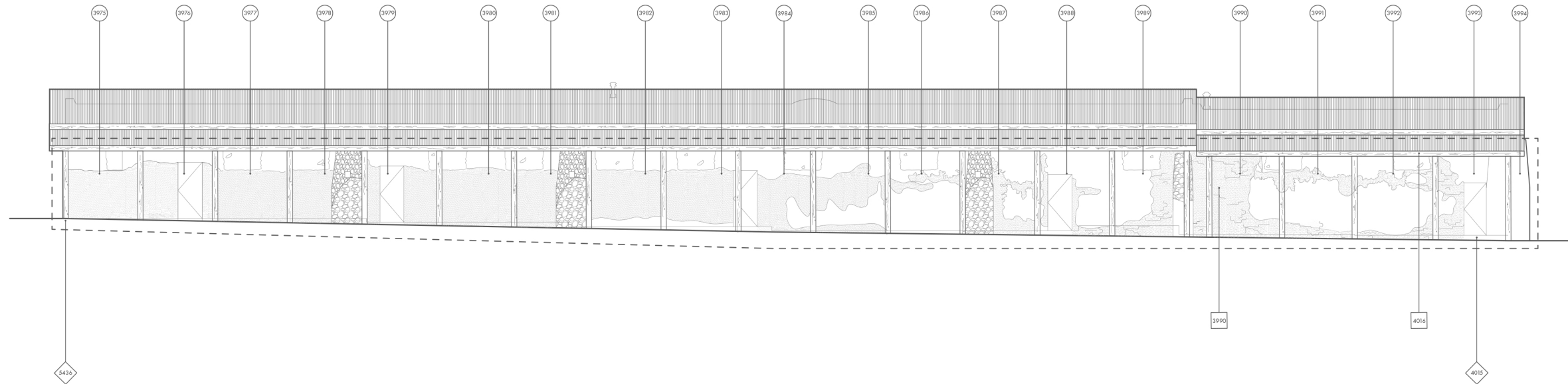


1/16" = 1'-0"



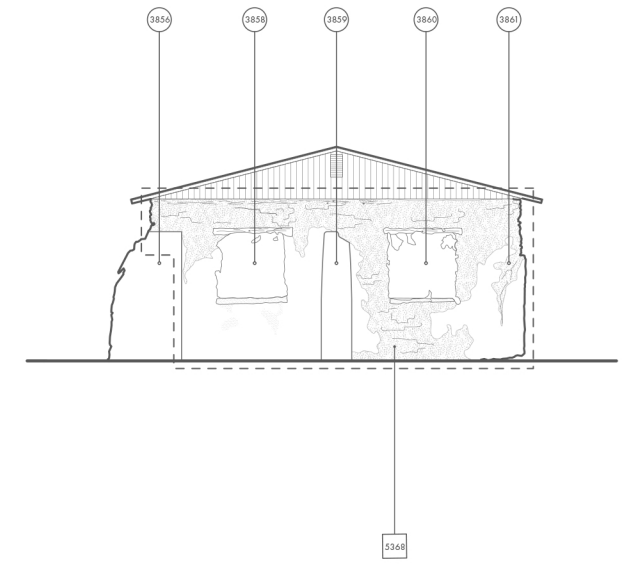
CSR architects, pc
220 gold avenue sw,
albuquerque, nm 87102
505 - 842 - 1278 csrnm.com

PVHPS - ST. ANTHONY PAROCHIAL SCHOOL



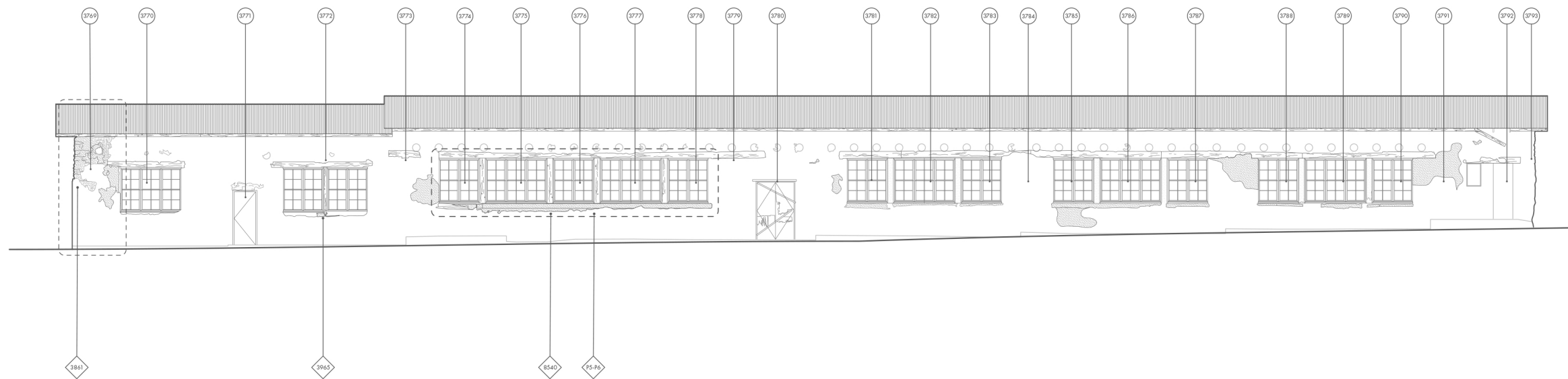
B1
A-201
NORTH ELEVATION

1/16" = 1'-0"



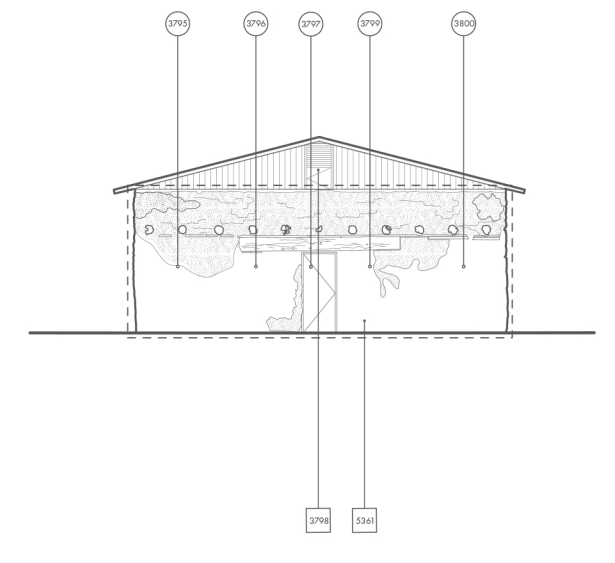
B4
A-201
WEST ELEVATION

1/16" = 1'-0"



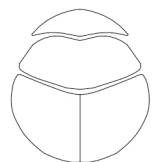
A1
A-201
SOUTH ELEVATION

1/16" = 1'-0"

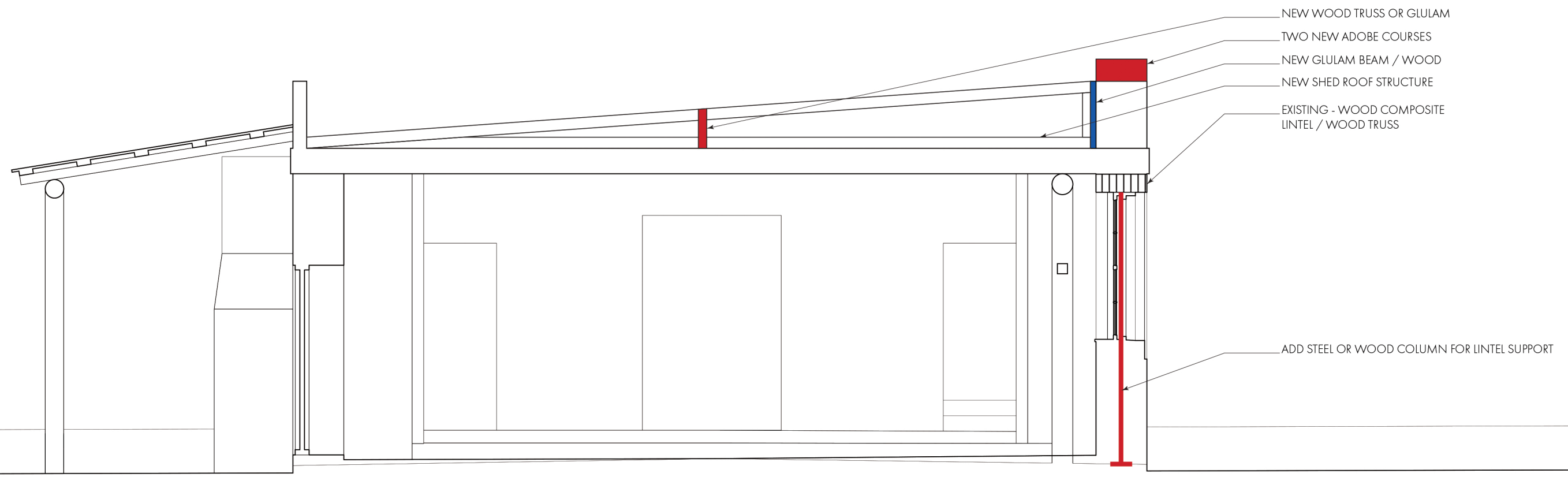


A4
A-201
EAST ELEVATION

1/16" = 1'-0"

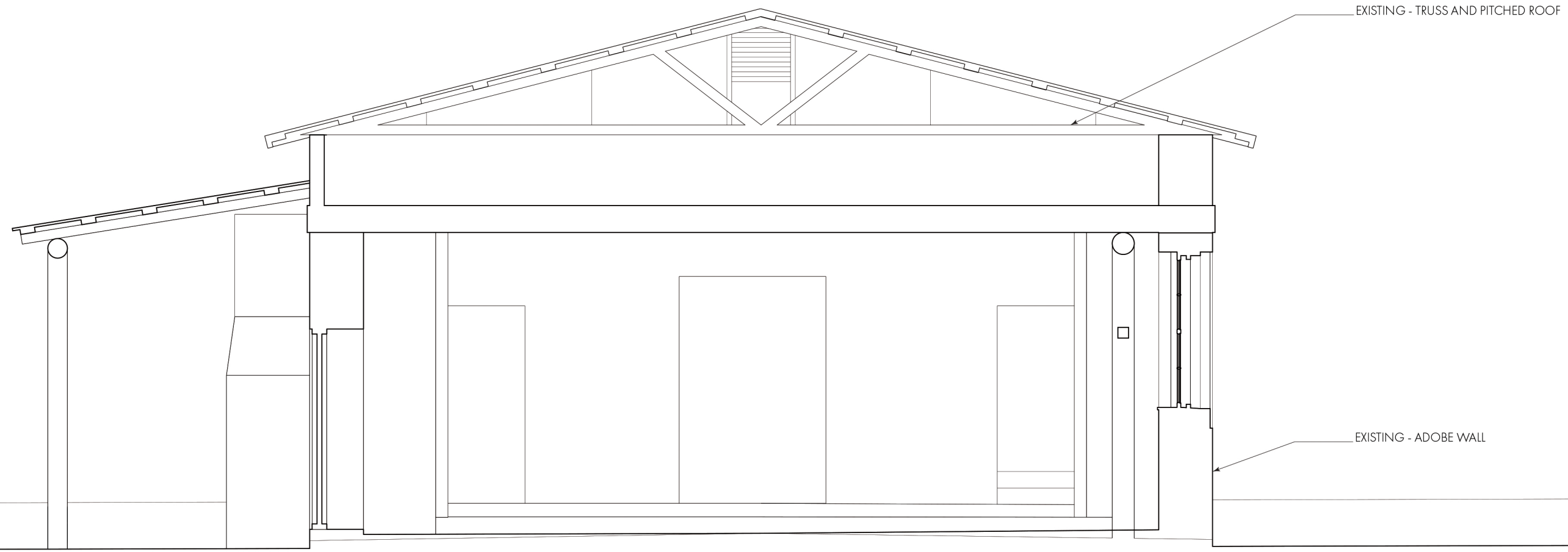


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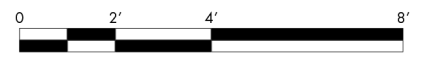
NEW PROPOSED CONDITIONS

B1
A-201

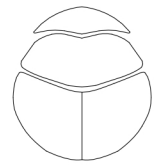
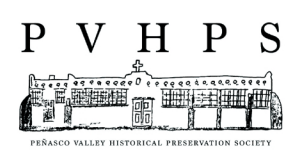


EXISTING CONDITIONS

A1
A-201



1/4" = 1'-0"



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 albuquerque, nm 87102
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9/16/2024

CIVIL ASSESSMENT

The subject site is 2.817 acres in Penasco, Taos County known as the Catholic School property. The site is adjacent to the north side of NM 75 at the intersection with NM 73.

FEMA MAP: This site is within Zone 'X' which is determined to be outside the 500-year flood zone as shown on FIRM Panel 35055C1100E dated 10/6/2010.

This site has one existing building located 150' +/- from the south property line which is the NM 75 right-of-way line. The school building has multiple finish floor elevations ranging from 7689.2 on the west end to 7693.1 at the east end. Either exterior or interior ramping may be required to provide accessible routes to multiple doorways for ingress and egress.

The site slopes down to the northwest at 2.5-3%. The existing building divides the site into two distinct drainage boundaries. Both drainage areas drain to the adjacent property to the west. Future building development and impervious areas will increase site runoff and require onsite storm water detention to limit the discharge to historic rates. Surface ponding is the most economical solution if it can be incorporated in the site design.

The site is served by overhead power with several power poles onsite. Additional power demands will need to be coordinated with the power provider. A water meter is located at the south end of the site near NM 75. Future development will likely increase the domestic demand and the meter size will need to be evaluated for potential capacity. There are two fire hydrants noted in the area – one west of the site on NM 75 and one north of the site on NM 73. A propane tank may be needed onsite if a natural gas provider isn't available in the area.

505.263.2905

P.O. Box 1273, Elephant Butte, NM 87935

scottmmcgee@gmail.com



SCOTT M MCGEE PE, LLC
CIVIL ENGINEER/PRINCIPAL

An onsite septic tank has been noted on the site survey which will possibly need to be replaced due to age and size. A percolation test is recommended as part of a Geotechnical study to help determine the leach field size needed per current N M Environment Department requirements.

Scott M McGee PE, LLC



505.263.2905

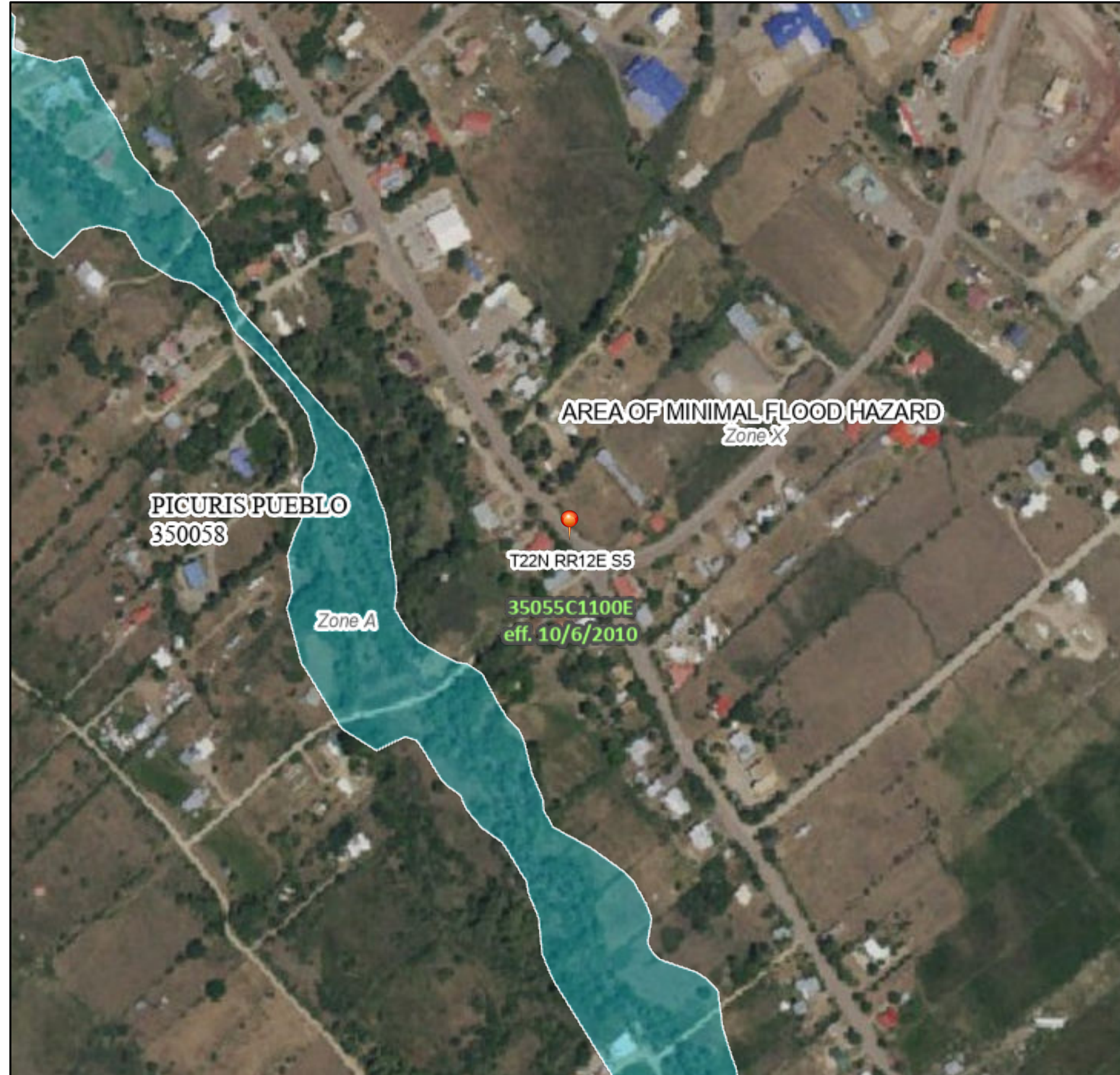
P.O. Box 1273, Elephant Butte, NM 87935

scottmmcgee@gmail.com

National Flood Hazard Layer FIRMMette



105°41'31"W 36°10'25"N



105°40'53"W 36°9'56"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
	Hydrographic Feature	

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

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**Structural Engineering Assessment Report
St. Anthony's School
Peñasco, NM**



**William M. Druc, P.E. Druc Engineering
430 Apodaca Hill St. Santa Fe, NM 87501
bill@druceng.com December 18, 2023**

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December 18, 2023

EXECUTIVE SUMMARY

This Structural Assessment Report is in regard to the St. Anthony's School in Peñasco, NM. Bill Druc, P.E. of Druc Engineering visited and inspected the property on June 15 and September 24, 2023 at the request of Tina Reames of CSR Architects in cooperation with the Peñasco Valley Historical Preservation Society (PVHPS). The primary purpose of the inspection and report is to evaluate the structural integrity of the building and provide direction for possible retrofit solutions. The goal of the PVHPS is to preserve and restore the historic character and cultural identity of the edifice with structural integrity. Elements under consideration include:

- The front adobe wall
- Site drainage and grading
- Foundations
- Adobe wall cracks and repairs.
- Plaster
- Wood lintels at windows and doorways
- Roof framing
- Floor framing
- Portal

Areas where reinstatement of the original design are possible include:

- Removing the columns, beams and footings added for structural support at the front (southwest) wall.
- Reinstating the "flat" roof.
- Revising the portal at the rear of the building.

OVERALL BUILDING STABILITY

From a structural viewpoint, building stability is of primary concern. Stability is the ability to withstand force, stress or movement without being distorted, dislodged, or damaged. Retrofit measures need to be based on concepts that address stability, the specific needs of the structure and its behaviors. The structural components of the building need to be working together with continuity and connectedness.

The primary goals of stability-based retrofits are:

- Structural continuity of intact walls firmly attached to floor and roof diaphragms. Intact walls are free of serious cracks, have competent blocks and free of voids.
- Complete unimpaired load paths between capable structural components. Loads must be distributed in such a way that no individual components are overstressed.
- Out-of-plane overturning stability due to lateral forces must be compensated with robust perpendicular shear walls.
- Competent foundations not subject to consolidation or movement and protected from moisture infiltration.
- Containment of wall material in the event of seismic activity.

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REPAIR AND STABILIZATION OPTIONS

Over many years of weathering, the Peñasco St. Anthony's School structure has become severely compromised. Which retrofits are required, possible and practical? Several stability-based retrofit options are being considered.

Grading and drainage deficiencies.

Over the years, moisture from roof and site drainage has been accumulating at the base of the walls. Moisture infiltration to soils underlying the foundation walls can consolidate causing movement and subsequent settlement. Walls are being undermined, deteriorating and cracking. This is a common problem at many older adobe buildings and has led to the collapse of some historic structures. A site drainage and grading plan needs to be designed and implemented so that there is positive drainage of roof and site moisture away from the building. This is a priority and can take place as soon as possible.

Foundation remediation.

The base of the adobe wall has been compromised by moisture infiltration. The soils underlying the foundation weaken when they are wet. The heavy adobe wall loads and weight of the roof on the weakened soils can cause settlement. Traditional stone foundations are viable and can be used as long as they are robust and are complementary with the existing soil conditions. If necessary, new footings can be added as needed. As part of the repair process, the entire building foundation needs to be revealed, evaluated and repaired. Once moisture infiltration has been controlled and if settlement persists, as evidenced by continued cracking in the adobe walls, it may be necessary to underpin portions of the building. The foundation repair is a priority and can be done in consort with the grading and drainage improvements.

Adobe Walls

Adobe walls can be repaired.

The crumbling base adobe blocks at the ground level have been inundated with moisture and have suffered through numerous freeze-thaw cycles. Basal erosion results in the blocks becoming friable and compromised. At some locations the blocks have totally decomposed. Damaged blocks can be carefully removed and replaced with sound blocks. It is most likely that most of the adobes at the base of the walls will need some remediation. Repair work needs to be done in small increments so as not to endanger the stability of the wall while it is being worked on.

Large cracks, mostly as the result of settlement, can be repaired by removing adjacent blocks and stitching or weaving new properly sized units into place, filling the void. All of the existing exterior stucco and interior plasters need to be removed in order to diagnose the extent of the cracks and in order to make the repairs. For safety's sake it is important to shore all roof framing and walls prior to any remediation.

Smaller cracks can be ameliorated by adding joint reinforcement across the cracks into adjacent blocks.

Broken or missing blocks can be replaced with new blocks that fit. Compatible earthen mortars are appropriate.

"Adobe Conservation-A Preservation Handbook" by Cornerstones Community Partnership is an excellent guide for repairing adobe walls.

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Adobe Wall at the front of the building.

It is apparent that there has been some movement at the wall. Further study will be helpful in determining the extent of the movement and its causes. We do see the deterioration of the vertical wood framing between the windows and its bearing condition on the adobe blocks. It is possible that there has been some settlement at some locations. The roof drainage has introduced moisture to the foundation which could soften soils and lead to displacement. Something needs to be done including replacing the vertical framing and bearing it on a substantial robust foundation. The structural remediation of the front wall will most likely include rebuilding the framing around the windows and also restructuring the roof framing to be able to take off the roof load from the lintels over the windows. The lintels need to be inspected, evaluated and repaired, strengthened or replaced.

Removing the interior columns, beams and footings at the front southwest wall that were added.

In order to remove the beams, columns and footings at the front wall the roof framing would need to be restructured. Apparently, the framing was added to prevent movement and a subsequent collapse. The existing roof would need additional framing in order to remove the added framing at the front wall. This could include new beams bearing on the wing walls that support roof framing that incorporates the existing vigas and new roof rafters. To reinstate the original look of the roof is an opportunity to add strength to the existing vigas, add insulation, roof slope and roof waterproofing. See the drawings in the architectural section as a possible schematic design going forward.

Plaster

Plasters need to be compatible so that moisture does not get trapped within adobe walls. Concrete stucco, and impermeable vapor barriers have been proven to be ineffective and contribute to earth block deterioration. Much of the cement based stucco that was on the building had been removed. Plasters need to be removed to actually see the extent of adobe damage.

Wood lintels and posts at windows and doors

At several locations we observed that the wood framing had rotted or was not originally properly detailed. This includes the condition of the lintels where there is severely compromised framing members and some splices of the framing over the window opening. In addition, the wood posts between the windows are bearing directly on adobe blocks. The adobe blocks do not have the strength to bear such concentrated loads. The walls also settled under the weight and weakened foundation due to moisture infiltration. Such conditions could have led to wall collapse. At some time, beams, columns and footings were installed at the interior to support the roof vigas at the southwest front wall. This action was apparently done to prevent the failure of the wall. The wood framing needs to be carefully inspected, evaluated, repaired or replaced. The framing of the walls needs to eliminate the concentrated point loads on the adobe. This is another priority. The additional beams columns and footing cannot be removed without addressing these concerns.

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Roof framing

At some time a pitched metal roof was built above and bearing on the original vigas and adobe walls. Wood struts and frames bear the new metal roof onto the older viga framing. The original vigas are still the structural framing elements and support the pitched roof above (see the attic framing photos on page 27 of this report). The vigas are original to the building and have supported the snow loads over the years, however, structural analysis has shown that the vigas are marginal, i.e. the safety factor is low. The roof framing needs to be securely anchored to the walls as per the goals of stability based retrofits.

Floor framing

The floor joists are pocketed into the adobe walls. At many locations the portion of the joist pocketed into the adobe has deteriorated. Additional joists have been attached to the originals at several locations for structural reasons. A new concrete footing to support the floor joists about 12” clear of the wall could be installed for floor joist support in lieu of the existing adobe wall. Concrete footings if needed ought to be installed away from adobe walls so as not to trap moisture. Inadequate venting, as present at this building, often creates mildew like conditions. Venting needs to be provided as well as insulation to keep the space comfortable when venting is added.

Portal

The portal, not original to the building needs to be replaced. Several deficiencies include a lack of bracing, and poor beam to column connections.

CONCLUSIONS-A CASE FOR ACTION

The way things are now is that there will be continuing deterioration of the adobe walls.

If nothing is done the existing conditions will worsen and could lead to a devastating collapse.

When a comprehensive program utilizing the stability-based retrofits are employed, the building will be safe and will last for a long time.

Structural retrofits create the possibility of peace of mind.

An immediate priority that could be implemented at low cost at any time is grading and drainage improvement.

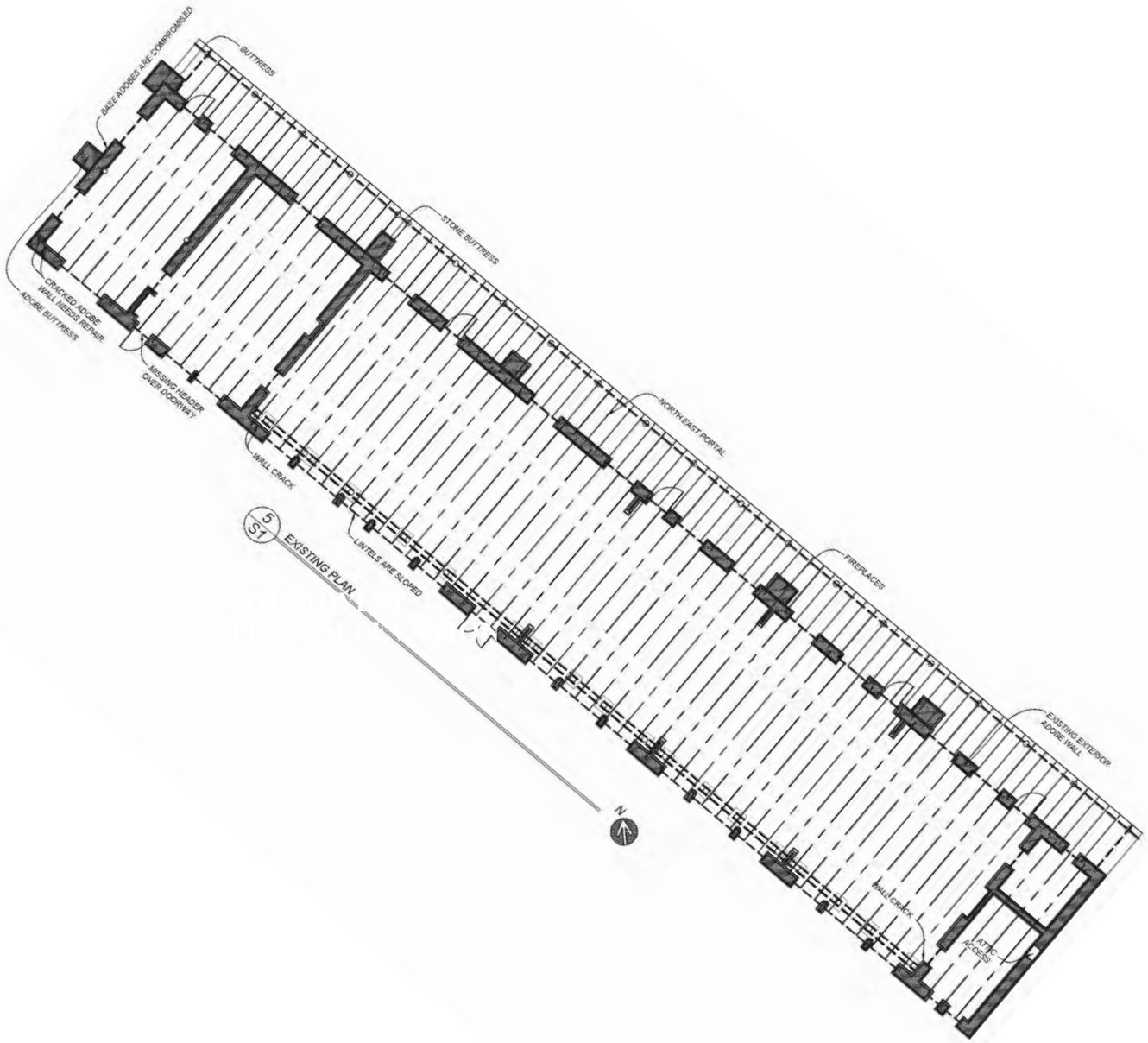
Adobe wall repair could be taken place when sufficient funding and labor sources become available.

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Birdseye view from Google Earth



PLAN VIEW



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OBSERVATION-GRADING AND DRAINAGE NEEDS IMPROVEMENT



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OBSERVATIONS



Examples of deterioration at the base of adobe walls due to moisture infiltration caused by grading and drainage problems.



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OBSERVATIONS-WEST CORNER IS FAILING



The adobe corner is separating away from the wall. Base of the wall is undermined. Rebuilding the corner and stitching into the remaining adobe blocks is necessary.

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OBSERVATIONS-NORTHWEST WALL (SIDE)



Northwest (side) wall.
Cracks in the wall
Base adobes are deteriorating
Adobe blocks are missing and decomposing.
Buttresses were added.

Rebuilding the corner and stitching in adobes at the significant cracks is required as is replacing compromised or missing individual blocks.

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OBSERVATIONS-NORTHEAST WALL (BACK)

Northeast back wall has some significant cracks that need to be repaired with stitching in



new compatible adobe blocks. Cement based stucco has been removed at some locations and needs to be removed.

The portal is structurally compromised.

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OBSERVATIONS



Stonework chimneys need repair or replacement.

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OBSERVATIONS



Poor grading and drainage contributes to the undermining of the front southwest adobe wall and needs to be re-graded.



Wood framing at the windows on the front elevation is severely deteriorated.

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OBSERVATIONS-SOUTHWEST WALL (FRONT)



Deteriorating wood framing, wall settlement and incompetent load path contributed to an unstable condition at the front wall.



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OBSERVATIONS-SOUTHWEST WALL (FRONT)



Adobe wall and vigas carrying the roof load, supported by wood lintels over window openings supported by wood columns bearing on adobe wall below.



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OBSERVATIONS



Load bearing wood columns are supported on deteriorating wood blocks and sills at walls affected by settlement. This condition needs to be addressed and repaired.



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OBSERVATIONS



Roof loads are transferred by wood columns between the windows to the adobe wall below. Walls have been subject to moisture and erosion of the adobes at the base of the wall. Point loads on the adobe are unsustainable.



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OBSERVATIONS



Concrete sills are cracked revealing the wood framing that supports the lintels bearing the wall and roof weight. The point load bears on the adobe wall beneath the window.



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OBSERVATIONS



Base of structural wood columns between the windows are deteriorated. Point loads are supported directly onto adobe walls already compromised by base erosion and settlement.

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OBSERVATIONS-SOUTHEAST WALL (SIDE)



Southeast side wall has an access panel to the ‘attic’ between the original viga roof and added pitched roof.

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OBSERVATIONS-INTERIOR VIEW FACING SOUTHWEST WALL (FRONT)



Additional framing columns and beams supported on concrete piers were added to support the original roof vigas. It is the desire of Penasco Valley Historical Preservation Society (PVHPS) to remove the added framing. To remove this framing would require substantial structural remediation of the wall.



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OBSERVATIONS-INTERIOR VIEW FACING THE FRONT SOUTHWEST WALL



Additional columns and beams framing supported on concrete piers was added to support the roof vigas at some locations. At the south end the room with the dropped ceiling was not affected.



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OBSERVATIONS-INTERIOR VIEW



Adobe walls are cracked and plaster is peeling off the wall indicating moisture infiltration and settlement.

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OBSERVATIONS-INTERIOR VIEW



Additional columns and beams framing supported on concrete piers was added to support the roof vigas.

Cracks at the adobe wall indicates some settlement.

OBSERVATION

Wood framing at the floor. A lack of sufficient crawl space venting contributes to poor air quality.



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OBSERVATIONS-ATTIC VIEW



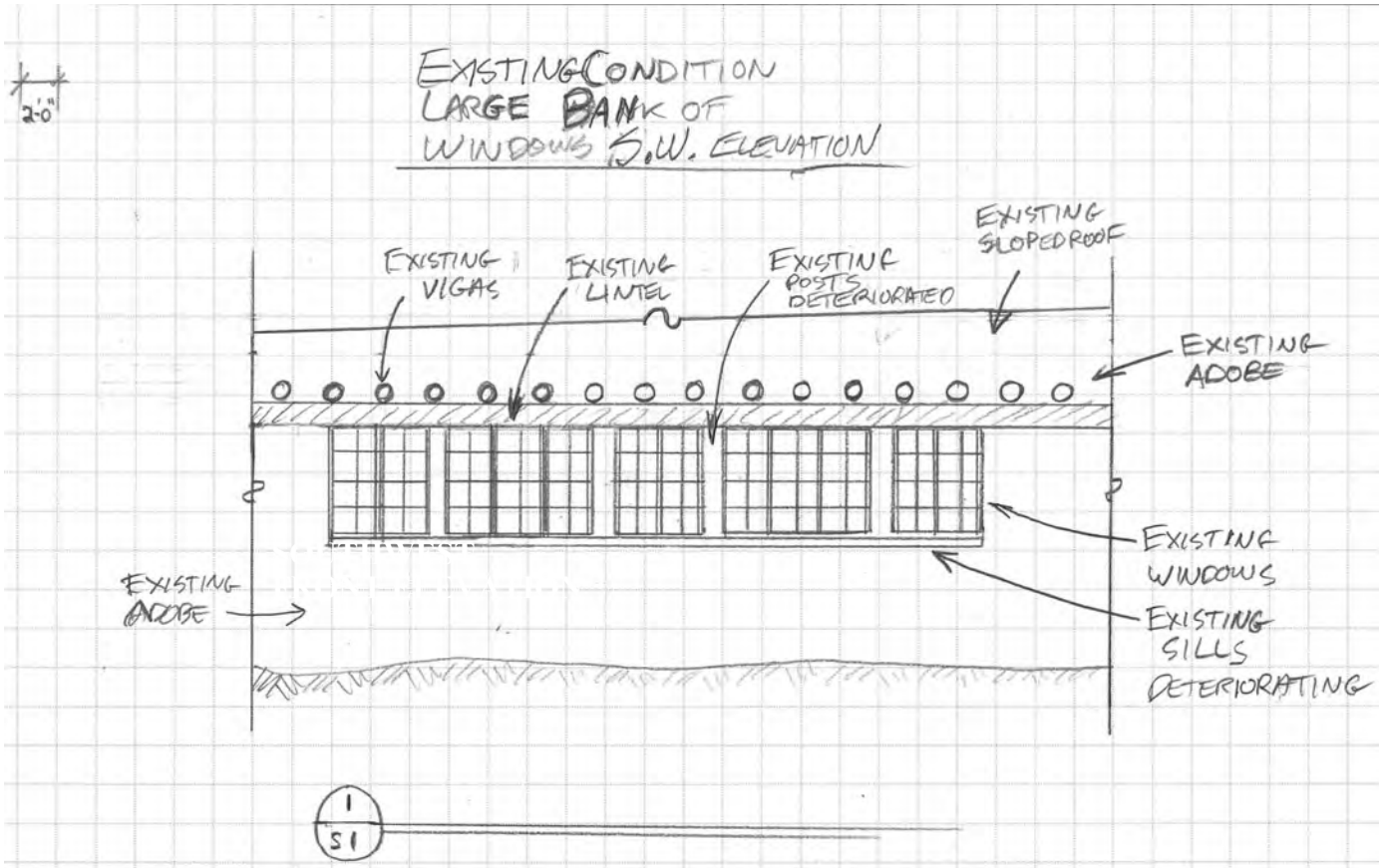
A pitched framed roof with wood members was built above the original flat roof. The newer roof bears directly on the older viga roof. The viga roof is the structural roof that supports the pitched roof above.



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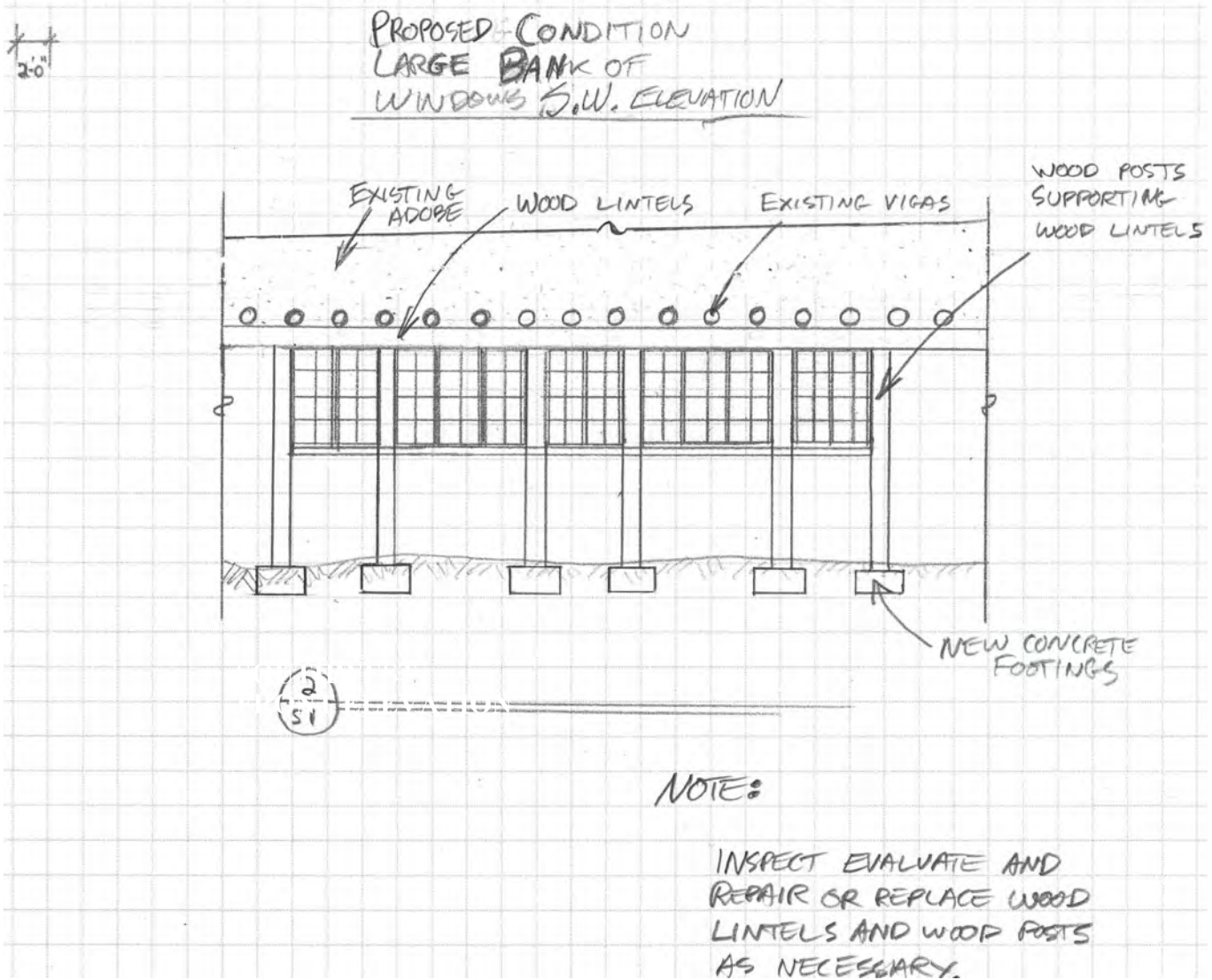


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EXISTING STRUCTURAL ELEVATION VIEW SOUTHWEST WALL (FRONT)

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POSSIBLE STRUCTURAL ELEVATION VIEW SOUTHWEST WALL (FRONT)

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The next step is to determine the path forward.

Various deficiencies as well as ideas and possible solutions have been presented in this report.

Once determined which remedies are suitable for the building, a design phase that produces working drawings for construction is necessary.

Budgeting and gathering of resources can follow.

Druc Engineering is available for additional conversations, support and development.



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December 18, 2023



TESTUDO ENGINEERING

MEMORANDUM

Date: May 7, 2024
To: Tina Reames; CSR
From: Wayne Yevoli; Testudo Engineering
RE: Penasco Valley Historic Preservation Society Assessment
Project #: 24023

The purpose of this assessment is to review the existing systems and provide our recommendation for possible systems for the building.

The existing building is a 1-story building constructed of adobe construction with a pitched roof over the original flat roof. The building originally had separate classrooms with individual heating systems and separate small restrooms. The construction and current conditions of the building are described elsewhere in the entire report.

The building is vacant with most systems removed at this time. Our assessment is based on site observations and the possible rehabilitation.

Utilities

Electrical:

There is no electrical power connected to the facility. A 240/120V 100-amp panel remains but the meter and connecting power line to the building have been removed. An existing 3-phase power line (65KV) bisects the property east to west. See attachment 'A' for location. This is where a single-phase transformer is located that formally fed the building.



Propane:

The existing propane system is still piped to the building for heaters previously located in building to heat. The propane tank has been removed on the west side of the property.

**Water:**

The domestic water system has been removed from the building. Some piping remains throughout the building but is galvanized and will not be reused.

Sanitary Sewer:

The sanitary sewer is still connected (as far as visual aspect) in the building. A septic tank was discovered on the northside of the building. It is probably not sized for the future use and it will be removed.



Interior SystemsMechanical:

The original plumbing systems has remnants that remain including 2 restrooms (single toilet rooms) and 1 exterior restroom with a trough urinal. Propane was originally piped into the classroom heating units. Most of the heating units have been removed.

Recommendations

One possible system is to set ground mounted air handlers (gas fired heat and DX cooling) on the backside of the building using either underfloor ductwork between the existing floor joists or by sidewall through the existing walls. We would expect there would be 3 or 4 units.

The second way to provide air conditioning would be to provide a hot water heating system and evaporative cooling system. We would recommend that a small boiler system with pumps and a redundant fin tube heating be installed in the building for heating and ground mounted evaporative cooling units be utilized to cool the building.

We recommend a new septic tank and septic field be designed for the sanitary sewer system. As part of this work, a percolation test would need to be conducted for soil drainage performance.

A new electrical system from the existing 3-phase system which bisects the site. Power would be routed to the building underground where a 300kVA transformer would be installed and a main distribution panel installed. We would expect that to support market days that 50-amp food trucks or similar items would be supplied.

In addition, normally power for receptacles, lights, equipment, etc. for the building would be supplied from the subpanels in the building.

If you have any questions, please feel free to contact me.

Regards,

