City of Ely, Nevada Historic City Hall and Fire Station Rehabilitaion

REPORT

A Historic Structures Report

RAFI Architecture and Design
155 South Water Street, Suite 220
Henderson, Nevada 89015

Robert A. Fielden, Arch D, NCARB, FAIA, Principal

City of Ely, Nevada Historic City Hall and Fire Station Rehabilitation

An Historic Structures Report

RAFI Architecture and Design

155 South Water Street, Suite 220, Henderson, Nevada 89015

702.435.7234

Robert A. Fielden, Arch D, NCARB, FAIA, Principal

rfielden@rafiarchitecture.com

Table of Contents

Appendices

Preface

This Report is organized and structured to provide the City of Ely, Nevada and its residents with a program and plan to rehabilitate the historic downtown civic property; and to extend its useful service life to the community for a minimum of an additional one-hundred years – recognizing there are operational, maintenance and equipment replacement expenses that will occur through the continued use over time.

This report was funded with assistance from the State of Nevada Commission for Cultural Centers and Historic Preservation.

The value of the Historic Structures Report is:

- It serves as a primary planning document for future decision-making
- It helps establish significant dates and periods of construction
- It serves as a guide for scheduling and budgeting work
- It offers design recommendations for rehabilitating the building
- It provides a compilation of key information regarding the history, significance, and conditions effecting the building and its future at the time of the survey and investigation
- It serves as a reference document regarding future uses, management and operations of the building and property
- It is a tool for design professionals to use in interpreting and rehabilitating the building, its building systems, its structural systems, its electrical and communications systems, its plumbing systems and its heating, ventilating and air-conditioning systems based on the building's history and physical evidence
- It's a resource for future research, investigation and discovery
- It provides a record of completed work to date

The ultimate goal for this effort is to create a path of action that successfully leads the community and its leaders to having the historic Ely City Hall and Fire Station listed on the National Register of Historic Places, a program administered by the National Park Service in Washington, DC.

Accordingly, the program and plan that follows is strategic in nature. First, it establishes a process for nominating the building to the National Register that successfully addresses

criteria established by the National Park Service. When a final nomination is submitted to the State Historic Preservation Officer for approval by that office and the Nevada Board of Museums and History, if approved, the nomination is forwarded to the Keeper of the National Register in Washington, DC for its review and acceptance.

Once listed on the National Register, the property and structures are recognized for the significant value they possess as an important American treasure; and are eligible to receive federal assistance in rehabilitating the property and structures.

Second, the program and plan herein provides a schedule of future activities and events necessary to accomplish the work, including a tentative “Best Estimate” of construction costs based on 2017 pricing for rehabilitating historic properties.

The technical information contained within the Report is compiled from three investigations of the site and surroundings and the documentation of information uncovered through each of the investigations. With this project there has been continuous communications with the City of Ely and others regarding the work through RAFI’s FTP site. Second, interim reports addressing on-site investigations and research performed by RAFI and its consultants have been directed to all parties participating in this process, and third, outside research performed by RAFI staff using established information seeking processes as well as information and assistance provided by Nevada SHPO offices in Carson City, Nevada has been conveyed to all participating parties.

In addition to RAFI staff, the project team for this work and these investigations includes Mel Green and Associates working in conjunction with Risha Engineering Group, structural engineers, and PDA and Associates led by Tom Foster, PE, electrical engineer, with Moe Kazemeini PE, providing mechanical engineering assistance. RAFI staff for this project included its project director, Chris Gaydosh, a Doctor of Architecture Candidate at the University of Hawaii, Manoa, Johny Corona, M. Arch, UNLV, Alfred Pulido, M, Arch, UNLV, and Eduardo Gonzales, M. Arch Candidate, UNLV.

Each aspect of this report has been developed in concert with community volunteers; and every segment of the report has been reviewed for acceptance and approval prior to finalizing and publishing this document.

It’s important to note from the earliest discussions with Nevada SHPO, there is little information currently available through the state’s office archives to help direct, support or supplement the work this exploratory investigation and report pursues. Consequently, studies

related to various segments of work may perhaps be more inclusive than ordinarily necessary. Additional work has been performed by the team to assure the team's results are as accurate, informational, and supportive as possible in helping to guide and direct the community's efforts ahead.

To assist the community's future endeavors, all of the project's worksheets, photographic catalog and other information of interest uncovered is attached to the Report as Appendices. Additionally, the U.S. Department of Interiors has created: The Secretary of the Interiors Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. The guidelines within this document establish compliance requirements necessary for achieving the Secretary's Standards. Please refer to pages 75 through 162 for recommendations on how to address various issues associated with Rehabilitation projects. The "Not Recommended" actions provided are equally valuable to all future Ely endeavors.

The team wishes to thank the City of Ely for its guidance and access to what existing information it possesses, and to Virginia and Glenn Terry for opening their personal library of historic resources and papers for the team to use, and in sharing their "first hand" knowledge of Ely's history. The materials provided by the Terry's consist of the vast majority of resources included in the attached project Bibliography. Special appreciation also goes to Jennifer Lee, the City of Ely Deputy City Clerk, who has provided us with documented information from previous Council Meeting Minutes and sought out answers to the many questions regarding earlier days, events and prominent leaders in Ely the team posed.

Information and Findings Guiding the Report

The National Register of Historic Places evaluates properties applied to the following four criterion: a) criteria that is associated with events with historical significance; events occurring within the City of Ely and the community-at-large - where the city council was required to meet, respond and act upon the critical nature of important issues facing the community over time; b) criteria that is associated with the lives of persons significant in our past – citizens, community leaders and others associated with important events occurring within Ely City Hall, c) criteria that embodies distinctive characteristics of type, period, or method of construction that possess high value – including location and setting, planning and design, scale, materials used and aesthetic applications; and, d) criteria that has yielded information important in prehistory or

history regarding the role of the building in the community's evolution from its earliest beginnings to events of today – and its rehabilitation for future purposes..

The submission requires two essays, one that address the physical characteristics of the property and another describing the historical significance of the property. This historic significance is reflected in and through the four phases of a community's evolution as described by Nevada SHPO.

Determining the correct criterion for nomination and preparing the two informational essays are critically important to pursuing a successful strategy and process for registry for the historic City Hall and Fire Station.

For the RAFI team, this initial phase of contributions are conceived as an interdisciplinary approach where its worked to meld planning, design and design technologies with the professionally recognized approach undertaken by related social scientists. In the preparation of this effort, the RAFI team has focused on serving objectively as recorders and reporters.

The significance of the historic Ely City Hall and its presence within the community clearly represents through its current architectural condition and setting significant importance as a civic endeavor; including its land use partnership with other existing civic functions and purposes; it's positioning as a central focal point along the edge of downtown within view of the historic Lincoln Highway, and its well-maintained condition and continuing useful purpose.

Likewise, the building's rich value as a cultural asset to residents and visitors clearly portrays the building's political and governmental importance for nearly a century of continuous public service in Ely.

According to the Secretary's criteria C: *The embodied characteristics of this building set it as a significant and very distinguishable entity apart from the city specifically from a visual aspect.*

In meeting criteria A, since 1928, the building has stood as the symbol of Ely's open, civic and democratic governance.

According to early city council meeting minutes, after the city's incorporation in 1907 the council convened in county facilities until it constructed this new civic facility on Mill Street. Information provided by Jennifer Lee indicates that on, November 5th, 1947, the Ely Women's Association approached the Council regarding new quarters for a public library.

Later on November 20th, of 1947 the City Council gave permission for the library to be housed in the building's Council Chambers and that the council also afforded the use of space within the city hall to house offices for the local Chamber of Commerce.

On December 20th of the same year, the City Council voted to donate shelves and decorations for the new public library room.

Soon after, on January 20th 1948, the City Council voted to donate $500 for the establishment of the public library at City Hall. After converting the council chambers to the library, the city council began meeting in the offices of the local water department.

Moving Forward

For those within the community that will work to move this project forward in the future, it's important to know in the preparation of the future research and the essay on *the historical or cultural background of the property*, from an archeologist's perspective: why, where and who settled in White Pine County and what influence did those pioneers have upon Ely's evolution?

From the perspective of a social anthropologist, it's important to know why early pioneers were attracted to Ely; where did they settle within the community; how did they come to create its unique social patterns and live neighborly, productively and peaceably amongst one another over time. Also, what were the unique behaviors new residents possessed that influenced Ely's earliest development as a community with its sense of civic life?

From the geographer's area of interest, it's important to recognize and understand where and why people settled where they did within Ely, and how did development patterns emerge over time? It's important to also know why the City Hall and Fire Station is constructed where it is; why is it designed as such; where were its building materials and products manufactured? How were the materials and products delivered to Ely's remote location for construction?

Within all of these areas of interest and influence, the historian serves as the first frame of reference for knowledge and information regarding the local community and its evolution over time. Ely's *Raison de Etre*, its society, its people, its economy, its civic life and its historic City Hall and Fire Station are all part of the historians' contributions to the body of knowledge necessary for this project to be successful.

Many scholarly writings uncovered through the team's research focus on Ely's history and how it emerged to become the seat of government for White Pine County. Most of the writings describing its early history however concentrate on the final two decades of the

nineteenth century, when Ely replaces Hamilton as the County seat for White Pine County - and the pivotal role copper played in the early twentieth century securing the community's permanence and prominent future.

A guide to assist future endeavors in seeking resources relative to each area of disciplinary interest in support of the registry nomination is provided in Appendix A.

Ely Nevada: Historical Significance of City Hall and Fire Station

The historic Ely City Hall and Fire Station may be viewed critically by some others as having a limited presence as an architectural example of a "distinctive representation of a recognized type or style of architecture or another form of structure as necessary''. This limited perspective as an assumption is incorrect when one recognizes the visual importance and public stature of the Ely City Hall possesses as an active *Center of Place* for civic life for almost 90 years. According to Nevada SHPO, specifically at a local level, the building's respect, public popularity, roles and position within the community offers a strong supportive argument "for an association or associations with significant persons, events, or *movements in American history and culture*". Since its construction and formal opening in 1928, this simple, locally executed, straight forward iconic brick masonry building represents the earliest of the modern architectural movement in the western sector of the United States. It's simple masonry exterior with wood and steel windows, and metal trim has a high integrity of architectural design often reflected in much newer buildings.

The permanence of the solid brick construction represents a metaphor of the city's strength, its leadership, sustainability and political integrity for almost an entire century – where her once neighboring, competing communities are now mostly ghost towns. In addition to the building's importance in politics and local government since 1928, the City Hall and Fire Station serves as a portrait of the community's resilience, experiencing a timeframe of extreme economic fluctuations from booms to busts; seasonal floods through the city, along with blizzards and fires.

Even today, facing the uncertainties of tomorrow, the historic City Hall and Fire Station remains a strong visual symbol representing Ely and the community's long-term continuing strength and perseverance - for residents and visitors alike to observe.

Documented Building History

While the team in its investigations uncovered little new documented historic information regarding the building it did learn something about the building's architect and engineer. According to City of Ely records, the building was designed by the city's engineer at-the-time, Frank W. Millard. Millard was a graduate in architecture from the University of Colorado. Millard came to Ely at age 22 with his father in 1902 to study and evaluate tailings from the dormant Chainman's Mine.

Encouraged by the remaining value of the discarded ore, Millard and his son remained in Ely to reprocess, extract and barter the sale of the valuable remaining discard for profits. Later, Frank joined the city and became its city engineer. A number of today's buildings in Ely bear his name as the architect of record. At the end of his career, as retirees he and his wife left Ely and moved to Salt Lake City. His son Robert, as an adult, practiced in Ely and also later served as its city engineer. Early in his own professional career its likely Robert assisted his father in his practice and in developing many of the city's building projects.[1]

Up until the date of this report, it appears no existing drawings of the original city hall building have been recovered by the city or through Millard's practice archives. The city does have a limited set of drawing documents dated 1950 for the construction of the two additional fire department bays that according to the White Pine County Tax Assessor's office were added in 1952. It appears from the assessors' office records, there were other additional changes made to the city hall property that year (1952) as well that are addressed herein.

A second limited set of drawings in the City's possession dated 1973 address interior modifications constructed at some later time. These drawings indicate the addition of the building's current interstitial space that is used for storage, possibly the addition of new aluminum windows and brick infills to accommodate the new floor framing for the interstitial space, and possible modifications to the building entry along with changes to surface grades to accommodate access by the disabled.

At some point in time, possibly with the changes referenced by the 1973 documents, the gabled parapet above the main entrance of the city hall, and the original roof mounted flag pole were removed. Both could have become significant potential concerns. Since the original building was constructed of unreinforced masonry, extremely high wind loads or a seismic event

[1] "*A Rich Failings Pile Attracted Ely, Its First Architects," City of Ely Centennial* (Ely, NV), 1987.

could cause the parapet to fail – and fall. Extremely high winds could also rip the flag and pole from its roof base, damaging the structure and possibly injuring people below.

A number of changes to the property and building described herein are noted as "*possibly"* because there is no existing documentation pertaining to the construction alteration or when they occurred - other than the limited plan drawings available and visual on-site observation of completed modifications.

Adding to the realm of the *unknown* in this situation is the absence of any building improvements identified by the county's tax assessor evaluation for the city hall property for that year. Perhaps the work associated with these undocumented changes were performed by city personnel – or the project was not officially permitted through the county.

Architectural and Engineering Evaluations

For the historic architect using the US Secretary of the Interiors Standards for the Treatment of Historic Properties, her or his principal role is to document the life of a community's architectural resource; generally, one that is significant and has played an important role in the community's evolution and development. Documenting a building's life includes identifying changes to the structure over time and recording when and how those changes occurred. In instances where changers are not historic or are not critical to the health, safety and public welfare associated with the structure, appropriate means to remove changes and return the building to its original character are equally important.

When an architectural asset is to be rehabilitated for continued purposes, it's important to also analyze existing conditions to determine and incorporate whatever changes are necessary for the facility to function as efficiently and as effectively in the future as possible; recognizing that other than public health, safety and welfare improvements, new alterations must be easily removed if and when required without damaging the original building.

Preserving the past through rehabilitating important architectural assets not only symbolizes respect and appreciation for those who came before and the conservation of resources as community assets, preservation portrays to others the community's commitment to cherishing social order, it's culture, humanity, architecture, art and its futures ahead.

Every historic rehabilitation and/or restoration project requires its own unique process of inquiry in seeking information and knowledge that hopefully leads to added enlightenment. With the historic Ely City Hall and Fire Station, RAFI has followed an approach that in effect peels back the effects of time that includes later alterations and additions - to better understand today how the building was originally designed and constructed. With little access to historic information, documents or drawings, there is never a guarantee what is observed or understood to be the building's origins are one hundred percent accurate.

Even in face-to-face conversations and discussions with early, long-term Ely residents, there are only hazy remembrances of what existed then or occurred inside the building over the years. Current memories are vague in terms of where original office spaces were located, where staff areas existed and when and where internal changes occurred. As a child, Virginia Terry lived near the building and frequently used the public library located on the second floor at the south end of the building. She remembers other than the library all of the other doors within

the building were closed – and as a child she never had any reason to know or even wonder what occurred in any of the offices and areas behind the closed doors.

To provide as much assistance to the city in the future with this project, in its initial investigations, in addition to basic forensic inquires the RAFI Team conducted some simple investigations in archeology and social anthropology to better understand early community life in Ely; its culture, living patterns, human behaviors; design technologies of the time, design values, economics, construction technology and the community's access to building materials, to better appreciate, if not to better understand the history of the project and its evolution over time.

Of special interest to RAFI's Team efforts:

- Are there any unique construction methods or materials that can be found in the construction of the building?
- Are any replacement materials or existing building components still available? If not, can replacement parts be economically or feasibly reproduced?
- What is the most economical way to seismically stabilize the unreinforced structure?
- What is the most appropriate way to remove non-historic additions and non-compliant alterations?
- How is the best way to blend historic heating, electrical and lighting systems with current code compliant and energy efficient technology?
- What will historic improvements to the building cost?

These interests as well are addressed in this report. Beyond RAFI's inquiry, an additional set of questions needs answers regarding the historic Ely City Hall and Fire Station. These questions go beyond the team responsibilities for this initial phase of investigation and work.

The first set of unknown issues deal specifically with the site, its topography, the location of existing infrastructure – and how well do these original systems perform today. The full site needs to be surveyed and studied in terms of seasonal rainwater and underground water that frequently surfaces and collects in the playfield to the west, and the influence if any the water has upon the designated building parcel and its soils.

A full survey is also needed to establish the current topography, any easements and the location and sizing of existing underground and overhead utilities; and to determine what

changes are necessary to properly prepare the property, the designated parcel and revised building needs for future uses. Additionally, the existing above and below ground site infrastructure needs to be evaluated to determine if improvements or upgrades are necessary to adequately serve the property over the next 100 years of anticipated use.

The second, closely connected concern relates to site soils. From discussions with staff, there appears to have been a significant presence of water over time that moves (or has moved) across the property and through the site underground. A forensic site and soils investigation independent of this study has been undertaken that provides recommendations to mitigate problems that were encountered in their soils investigation. While ground water was not encountered, an additional investigation is needed to determine if the foundations and the building's basement are properly protected from any future flooding. Structural building enhancements are most likely of little value to the building's long-term stability and use if the foundations are not protected. This level of added investigation can be incorporated with the work associated with the future foundation enhancements recommended in the soils report.

Third, a comprehensive hazardous materials investigation and report is necessary before any construction can occur. This investigation is necessary to identify any asbestos, lead or other hazardous materials existing within the building and to provide a recommended plan, timeline and budget as to how best mitigate any issues uncovered.

In correspondence dated August 31, 2015, Jim Bertolini of Nevada SHPO provides a comprehensive approach to applying for the National Register of Historic Places and in rehabilitating the historic Ely City Hall and Fire Station. The RAFI team has used this document and approach in preparing its work. Bertolini's SHPO correspondence is included with this report as Appendix B.

Historic Ely City Hall and Fire Station: Site and Development Analysis

At the time the original project was constructed, RAFI was informed the building sat alone on a segment of undeveloped property one block west of Ely's original main street: Murry Street, and one block south of Aultman Street, which is also designated US Highway 50 (the Historic Lincoln Highway). The city hall and fire station property is only a portion of White Pine County Tax Assessor's parcel number: 0128304. The site's global positioning is 39 degrees, 14 minutes, 48 seconds North by 114 degrees, 53 minutes, 14 seconds, West. The current sub-parcel on which the facility and proposed addition currently sets is designated solely for this project. It contains 29,800 square feet.

The building's address is 501 Mill Street. With its original planning and design, the city hall and fire station is located on a separate sub-parcel of the park where its primary building elevation is centered on the west termination of Hayes Street in Ely. It's positioning and vertical height creates a strong visual focal point for pedestrians and drivers on or along Mills and Hayes Streets; it also provides a center of "*civic place"* that enhances the character of other surrounding buildings and other buildings nearby. With the setting of the park as its background, the building's value as an asset, civic character and prominence is greatly heightened.

To the west of the project sub-parcel lies the remaining area within the county assessor's designated APN site. The overall site consists of a community park that includes turfed areas and amenities for hosting baseball, football, soccer games and other outdoor events along with a separate enclosure area for a playground for younger children. A fence currently separates the park and playground area from the city hall project sub-parcel.

Vicinity Map of Historic Ely City Hall

The city's park site is located at the foot of Murry Canyon and Murry Creek where seasonally collected snowmelt and rainfall collects and continues draining downward into the lower valley. The soils beneath the park's playing fields are frequently saturated with spring

water that rises near the surface. It is commonly believed that seasonal water flowing beneath the park travels underground through the city hall and fire station sub-parcel where it is collected in infrastructure installed beneath Mill Street. From there the drainage continues onwards into Gleason Creek via the city's existing storm drainage infrastructure.

It was originally thought that building settlement observed near the northwest corner of the1952 fire station addition was a product of exposure to underground water and/or ponding water that collected near the corner over many decades. The soils report indicated no findings of underground moisture currently, and that the foundation failed because of low quality native soils supporting the weight of the masonry wall.

The early historic photograph of city hall and its one-bay fire station provided by the city for this report includes portions of Mill Street and the sidewalk to the eastern edge of the sub-parcel. In the photograph the street is lined with *Boleana Poplar* trees. From the photograph it appears that at some unknown time perhaps as many as eight (plus or minus) of the original poplar trees were removed along the sidewalk near the street. The removal in all probability was performed to create additional access and parking for people visiting the building.

With regards to landscaping for the property, SHPO suggests restoring the edges to more closely depict the site's original context. This however is secondary to addressing the sub-parcel's structural weaknesses and addressing the facility's new site services, infrastructure and utilities prior to completion. The trees previously removed should be replaced with new poplars to support rehabilitation, provide a partial *restoration* of the historic context and to restore portions of the original landscape. RAFI's proposed option for future development includes returning the trees to their earlier probable placement along the entire length of Mill Street northward to the corner.

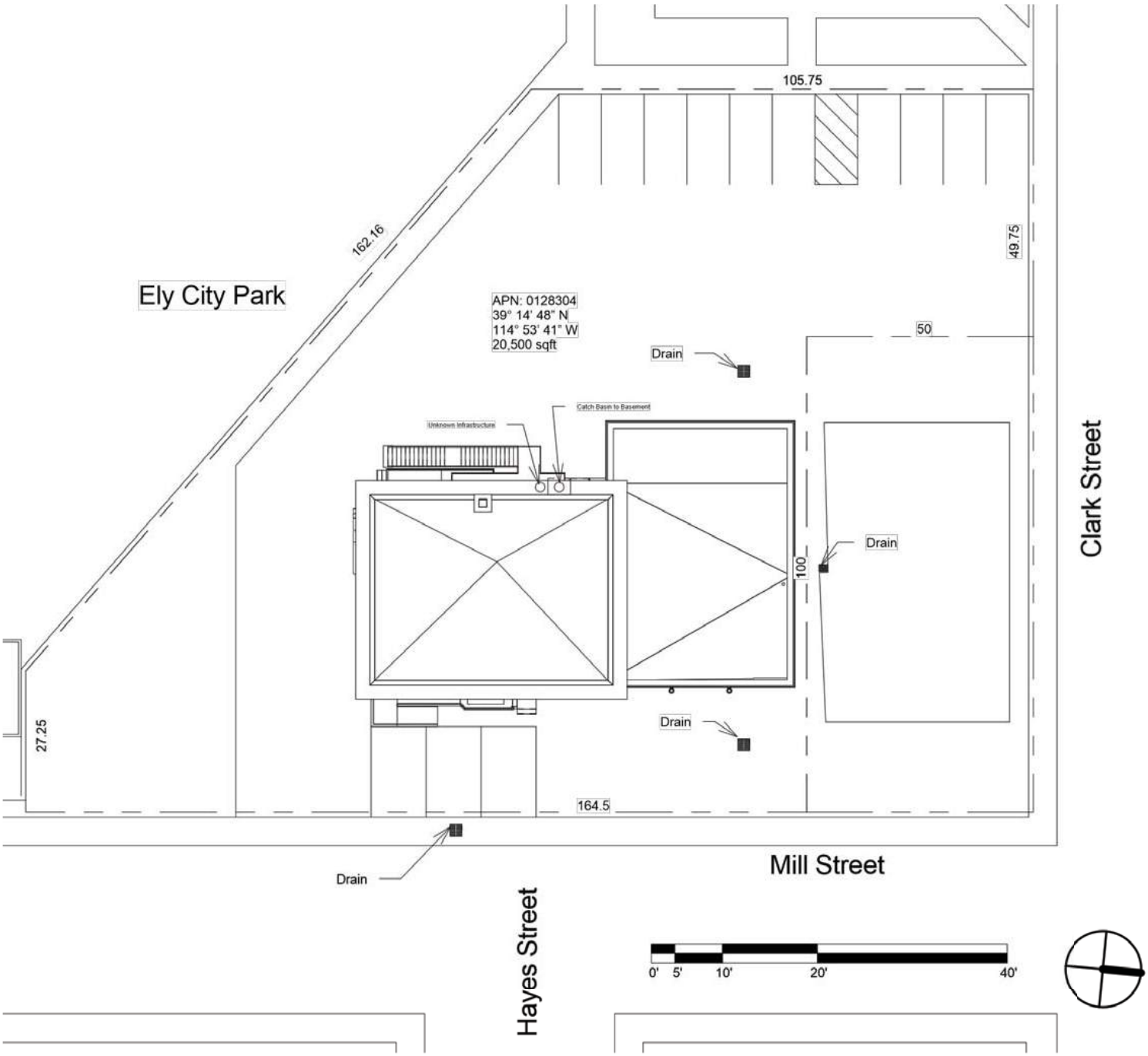
Along the existing asphalt surface across the project site, it appears storm water drains from west southwest to northeast. An existing elevated storm water collection receptacle is located near the west edge of the historic building that receives and drains excessive storm water (probably installed as a result of previous site flooding) into a collection sump and pump in the building's basement. From there it appears storm water is pumped from the basement into the community's storm drainage infrastructure located in Mill Street. A second and third storm drainage surface collector are located to the north of the building adjacent to the neighboring structure and to the west that appears to drain underground in an easterly direction. Future site and infrastructure investigations described previously need to address these conditions to insure these methods are the best solutions available.

From changes indicated on the 1950 drawings and observed from the historic building photo, it appears at some unknown time after the original city hall was constructed topography across the site was altered. The date and extent of those changes to the original site grading are undocumented and remain unknown.

The current area of asphalt surrounding the existing building indicates from cracking and subsidence that significant settlement has occurred over time. The conditions east of the building near Mill Street are greater than settlement occurring to the west. In the future when the property is being upgraded and storm water issues are being addressed, it's important to communicate with Nevada SHPO and coordinate site improvements with that office - to insure no existing archaeological resources or assets are damaged or lost as a result of the work.

RAFI Plate #1 exhibits the current site plan along with the area contained within the property's sub-parcel. RAFI Plate #1.01 exhibits representative photographs of current site and building conditions.

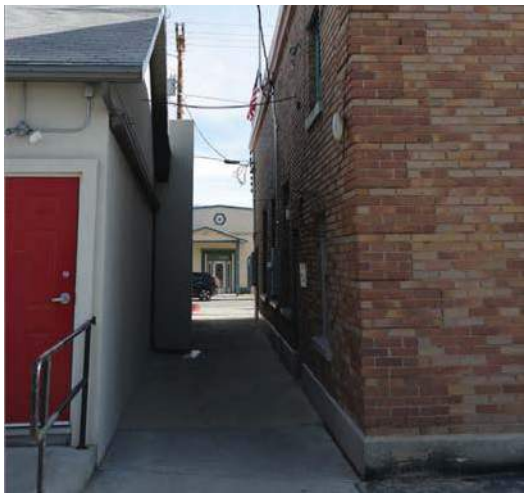
Additional photographs of building elevations and exterior details can be found in Appendix L.


105.75
162.16
49.75
Ely City Park
APN: 0128304
39° 14' 48" N
114° 53' 41" W
20,500 sqft
50
Drain
Catch Basin to Basement
Unknown Infrastructure
Drain
100
Clark Street
Drain
27.25
164.5
Drain
Mill Street
Hayes Street
0' 5' 10' 20' 40'

South Elevation (Notice Changes in Brick Color at Alterations)

West Elevation

South/East Elevation



View to East Between Buildings

View of West Fire Escape Looking North

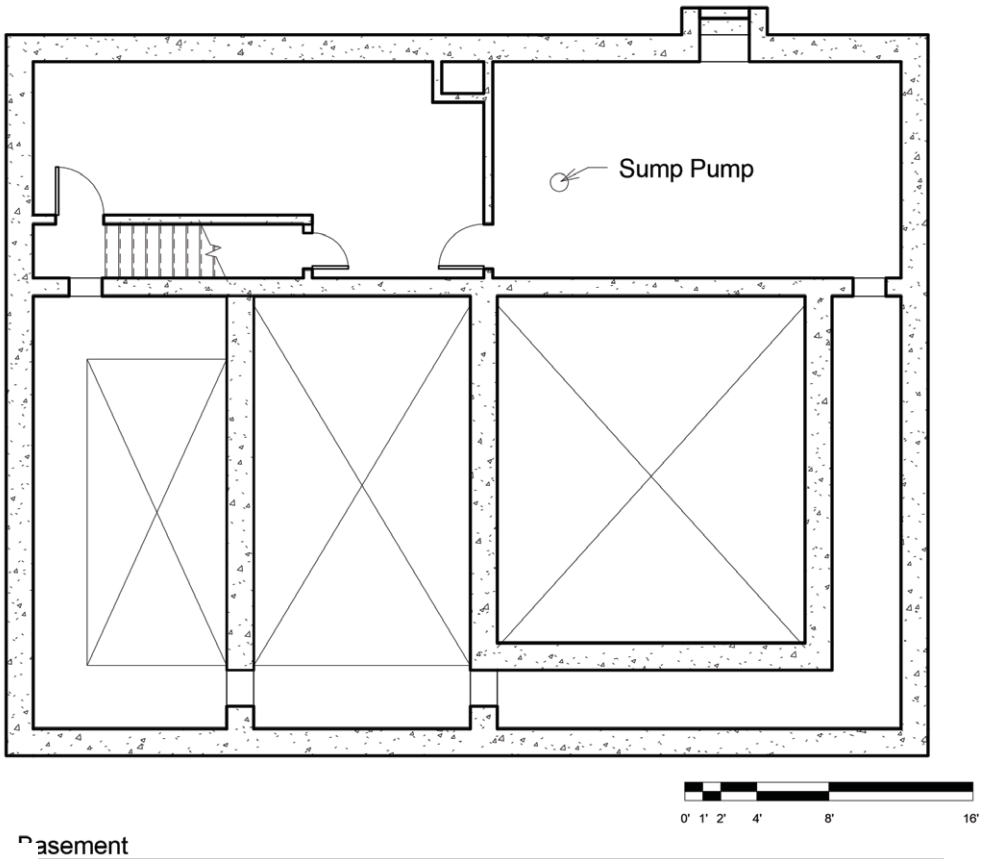
Detail of West Drain in Parking/Drive Area

Ely City Hall Development Phases

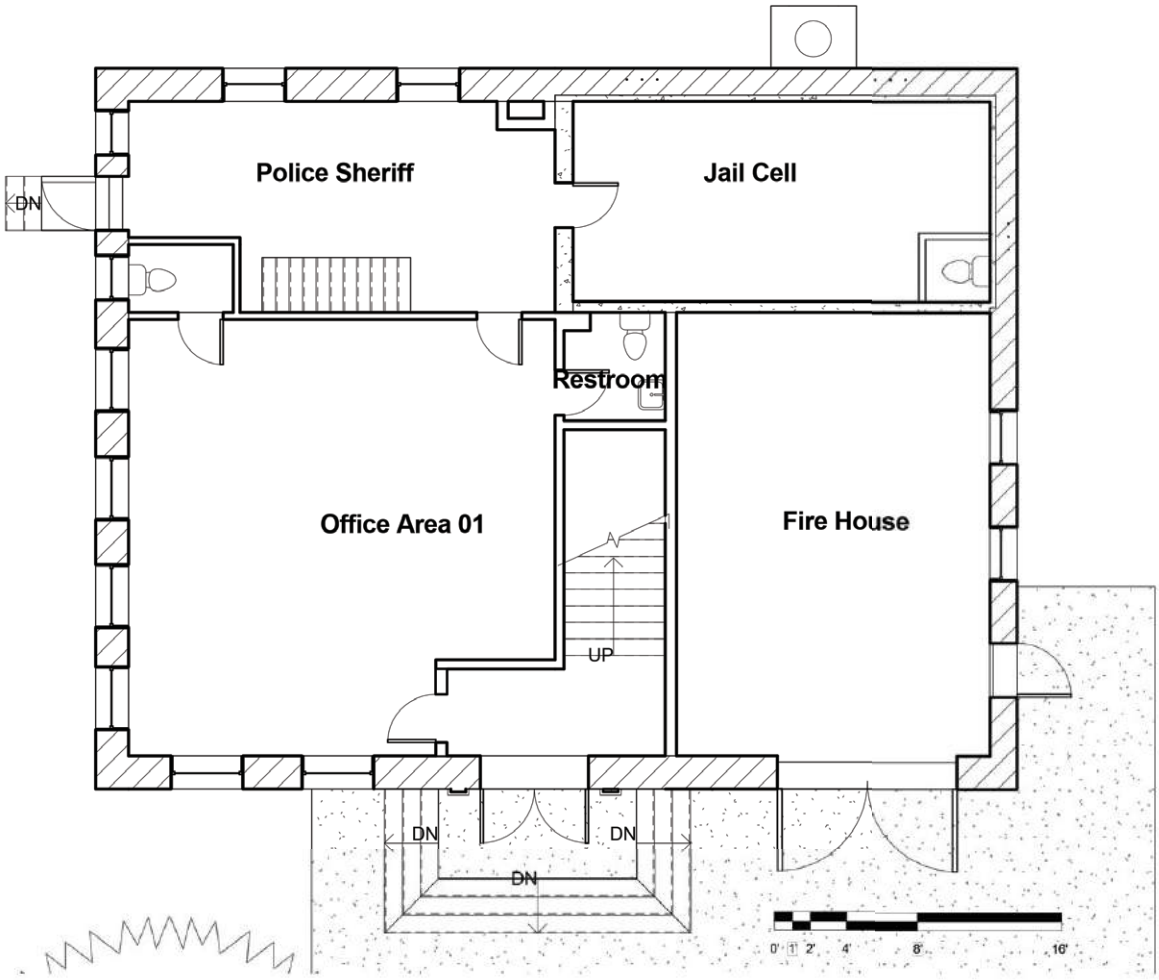
From field observations, RAFI Plates #2, #3, #4 and #5 represent what is thought to be the original floor plan configuration of the masonry building constructed in 1928. No documents exist to verify this assumption.

Plate #6 is a copy of a historic photograph of the building, date unknown. This early photograph offers evidence of the design character, building elements, site and landscaping provisions incorporated with the original construction project.

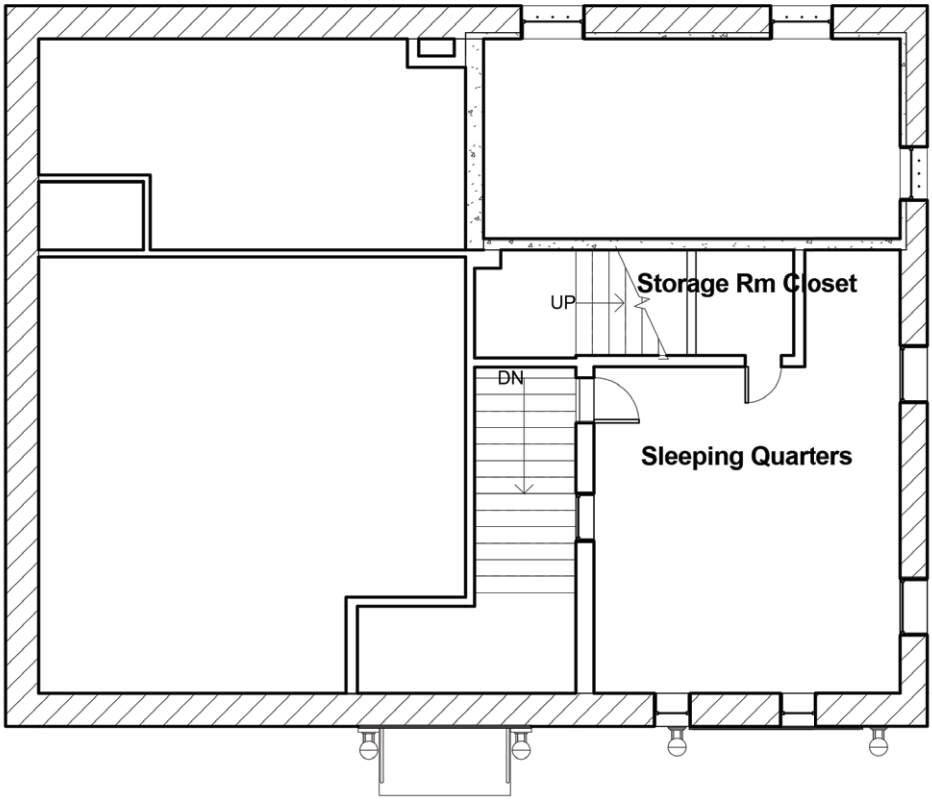
Plates #7, #8, #9 and #10 are RAFI Revit drawings portraying each perceived exterior elevation.



Basement

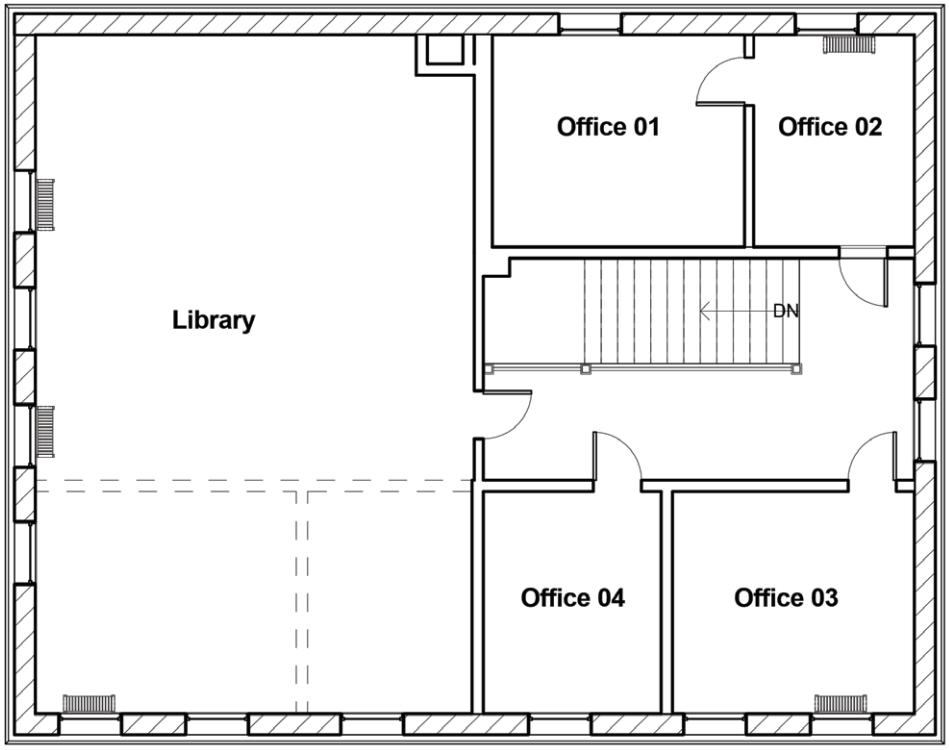

Police Sheriff
Jail Cell
DN
Restroom
Office Area 01
Fire House
UP
DN
DN
DN
0' 1' 2' 4' 8' 16'

First Floor

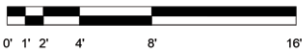


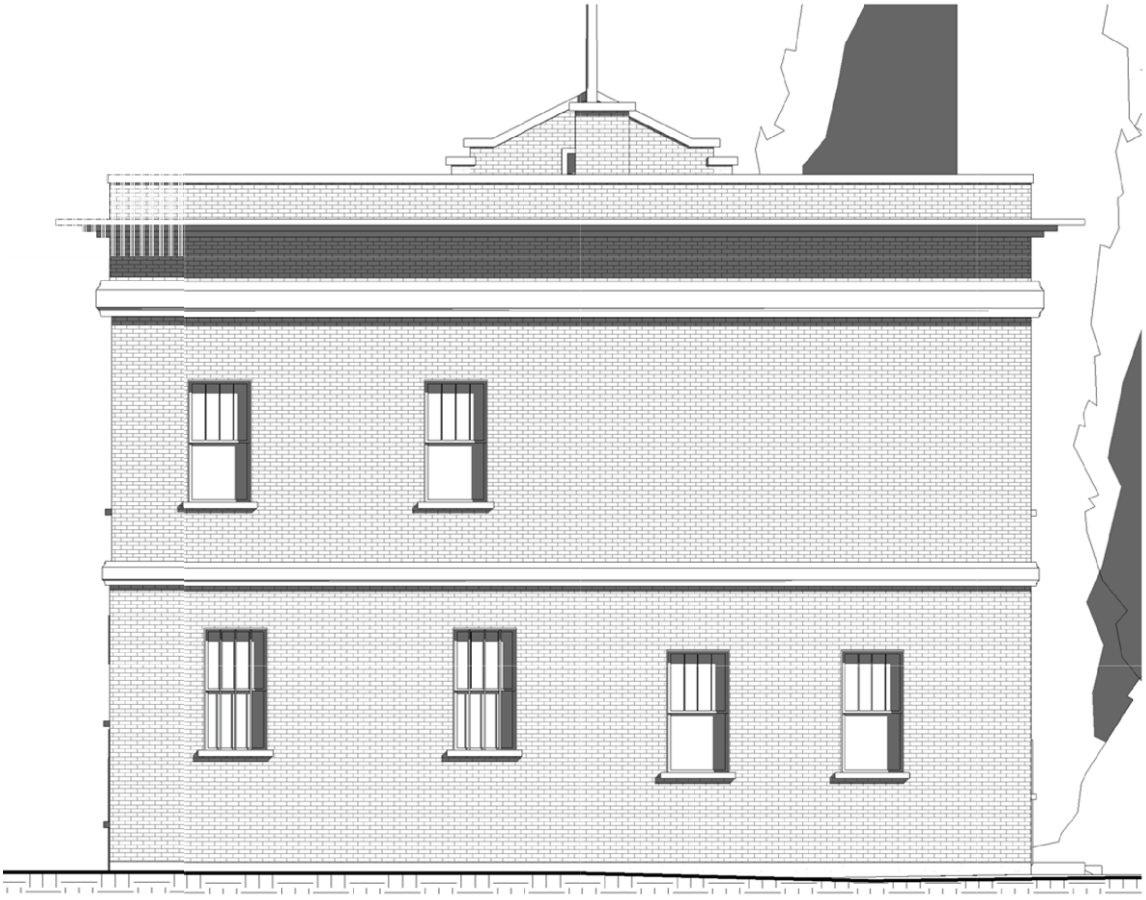
Interstitial Mezzanine

0' 1' 2' 4' 8' 16'

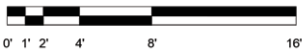


Third Floor

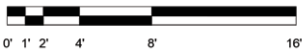




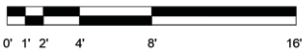
Designated West Elevation



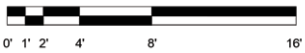
Designated East Elevation



Designated North Elevation



Designated South Elevation

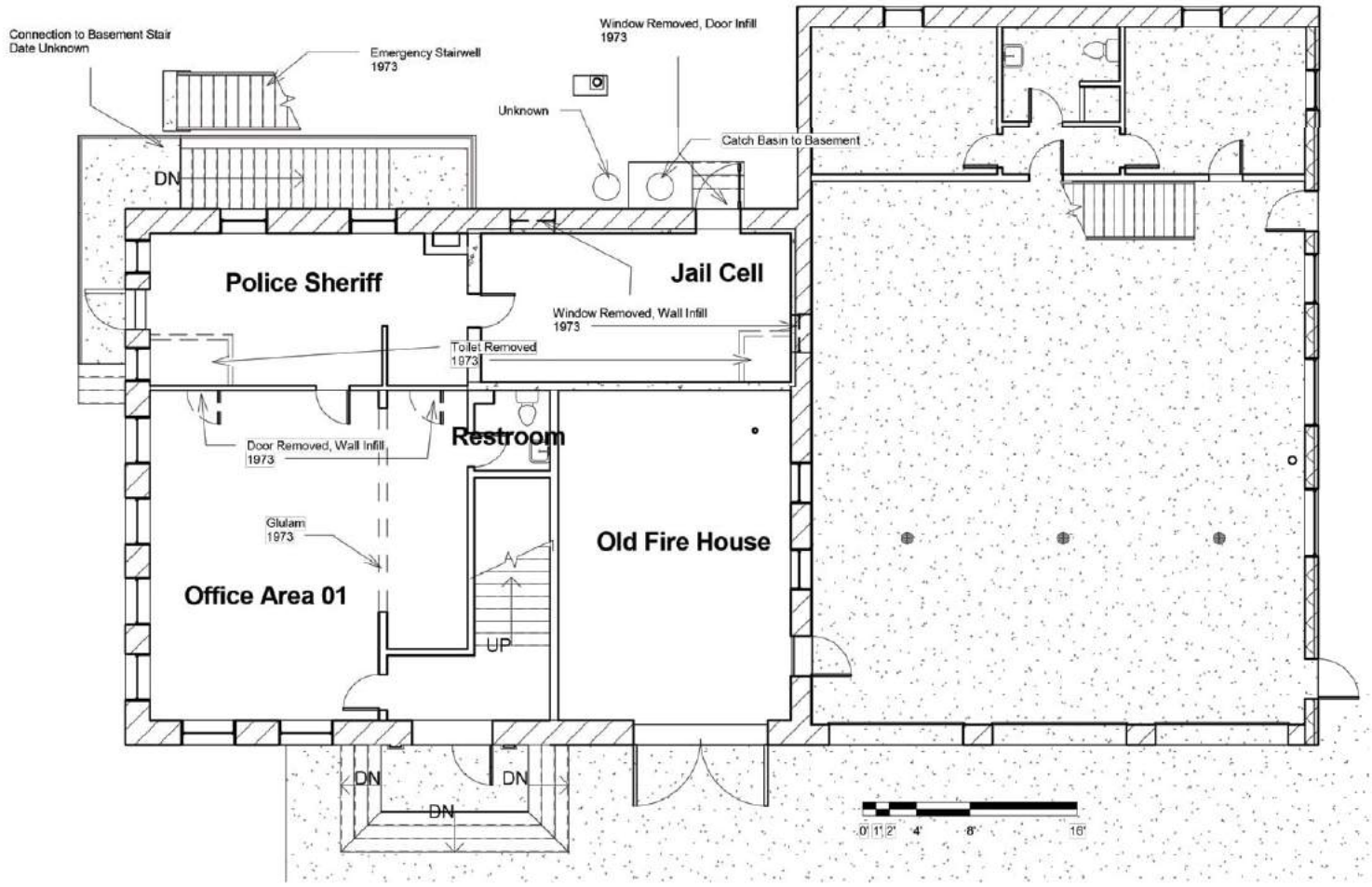


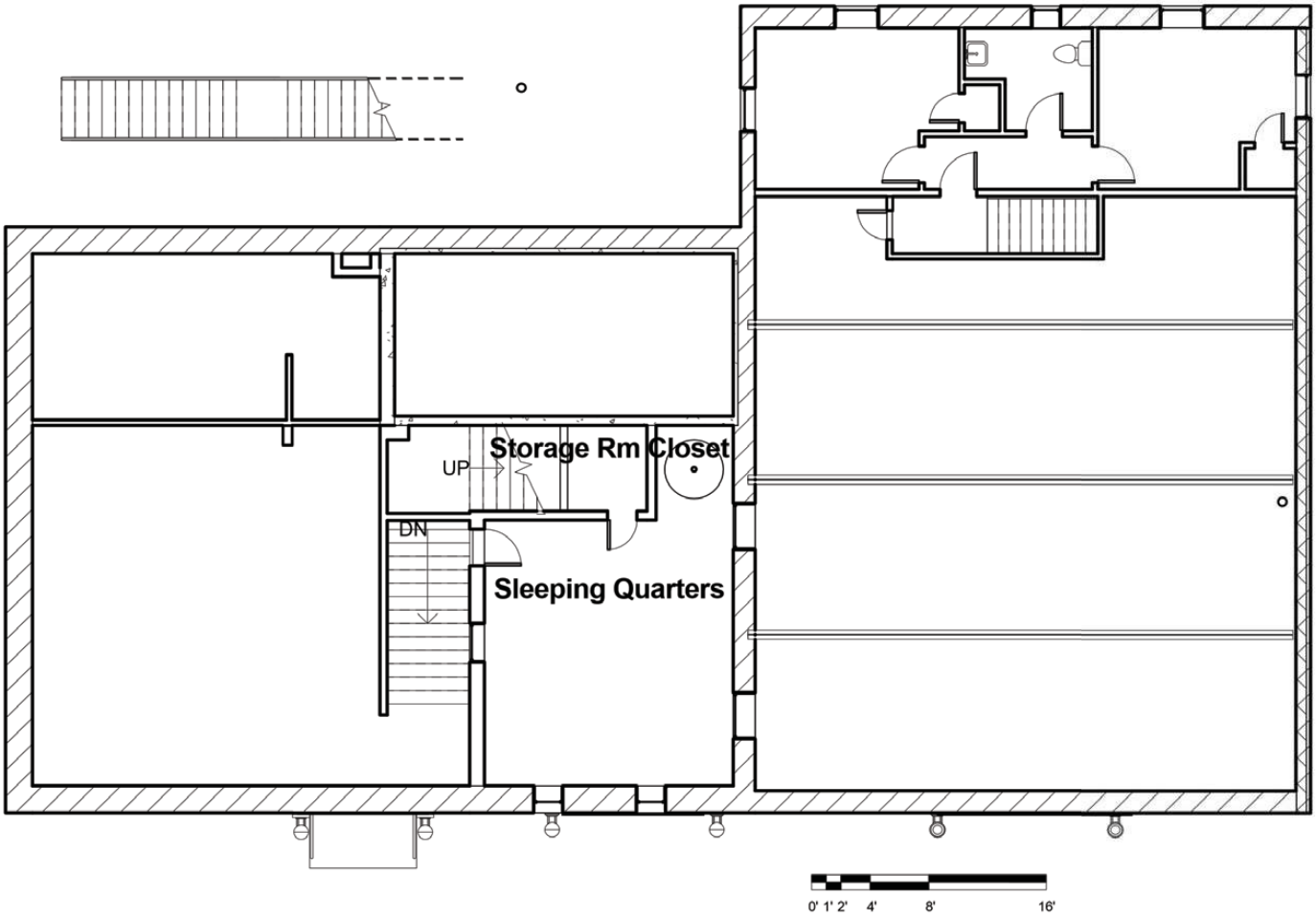
Building Addition #1 (Perceived)

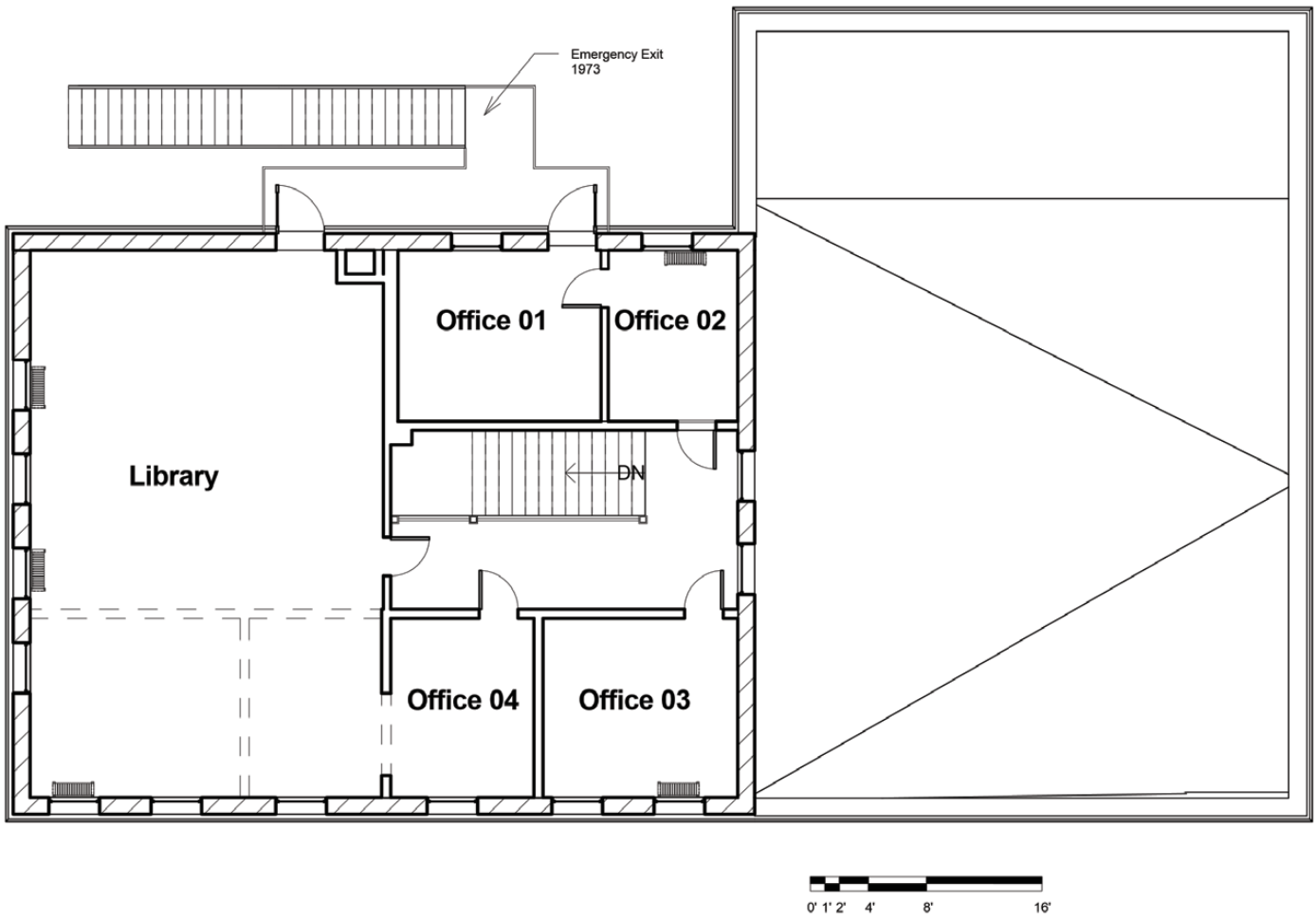
The city's drawings dated 1950 indicate the addition of two fire department bays to the original building structure. However, the Assessor's Data Inquiry for the year 1952 appears to document other additional improvements to the project not identified in the scope of work described in the city's drawings.

RAFI Plates # 11, #12 and 13 exhibit what probable floor plan changes occurred with the 1952 additions and improvements.

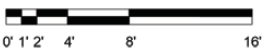
Plates #14, 15, 16 and 17 are RAFI Revit drawings representing the probable changes to the building's Exterior Elevations at that time.


Connection to Basement Stair
Date Unknown
Emergency Stairwell
1973
Window Removed, Door Infill
1973
Unknown
Catch Basin to Basement
DN
Police Sheriff
Jail Cell
Window Removed, Wall Infill
1973
Toilet Removed
1973
Restroom
Door Removed, Wall Infill
1973
Glulam
1973
Old Fire House
Office Area 01
UP
DN
DN
DN
0' 1' 2' 4' 8' 16'

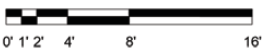

Storage Rm Closet
UP
DN
Sleeping Quarters
0' 1' 2' 4' 8' 16'


Emergency Exit
1973
Office 01
Office 02
Library
DN
Office 04
Office 03
0' 1' 2' 4' 8' 16'

Designated North Elevation



Designated North Elevation



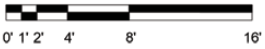
Designated South Elevation

0' 1' 2' 4' 8' 16'

Designated East Elevation

0' 1' 2' 4' 8' 16'

Designated West Elevation



Building Addition #2 (Partially Documented)

Similar to Addition #1 to City Hall, the City of Ely has some limited drawings dated May of 1973 prepared by Chilton Engineers of Elko, Nevada addressing floor plan alterations and a revised electrical outlet and lighting plan.

It is only RAFI's conjecture that the addition of the interstitial storage space, main entrance modifications and ramp, window modifications and the parapet removal was also part of this work. There are no drawings or recorded documents to support this assumption.

In a review of White Pine County Tax Assessor files for improvements to the City Hall and Fire Station by the RAFI Team no information regarding any additions or revisions to the building were ever recorded for the city's 1973 alterations. However, the floor plan configuration prepared by Chilton Engineers coincides with the added structural framing incorporated that is necessary to support the interstitial floor framing. The floor plan changes also coincide with the dropped ceiling and revised lighting plan.

At the same time, the finish floor line established for the interstitial floor framing interrupted the vertical height of the original window openings along the south and west building elevations. Consequently, in order to install the new interstitial floor the original window openings effected had to be modified and reduced in height. In all likelihood, the current existing aluminum windows were less expensive for the contractor to purchase; they were easier to install and the aluminum eliminated future painted framework.

Some locals believe and have stated that the original parapet gable was removed at this time (by the 1950's it could easily have also become a structural seismic and wind-load issue) to use the existing brick as infill to reduce the size of the masonry openings for the new smaller aluminum windows. However, as can be observed from site photographs when sunlight is on any of the affected building elevations there is a clear coloration distinction between the original brick and the brick installed later as infill.

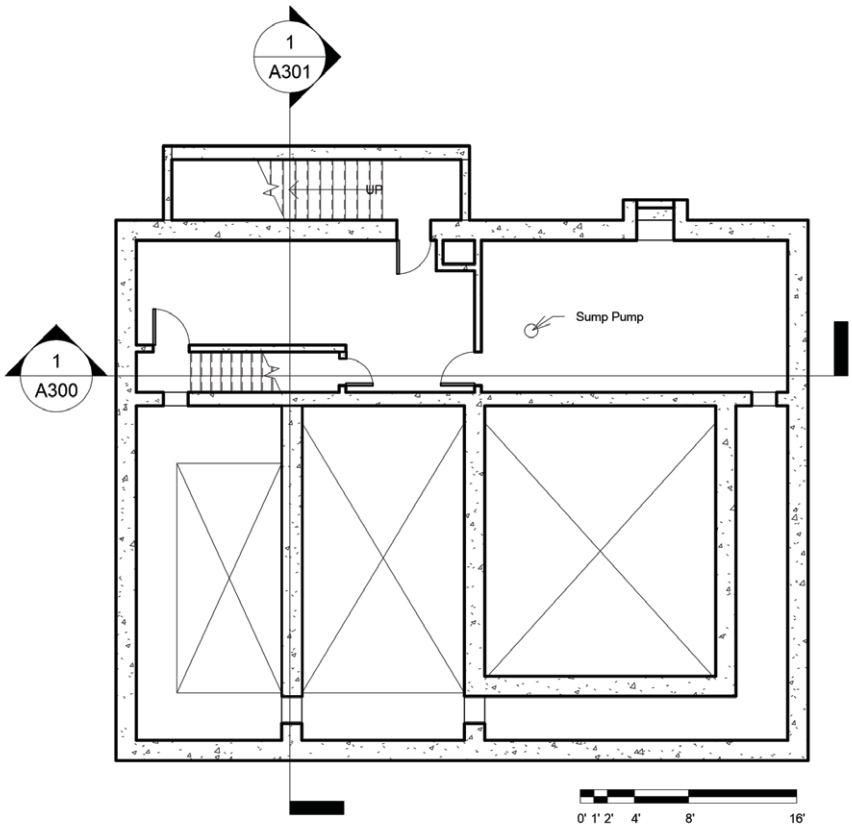
During this same era, early ADA design guidelines were enacted nationally with the passage of Section 504 of the 1973 Rehabilitation Act that banned discrimination on the basis of disability by recipients of federal funds. In order to comply with Section 504 of the Act and continue receiving federal assistance, it can be logically presumed the city improved accessibility to the building in order to accommodate the disabled. The design guidelines adopted in 1973 are far less stringent than those required today.

RAFI Plates #'s number 18, 19, 20, 21 and 22 represent on-site documentation of the current building's plan.

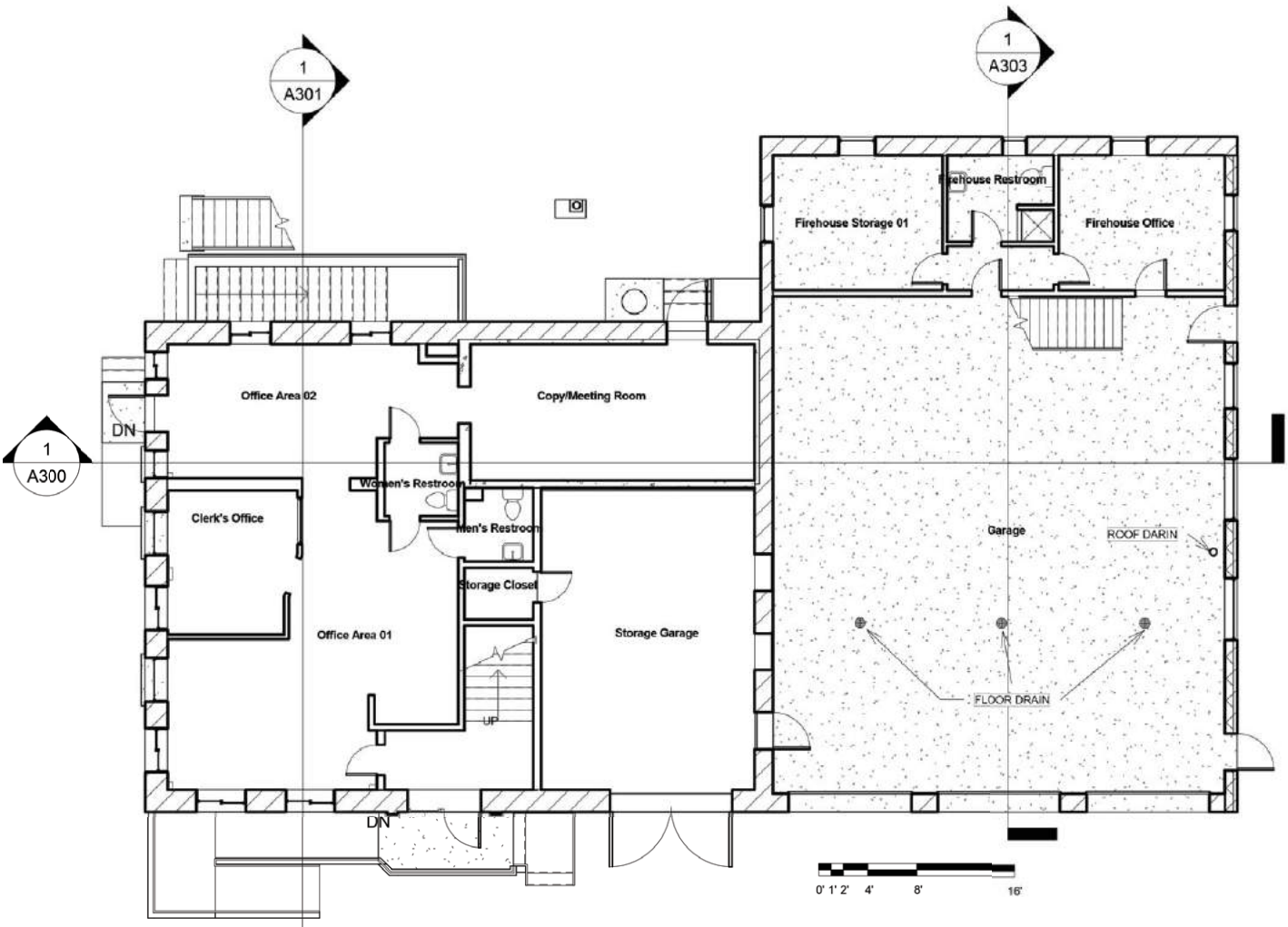
Plates 23, 24, and 25 are RAFI Revit sections through the building based on on-site dimensioning, photographs and observations.

Revit exterior elevation drawings are designated as RAFI plates, 26, 27, 28 and 29.

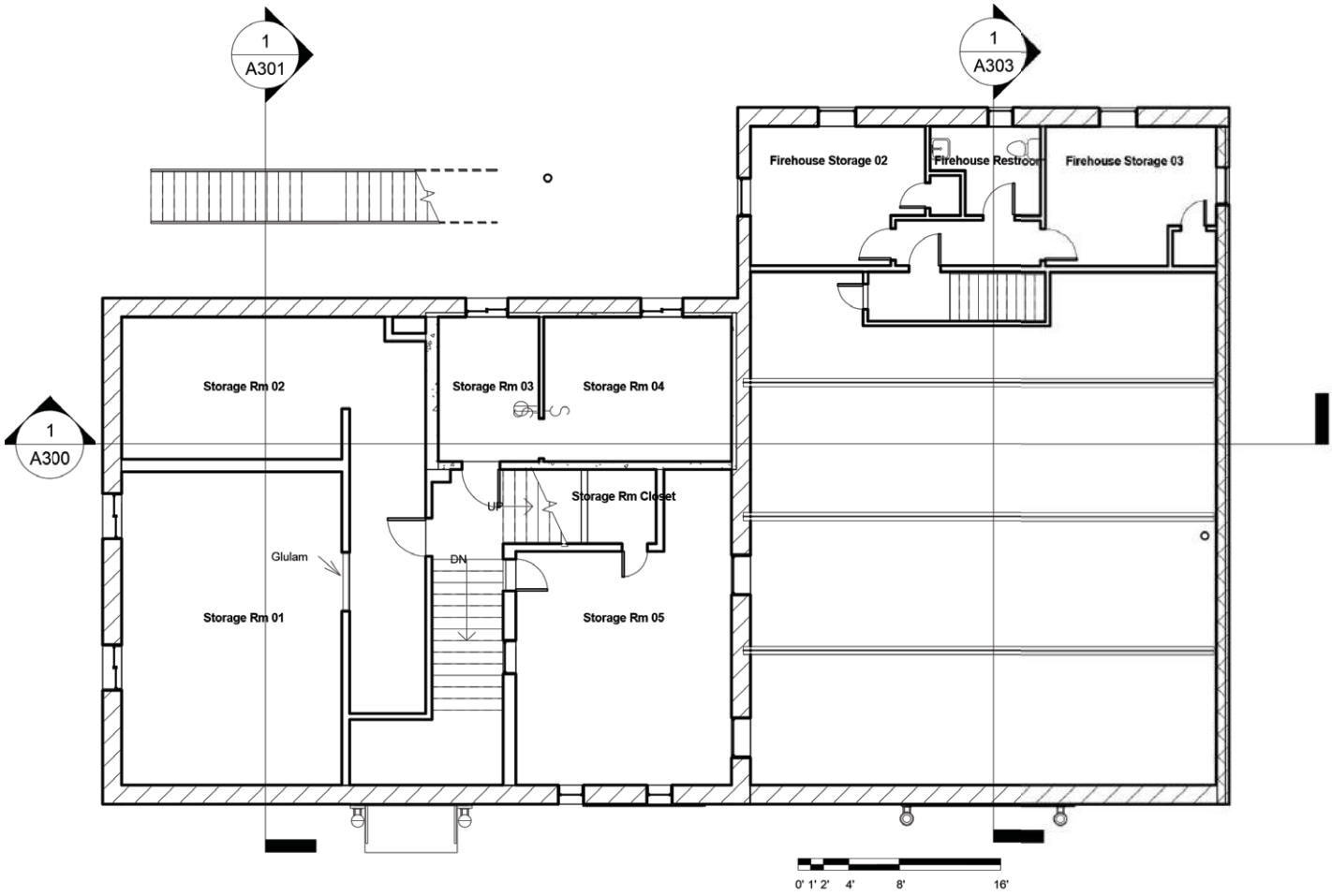
Selected RAFI photos of current conditions are presented on plates 30, 31 and 32. Additional photographs can be found in Appendix L.



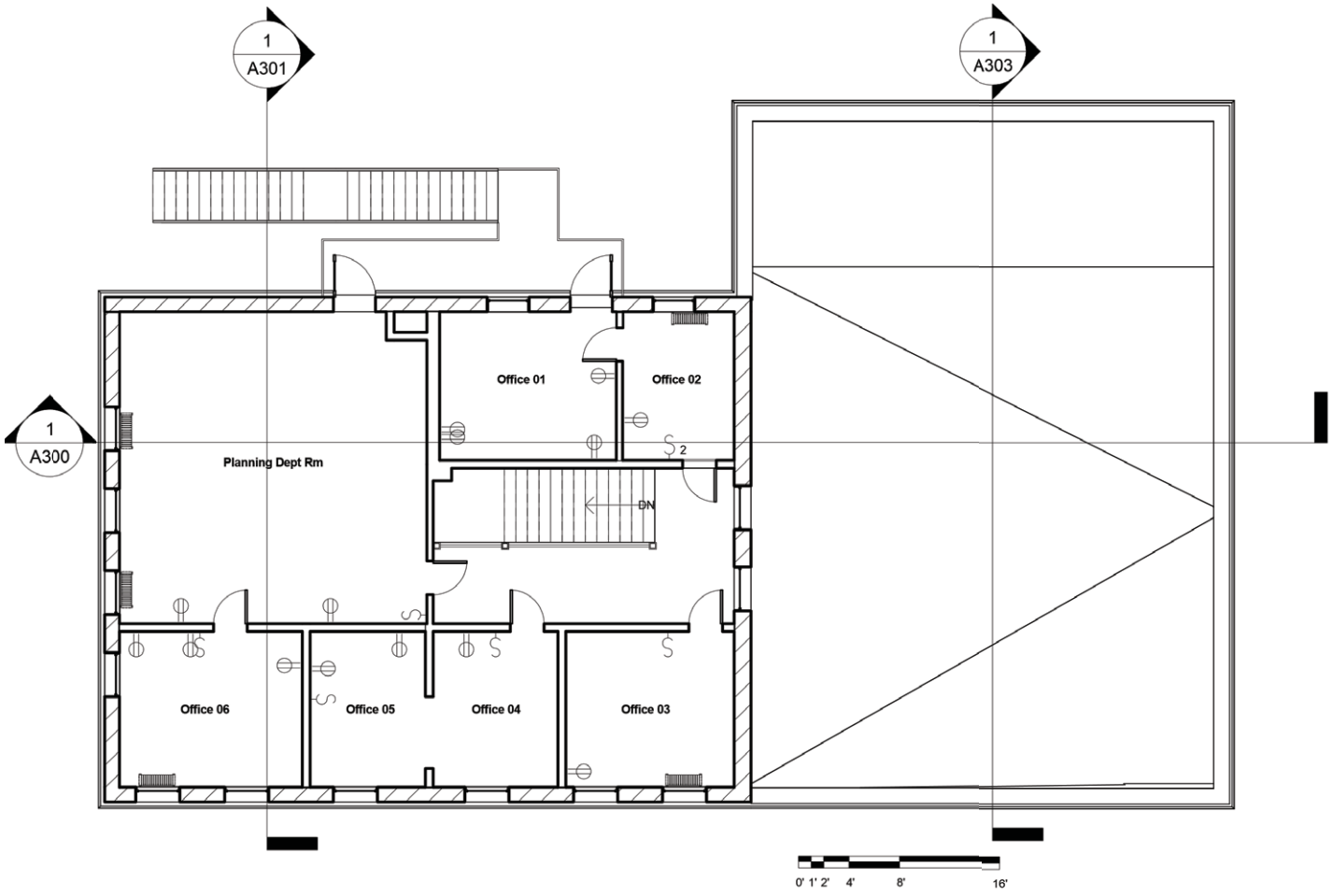
Basement


1
A301
1
A303
1
A300
Office Area 02
Copy/Meeting Room
DN
Women's Restroom
Men's Restroom
Clerk's Office
Storage Closet
Office Area 01
Storage Garage
UP
DN
Firehouse Storage 01
Firehouse Restroom
Firehouse Office
Garage
ROOF DARIN
FLOOR DRAIN
0' 1' 2' 4' 8' 16'

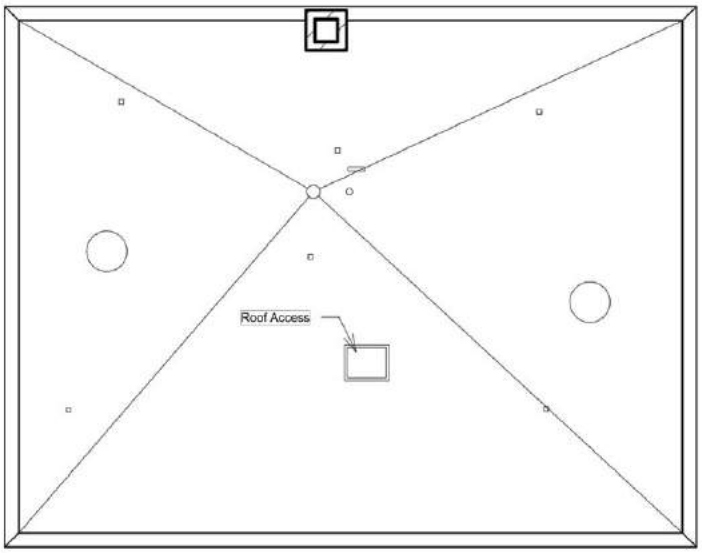
First Floor



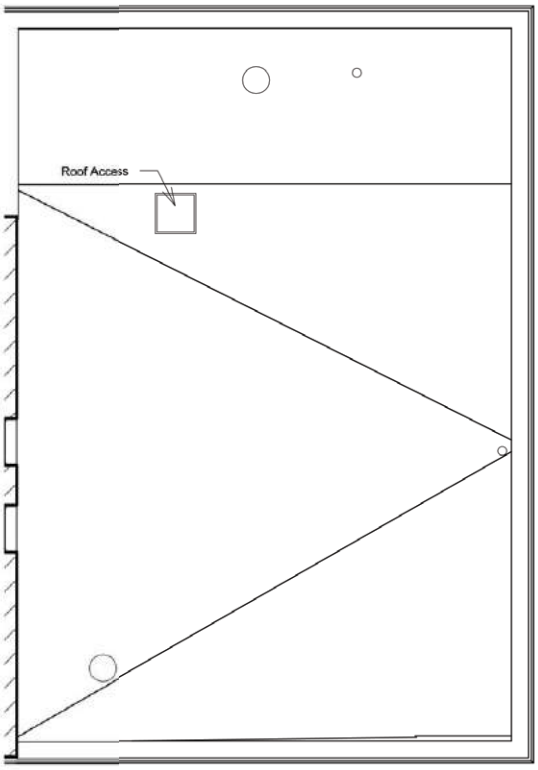
Interstitial Mezzanine


1
A301
1
A303
1
A300
Office 01
Office 02
Planning Dept Rm
DN
Office 06
Office 05
Office 04
Office 03
0' 1' 2' 4' 8' 16'

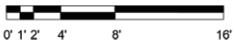
Third Floor



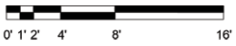
Roof

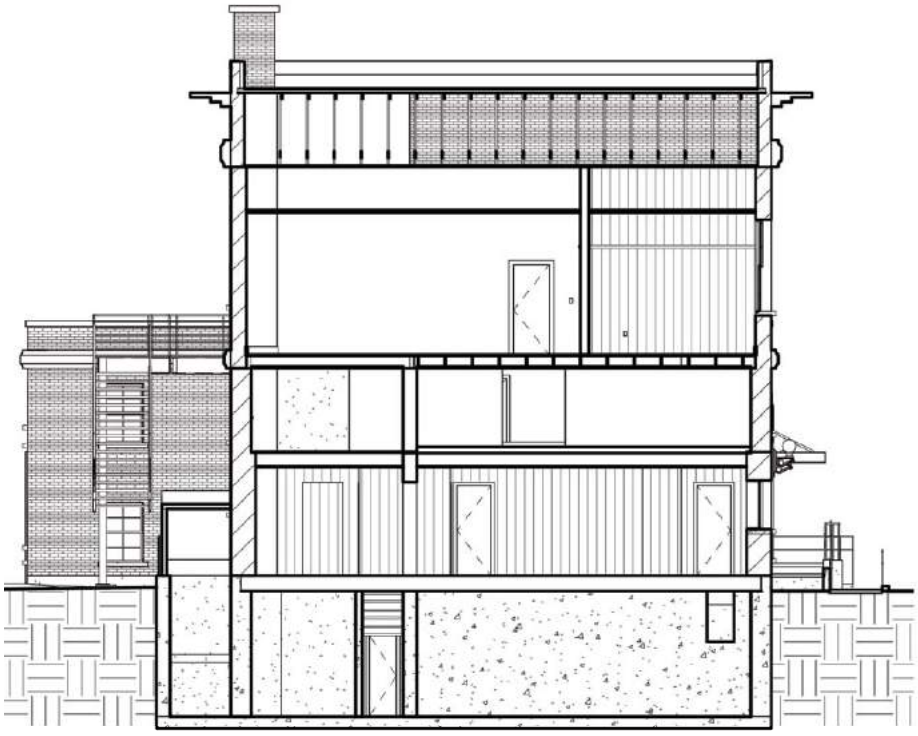


Garage Roof

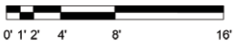


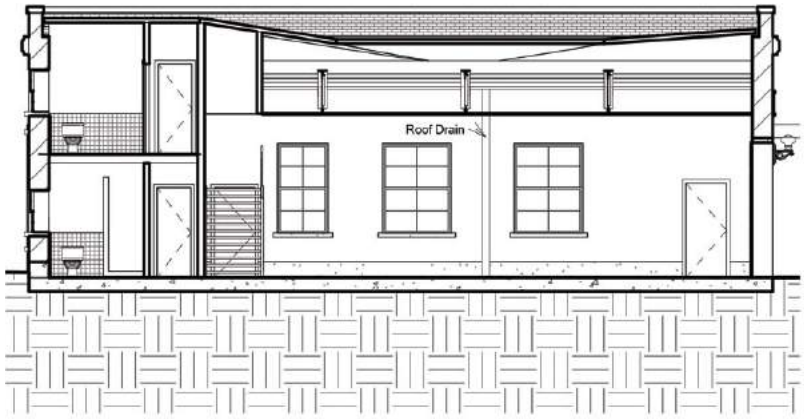
Cross Section 01



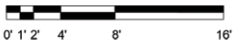


Building Cross Section



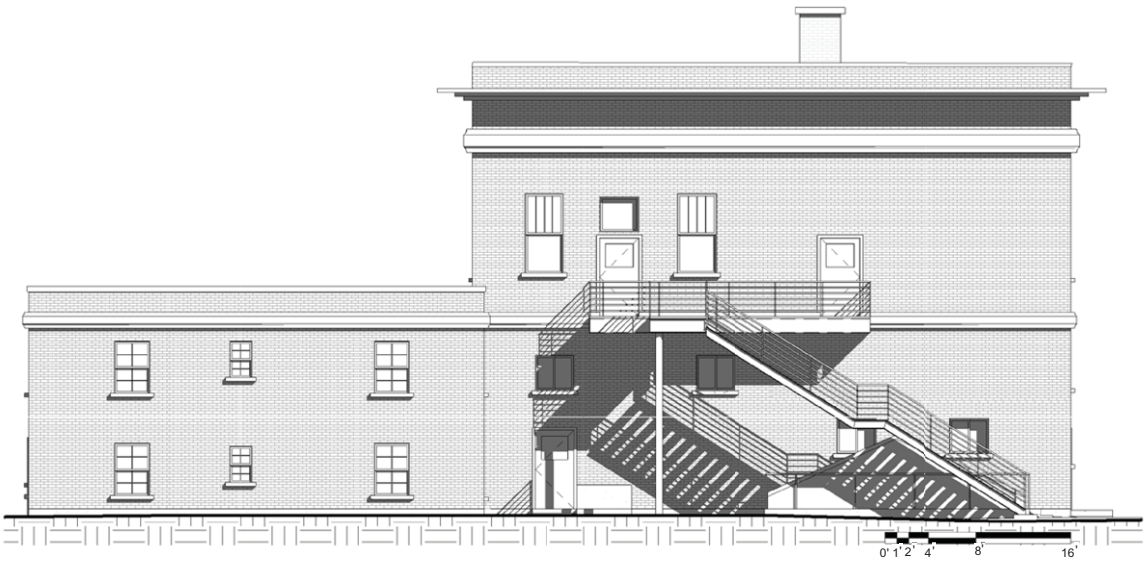


Garage Cross Section



Designated South Elevation

Designated East Elevation



Designated West Elevation

Response to Original Areas of RAFI Team Inquiry

- **The existence of unique construction methods, systems and/or building materials:** The original building and the latter, two fire bay addition use basic construction techniques commonly practiced throughout Nevada during the times of construction. The original building and the fire-bay addition is constructed of unreinforced masonry using wood framing for supporting the main structure's ground floor and second floor, partitioning and roof. With the exception of the basement and fire-bay, the original building is constructed above a crawl space that was originally used for below floor maintenance. Only a portion of the ground floor of the main building is framed above the basement. The floor structure above the basement area is constructed of concrete. The original fire-bay, and the latter two bay addition both have concrete floors that are placed on grade. The original building has operable double-hung wood windows; the two fire-bay addition has steel windows. Alterations to the original building used aluminum-framed windows to replace the original double-hung wood windows.

- **Access to replacement materials and/or current building components still available**: There are well-established specialty manufacturers still producing historic building materials, components and fixtures. Some manufacturers offer custom products to match or use in replacing existing non-performing items.

  Matching brick and masonry units are the most difficult to secure – as can be observed from site photographs. Every batch of fired brick are unique in some manner of coloration. If necessary, new wooden replacement windows to match existing units can be manufactured by a local millwright.

- **The most economical way to seismically stabilize the unreinforced masonry structure:** a carbon fiber wrap can be installed along the interior face of the existing masonry walls, once repairs to the masonry and grout are complete. This is the most economical and effective means to seismically strengthen the structure. Using this process however, has implications described later in this report regarding the inclusion of other building systems and energy conservation.

- **The most appropriate way to remove non-historic and non-compliant additions and alterations:** Previous non-compliant building improvements described within this report should be removed with exceptional care, recognizing that delicate attentiveness to the removal process is critical to rehabilitating the historic structure properly.

- Non-structural partitioning, suspended ceilings and interstitial floor framing shall be carefully removed in order to minimize damage to all surrounding conditions. Aluminum windows installed along the east, south and west walls of the original building shall be carefully removed to minimize any damage to existing surrounding brick masonry. In re-framing the hew window openings to restore their original design, dimensions, surfaces and character, extreme take should be taken to return the masonry to its original appearance and character. It may be possible to salvage existing infill, matching brick units to use as necessary in recreating and matching adjacent openings, masonry color ranges and surface textures.

- **Best means for blending historic heating, electrical and lighting systems with current code compliant and energy efficient technology:** In this instance, on-site investigations and inspections of the historic systems indicate the original systems are archaic, inefficient and expensive to continue to use, operate and maintain. However, if and where possible, existing electrical and lighting systems that can be retrofitted with current energy conservation technologies are recommended to be upgraded for continued use throughout the property.

- **Costs for rehabilitating historic properties:** This information is addressed in detail within the final section of this Report on page 92.

Historic Structures Analyses

The set of 1973 documents prepared for interior revisions and other presumed related changes described herein, along with the original building construction in 1928 - and the later work

associated with the two bay fire station addition in 1953 forms the basic background for this report and its historic structures analysis. The minimum age requirements for the original building structure and the scope of work for its 1953 addition both comply with the US Secretary of Interiors requirements for eligibility for the national registry. If evaluated either separately or combined, their current presence reflects a significant asset to the historic context of the community, state and nation. As the City of Ely's historic seat of government, the facility represents continuing public service and democracy in action. The facility is an early twentieth century expression of simple, straightforward, public modernism.

However, the 1973 changes and revisions to the original building (or buildings) do not comply with registry requirements. The 1973 work is considered neither historic nor significant and, where appropriate, it is recommended for removal - as long as the historic character of the original building (or buildings) is maintained intact.

Although, the entire structure is considered one building within this report, it is divided into three building components: the original historic city hall, the 1953 historic two fire-bay addition and the 1973 non-compliant alterations.

On-site team investigations have uncovered design conditions that appropriately relate to guidance and assistance provided in Preservation Briefs prepared by the US Secretary of the Interiors Standards for the Treatment of Historic Properties; and to other more specific on-site project conditions observed and documented by this Team. Each of the preservation briefs address a specific design, maintenance and construction repair process important to future project endeavors. Additional briefs prepared by the Team are followed with critical improvements necessary to retain the project’s historic significance.

US Secretary of Interiors Standards for the Treatment of Historic Properties Preservation Briefs

Additional assistance to those working to rehabilitate historic structures within the parameters of the US Secretary’s Standards is provided through a series of Technical Assistance Preservation Briefs. These briefs provide methods and approaches for rehabilitating buildings that are consistent with the historic character of this nation’s early buildings. This document is easily found on line. It is important for those in Ely assisting the city with this project in the future to read and fully understand all requirements and tasks to be undertaken. Of the 47 Technical

Preservation Briefs, the following brief numbers, titles and condensed statements are deemed to be most important to this project:

1. Cleaning and Water Repellant Treatments: Contractors should carefully follow recommended procedures in this brief in washing the building from the bottom up using clean water and soft bristle brushes once all of the building's repair and maintenance work has been completed. For heavy stains special cleansers are available. Do not attempt to clean masonry during cold weather. When subjected to cold temperatures or freezing any moisture absorbed by the masonry or grout expands resulting in damage to the materials' integrity. Refer to Brief #6 for the Dangers of Abrasive Cleaning.

2. Repointing Mortar Joints: Designers and the contractor should carefully follow and comply with this brief in analyzing existing mortar for creating a new mixture that matches the original mortar's sand, color, texture and vapor permeability, without exceeding the compressive strength of the existing mortar. Repoint repairs in joints to match current tooling.

3. Improving Energy Efficiency: Designers and engineers should use this brief in guiding the development of energy conservation upgrades to the project; addressing the issues of energy demands based upon climate, kinetic temperature transfers, operating hours, access to local energy sources and to operational maintenance service for systems used. Other than roofs, the existing building(s) are uninsulated. Refer to RAFI Team Briefs for more detailed energy efficiency improvements.

9. The Repair of Historic Wooden Windows: Likewise, designers and the contractor should follow this brief thoroughly. Test current painted areas and caulking for existence of any lead based paints and asbestos commonly found in old caulking materials. Mitigate all issues present and dispose of waste appropriately. Insure wooden windows are operating properly. Remove sash and repair as necessary using traditional splicing techniques to replace damaged mullions, muntins and frame members. Replace damaged glazing with new glass panes consistent with surrounding units. Make similar repairs to existing perimeter wooden window frames; weather-strip frames and caulk. Prepare wooden windows and frames appropriately for repainting. Back window units with the addition of removable storm windows.

Repair exterior wooden door frames and doors similarly. New wooden replacement windows matching original units shall be placed in revised openings along the east, south and west walls of the original two story building. New units shall be constructed and installed, with matching concrete sills and overhead lintels of the same size and configuration as original framed windows.

13. The Repair and Thermal Upgrading of Historic Steel Windows: Use this technical preservation brief in repairing existing steel windows and other painted metal objects. Window units are to be properly inspected for the existence of corrosion, lead-based paints and asbestos commonly used in manufacturing caulking early on. Mitigate all existing issues and discard waste materials properly. Remove recently applied insulated window backings. Repair metal items in place using metal brushes and light chemical treatments to remove paint and corrosion. Do not sandblast. Use automobile patching materials for making metal repairs. Replace broken glazing units with matching glass. Caulk and weather-strip window units. Lightly sand steel windows and other metal objects in preparation for priming and repainting. Provide inside face of steel window units with removable storm window panels.

14. New Exterior Additions to Historic Buildings: Preservation Concerns Please review and apply this brief in forwarding and implementing the design intent and construction of the new addition to the building. As a treatment, 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, or architectural values."

17. Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character: While the RAFI Team used this brief in guiding its investigations and analysis of the historic Ely City Hall and Fire Station, it important for future designers and contractors to understand this brief as it pertains to their work in assuring that rehabilitation efforts conform to the Secretary's Standards. Refer to Brief #18 Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character-Defining Elements, for directions and techniques complying with the Secretary's Standards.

21. Repairing Historic Flat Plaster Walls and Ceilings: Use this brief in preparing for plaster repairs over interior masonry wall surfaces and/or wooden framing and wooden lath installations. Where appropriate use veneer plaster as a two-coat process to patch and hide plaster repairs.

Use two-coat veneer plaster finishes over interior wall surfaces where gypsum board and new gypsum board panels are installed as a wall sheathing material.

24. Heating Ventilating and Air-Conditioning: Designers should use this brief as a guideline in determining how best to evaluate, design and incorporate the specific HVAC systems described herein for this work. The systems proposed within this report are a result of on-site investigations and evaluations of the original systems, interim systems and the systems in place today; none of which are adequate, code compliant or economical in serving the building and its uses into the future. Proposed MP/E general recommendations for this project are incorporated in another segment of this document to guide future work.

28. Painting Historic Interiors: Use this brief as a guideline in preparing the interiors for repainting. With historic finishes, use hand procedures in removing flaking paint and making surfaces compatible for receiving new paint, stains or clear finishes. If possible and financially feasible, identify and contract with a consulting paint specialist to prepare a historic paint analysis of the work that identifies each various finish and paint color installed over the life of the building. Other techniques of inquiry and original finish determinations are addressed in another segment herein.

32. Making Historic Properties Accessible: Use this preservation brief in making accessibility a primary consideration throughout design and rehabilitation. The Historic Structures report addresses site and building issues only in general terms of making the property accessible to everyone. In every instance, current federal standards should be incorporated. Within the mezzanine area of the two-bay fire station addition, the original second floor sleeping rooms for firemen because of inaccessibility may be limited in use by the public – without a formal release from the local Building Official.

41. The Seismic Rehabilitation of Historic Buildings: Use this brief in guiding the preparation of a Seismic Rehabilitation Plan for the property, including mitigating existing deficiencies and restructuring ongoing maintenance efforts. The segment of the preservation brief addressing unreinforced masonry walls provides a background for understanding the processes described later herein. More descriptive information regarding seismic rehabilitation is addressed within the RAFI Team Briefs.

In using the Secretary's Technical Briefs it's important to document and record how the brief is being used and the various techniques that are being applied to rehabilitation tasks and activities.

Sustainability

The Secretary of the Interior has advanced *Sustainability* as a significant achievement in the rehabilitation of historic structures. The Secretary's *Illustrated Guidelines* address appropriate treatments recommended to insure projects are responsive to issues of sustainability as central principles of historic preservation. It is highly recommended that a consultant with experience in sustainability and an understanding of The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings participate in future project endeavors. A copy of the guidelines are easily accessed through the internet.

As part of future work pertaining to sustainability, a Weatherization Plan developed specifically for this project should be prepared that addresses the subject matter and recommendations set forth within the illustrated guidelines.

Definitive Architectural Characteristics

Shape

The definitive character of the historic building is a simple brick rectilinear form. Clearly pragmatic, the building is iconic in its lack of traditional ornamentation popular with public architecture of the time. The building is also iconic in its scale and context with the planning and design of other surrounding buildings downtown. The earliest portion of the city hall building is two stories in height. The two-bay fire equipment addition constructed later to house larger

pieces of fire equipment is considered a tall single story structure. In high contrast, most other nearby buildings downtown are single-story wood or stucco finished structures with much lower rooftops and far less architectural attention.

Roof and Roof Features

The original building possessed a brick gabled parapet located above the main entrance to the building that was later removed at some unknown time - for some unknown reason. Also removed was the definitive flag pole that helped as well to establish the building's design character. Additionally, the original design for the building included a definitive cantilevered metal cornice piece along the top of the roof parapet that serves as a cap for the building and adds articulation and detail to supplement the extensive simple use of brick. Similar definitive metal cornices with different shapes and configurations are installed around the perimeter of the building along the line of the building's second floor and above it's second floor windows.

Brick Details

There is simple brick corbeling along the length of each corner of the original building and the fire equipment building addition that is part of the structure's defining design character. Brick corbelling was a common design treatment of the time used to emphasize major building features, openings and corners. With this building the corbeling is exceptionally subtle in its appearance – breaking away from more traditional techniques to express a softer, more modern visual appearance.

Openings

Simple rectilinear window openings, each with a cast stone sill piece are definitive design characteristics associated with the original building. The unique design pattern of the double hung wooden windows are also part of the original building's visual design character. The signatory mid-century style steel awning windows designed for use with the fire station addition are also definitive parts of the building's presence and character. Using sloped cast concrete sills at the time, minimized water accumulation along window ledges and reduced damages to exterior building materials resulting from prolonged freezing temperatures.

Entry

The definitive building entrance is framed within a cast concrete surround designed to represent columns. There is a cast concrete header with "City Hall" "1928" inset in the concrete above the

doorway - along with a cantilevered, chain supported steel canopy suspended over the main building entrance. Unique decorative electric lights are attached to each of the side columns. Cast concrete steps lead to the original building's main entrance from grade with access from three directions.

The original fire house definitive entrance possesses a similar but smaller cast concrete header over the equipment doors with "Fire Department" inset into the concrete. There originally were decorative electric lights similar to those at the building entrance located on each side of the equipment doorway opening.

Entrances to the historic two fire-bay equipment addition have a larger cast concrete header panel centered above the doors with "Fire Department" inset into the panel. These doors also have decorative electric lights installed at each side of the center doors below the cast concrete header.

Team Briefs: Original 1928 Structure

This initial brief addresses RAFI's observations considering the extraction of all later building modifications and revisions to the original structure. It reflects what is *perceived* by the team to be the original construction of a simple two-story *Administrative Building* (with basement) for the City of Ely, Nevada that includes a single fire-bay and an overhead interstitial space that provided overnight quarters for fire department personnel. Additional and more detailed photographs of the areas investigated can be found in Appendix L.

Basement:

The basement portion of the original building housed mechanical and electrical equipment for the building; it also provided space for general storage and most likely was used as space for housekeeping and maintenance services.

Critical Necessary Improvements

- The basement area and crawl space need to be cleared of debris and tested for the presence of asbestos, lead and/or other hazardous materials.
- The floor structure of wood joists above the existing crawl space should be insulated with Batt materials in conformance with the Secretary's Illustrated Guidelines on Sustainability.

- The existing foundations need to be investigated to determine if there is adequate drainage protection to protect those elements from future water damage.

Entrance:

The M*ain Entrance* to the building is located on Mill Street. It is RAFI's understanding the original main entry doors that were removed have been located from storage. From project research and site inspections, the current porch and concrete ramp are not considered to be part of the historical building design – and do not comply with current federal standards for ADA accessibility.

Critical Improvements

- The original entry doors in storage should be repaired, refinished to match original finishes and reinstalled as an element of rehabilitation. Repair or replace original hardware accordingly, and in compliance with ADA operational determinations.
- From site observation, it appears likely the chain supported cantilevered main entrance canopy with spherical lights and ornate consoles along each side of the entry are original to the project. Each element and its components should be repaired and rehabilitated as necessary to function and operate accordingly. Paint test and refinish all elements and components to match original finishes.
- Nevada SHPO indicates at one time there were two additional identical lights installed upon the building; each light was placed on each side of the original fire equipment bay doors. After first addressing the structural stability of this segment of the building, attention should be directed to repairing the equipment bay doors, repairing and wiring the two existing electrical junction boxes and installing the new matching electrical lights.

Ground Floor:

The original *Ground Floor* consisted of a small central lobby and interior office area adjacent to the main Mill Street building entrance. Adjacent to the entry lobby is a stair to second floor functions. The west end of the first floor of the building housed the police department and jail. The finished floor elevation of the first floor is approximately 25 inches above existing grade. As previously indicated there is a crawl space below portions of the building's first floor. The west end of the building sets above a basement.

From on-site building investigations, the first floor ceiling height in the main administrative area was originally 15'–4".

The first floor area above a portion of the basement and above the crawl space is wood-framed with diagonal floor sheathing and surfaced with a second layer of wooden finished flooring. The floor for the portion of the building where the original jail was located is constructed of concrete.

The main administrative space of the first floor office area originally housed a small toilet room along the area's north wall. In all likelihood there may have been an enclosed office area within the original administrative space, but there has been no evidence uncovered to date to verify this presumption. The current existing administrative office is situated along the south and west walls of the first floor administrative area. Originally, there was a second small toilet room framed in the southwest corner of the office.

Located to the west of the first floor administrative area in a separate space was the original police department with a separate exterior entrance located on the south wall. North of the police department office was a concrete jail cell with a toilet located in the north–east corner of the cell.

The original separation wall between the general administrative office area and the police department is wood-framed with painted plaster surfaces. The existing plaster is installed on a wood lattice attached to the studs. At one time a door between the police department and the administrative area existed. It is presumed this doorway was part of the original design.

Also located on the first floor (at grade) as indicted previously is a single-bay fire station with an interstitial space above the fire bay used for the firemen's overnight quarters. The finished ground floor of the original fire equipment bay and garage is a concrete slab placed on grade. At one time, there was a fire pole for fire personnel's men to use to access the ground level from the sleeping quarters above.

At the intermediate landing of the main stair to the second floor there is an access doorway into the interstitial space above the fire equipment bay where the fire men slept. Flooring for the interstitial fire men's space is wood framed with two layers of wood sheathing for support.

Although the exterior fire equipment doors for the fire equipment room have been repaired and altered over time, they also appear to be original. These doors are currently in need of significant rehabilitation repair and repainting.

Critical Improvements

- The original ceilings remaining throughout the historic building are embossed tin panels. These panels should be retained remain for future use. Where panels have been previously removed, matching panels should be acquired and reinstalled as needed.
- The contractor shall carefully remove all existing suspended T-bar ceilings to expose and access the original tin ceiling panels. Were possible repair minor damages to remaining tin-tile panel units in-place. Replace only those original panels with significant damage that cannot be repaired on site.
- Keep all existing exits and exit corridors in place and functional; upgrade as necessary to become compliant with federal ADA accessibility requirements.
- Restore the tin ceiling within the original firehouse bay. Note that this is a condition uniquely different to other tin ceilings within the city hall building.

Stairwell:

The original *Stairwell* from the main entrance to the second floor provides access to additional office space and to the city's early public library located over the main portion of the ground floor administrative space. The original tin ceiling height for the second floor is14'-0". These ceilings too are embossed tin panels. A large majority of the original tin panels used on the ceilings are currently hidden by dropped suspended ceiling systems and are unobservable. Many of the hidden tin panels throughout the original building have been damaged by hanging wiring for installing more traditional suspended acoustical tile ceilings. A close inspection of all panels are necessary to determine which ones can be repaired and which panels have to be replaced.

Critical Improvements

- Remove suspended ceiling and restore tin ceiling panels to match original panels.
- Risers and Treads on the main stair are to be repaired and restored for continued use. Match original finish.
- Existing interior handrails appear to be original and shall be repaired and restored for continued use. Match original finish.

Second Floor:

**It is perceived that offices located on the second floor of the building remain as originally constructed. There is a question, however regarding the originality of the office spaces located to the east end of the library. This determination requires further inquiry and investigation during future phases of work.*

Critical Improvements

- Remove all existing suspended ceiling systems.
- Restore tin ceiling panels to match original panels.
- Repair and refinish doors and woodwork to match original conditions and finishes.

Exterior Walls:

The basement walls and floor are constructed of concrete. From visual observations, it's not known if the concrete possesses reinforcement steel incorporated to limit the structural impact of tension forces on the material. The concrete segments of the structure need to be x-rayed to make that determination. A similar situation exists with the concrete portions of the jail roof and floor as well as along the perimeter concrete foundations and building footings.

The original building's *Exterior Load-Bearing Walls* along all four elevations are unreinforced brick masonry construction. The outer layer of weather exposed brick is a non-load bearing veneer that may or may not be attached with wire or metal ties back to the principal load-bearing perimeter walls.

The perimeter brick walls are least thick (12") along the upper range of the walls at the roof framing level where the brick is offset to provide a 4 inch wide ledger space for installing and connecting the building's wooden roof trusses. At the second floor framing level the thickness of the brick wall increases again by an additional 4 inch wythe for installing and connecting the wood framing floor members to the walls. A similar occurrence with an additional wythe of masonry exists again at the ground floor framing level. The brick wall is the thickest at this level - and condition. This same masonry thickness continues downwards until the wall rests on the building's concrete foundations.

Along the top of the masonry roof parapet, a metal trim cornice molding is wrapped around and secured to wooden pieces of sub-framing attached to the parapet wall. Similar metal trim pieces of molding are attached to wood sub-framing above the second floor windows

and along the second floor line. As a result of damages over time to the metal trim and cornice pieces, significant observable rust exists; damages and failures from moisture and freeze-thaw cycles with the original wooden sub framing supports are also observable.

Because of extensive damages, the metal trim, cornice pieces and damaged wood sub-framing should be carefully removed and accurately measured in order to replace and reinstall the extremely deteriorated and failed components. Less damaged pieces shall be repaired, rehabilitated, repainted and prepared for reinstallation and continued use. When reinstalling, insure all components fit tightly and are properly sealed with calking to eliminate future moisture or freeze-thaw damage. Rehabilitation processes should be performed to extend the useful life of the revisions a minimum of 100 years.

Also currently, there is an indentation along the original parapet cap that appears to be where an original masonry and brick parapet gable and flag pole were once installed. The gabled parapet wall once exhibited over the main building entrance is represented on the Revit drawings in this report as it is perceived to have originally "*perhaps"* appeared. Without access to historic drawings, the visual appearance presented is only conjecture.

To identify original paint colors throughout the project on site, use a single-edge razor blade to gently scrape each layer of paint surface away, collecting scrapings until the first paint layer is exposed. This process will reveal the different colors of paint that were used in the building and can provide a potential color palette to use with the rehabilitation of the building A similar process can be accomplished by softly sanding surfaces down through all of the painted layers to expose the original color. In both instances samples of the original color should be capture and sent off for inspection to identify the original color's modern equivalency.

Critical Improvements

- A minor exploratory series of demolition investigations in inconspicuous locations should be conducted in the future to determine exact conditions of the masonry construction and its interface with other masonry units. Original non-structural interior partitions observed during RAFI team investigations indicate they are wood studs framed at 16 inches on center; along with attached wood lathing and painted plaster finishes.
- A more in-depth examination of the masonry installation requires the removal of some exterior veneer brick in the future to learn more about if and how the veneer brick is secured.

- If concerns are uncovered, a simple option to help reinforce the face of the perimeter wall is that the back face of the exterior layer of brick veneer may be “buttered” in a mortar mix that matches the original mortar for adherence to the brick behind.
- The interior face of the exterior walls are plaster finished. The existing plaster may be “buttered” directly to the back face of the brick, or it may be plastered over a wooden lath backing material. A greater review and investigation of these conditions should be performed and documented during later phases of the work.
- Some trim pieces of exterior metal are damaged and needs repair or replacing.

Structure and Framing:

Portions of the building not resting directly on concrete slabs on grade are elevated to provide a crawl-space maintenance area for performing building repairs and revisions. The crawl space also protects the wood floor framing and other under-floor apparatus from exposure to moisture wicking upwards from the soils outside.

As previously indicated, the ground floor framing above the basement (with the exception of the concrete jail area) and above the crawl space is sheathed with two layers of wood. The first layer of sheathing is laid diagonally across the floor joists as a subfloor for laterally bracing the joists; the second layer consists of boards, nailed perpendicular to the floor joists. A similar wood framing system occurs at the second floor level and the floor above the interstitial space. The second layer of boards serve as the finished floor.

The perimeter wooden windows are original. The windows are double hung units that allow for natural ventilation; and for introducing cooler outdoor air into the interior spaces. The original window sills are cast concrete.

Roof framing for the original building consists of wood roof trusses set at two-feet on center with the surrounds infilled with brick. The roof trusses are sheathed with a single layer of wood sheathing boards. A built-up roofing membrane system protects the building and its interiors from storms and weather. From on-site attic observations, the existing roof leaks at several locations.

Critical Improvements

- Observed during inspections of the crawl-space beneath the building are rubbish and disturbed soil remains that need to be removed.

- All aluminum windows, doors and door frames are not original to the building and should be removed. Replacement windows and frames, doors and door frames can be either purchased through specialty product manufacturers or constructed by qualified millwrights to match all existing conditions. The original wood and glass windows are another likely location for uncovering asbestos used in early calking materials; and the presence of a lead paint coating next to the wood.
- When replacing the roof membrane, attention should also be directed to insulating the entire interstitial roof area beneath the roof sheathing with solar reflectance barrier and batt blanket materials to create a thermally cocooned attic space.

Site:

While relatively flat with mild natural slopes towards the north and east, the site has an observed history of collecting standing water near the northwest corner of the 1953 Fire Bay building addition. Similarly, there is a history of underground and surface water collecting in the park area that is directly west of the city hall project.

There are two means to properly mitigate site water issues. With additional soils testing around the easterly edge of the park area, if any underground water flows from the park through the site it must be redirected in some manner into the city's existing underground infrastructure system – that empties into the drainage channel nearby. In addition, slopes within the site surrounding the building must be revised accordingly not to exceed 02 percent to adequately drain surface water from the southwest corner of the parking area and along its western edge eastward to Mill Street and northwards to Clark Street into the city's existing infrastructure system. A similar not-to-exceed slope of 02 percent should direct surface water away from all of the building's edges.

If necessary, the eastern boundary of the park area can be easily redeveloped to collect and redirect surface and any underground water flow northwards to Clark Street and the city's infrastructure.

With the site revisions proposed in this report, the new porous hard surface areas make the property more functional and adaptive for accommodating any variety of outdoor activities and events while allowing moisture to be absorbed naturally into the soils away from the building structure. The increased site area also allows ample room and distance to revise the surface drainage to slope to infrastructure properly.

Where hard surface slopes intersect, surface water draining to the streets should be set to not exceed 02 percent – to insure surface water drainage does not conflict with federal ADA standards.

Critical Improvements

- Site revisions necessary to accommodate new requirements for vehicular circulation, parking, outdoor uses and ADA access.
- Site mitigation necessary to resolve any discoveries of underground water issues.
- Site revisions necessary to provide for proper surface drainage.

The 1953 Fire Bay Station Addition

The City of Ely has documents in its possession prepared for adding (2) fire bays to the building. These documents are dated September of 1950; the drawings consist of five sheets. In general, it appears the limited character of the drawings were used only to guide the contractor's overall endeavor with the work. In some instances, the drawings and actual construction are different - or not constructed. These drawing are available through the City of Ely.

The (2) bay masonry and brick building addition is constructed on grade, in order for the new floor elevation to match the floor level of the original building's fire bay. The designated east elevation of the addition consists of concrete columns supporting a steel beam that carries the concrete masonry and brick wall area above the fire equipment door openings. The designated north elevation of the addition is constructed of concrete masonry and brick. There are steel lintels above the windows and door openings. The original windows and exterior entry doors are wood framed. An additional series of aluminum windows were later added inside the building. The date of that addition and scope of revisions are unknown.

There are two office areas on the ground floor of the fire station addition along the designated west wall that are separated by a small toilet room. A similar set of rooms and toilet are stacked above the ground floor spaces that are accessed by an interior steel stair. These spaces originally served as additional sleeping units for firemen. These rooms consist of wood framed partitions sheathed with gypsum board. The exterior west wall of the fire station addition is constructed similar to other exterior walls using concrete masonry surfaced with an exterior face brick veneer. The parapet cap along the perimeter walls is concrete.

There is no evidence on the city's drawings that the exterior concrete masonry walls of the fire bay addition are reinforced in any manner; nor do the drawings indicate any presence of brick ties mechanically attaching the exterior veneer to the concrete block. With the structural failure along the northwest corner of the addition, during the future design of improvements to the building, it will be necessary for the project's structural engineer to perform an in depth wall analysis to address and rectify present deficiencies using the most appropriate and economical means possible.

Two basic engineering approaches exist to rectify the settlement issues near the north and west corners of the fire bay addition. While the first option is certainly best aesthetically, it is the more complex and expensive of options. With this first option the north wall and portions of the west wall can be stabilized, strapped and supported by a series of temporary structural beams and piers that allow the wall area that has settled to be carefully jacked vertically back into its original positioning and rest upon temporary beams and piers while soil issues below are addressed - and a new segment of permanent foundation wall and ground anchors can be installed. When the joints are closed together as tightly as possible, special grouts of a matching color can be inserted to fully close any remaining gaps in the reconnected wall.

With the second, less expensive option proposed by the soils engineer in its report attached herein as Appendix C, the foundation along the west wall near the north corner and the north wall near the west corner would be stabilized and supported while a new segment of reinforced concrete foundation is constructed and tied to the existing foundation. This new foundation wall would be supported by ground anchors screwed deep into the soils beneath the new foundation. With this process, the existing gaps in the walls would be structurally connected using a lining of carbon fabric reinforcement along the interior of the wall. Once stabilized the gap would be filled with an approved grout and joint material manufactured for this type of specific purpose and use.

The roof structure for the fire bay addition consists of (3) steel roof trusses that support wood framing members and a plywood roofing diaphragm. An investigation of the interstitial space indicates several areas where the roof has leaked. Wood ceiling framing for the fire bays are attached to the bottom chord of the steel roof framing trusses. The ceiling is sheathed with gypsum board and painted.

Critical Improvements

- When replacing the roofing, the interstitial space below the roof joists should be insulated in a manner to create a solar reflective batt blanket cocoon similar to that proposed for the original two-story structure. Do not consider any type or form of machine applied insulation.

The 1973 Alterations

The interior photographs contained in this report along with drawings on pages 40 through 51 indicate current interior conditions resulting from Chilton Engineers drawings dated April 25, 1973. It appears from Chilton's revisions to the historic building, the toilet in the jail was removed and a new exit out of the jail area was cut and framed into the west wall where a concrete porch and steps were added. At that time of the revisions to the jail, the drawings indicated the space was to be used as a Courtroom. It appears the jail cell door was also removed and a new door installed, that was later removed to create what is currently designated as the building's Copy/Meeting Room.

The original toilet serving the administrative area was removed as well and a new toilet was constructed where the current Men's Room is located. At some later time, or through a change order during these revisions an additional Ladies Toilet was added to where it is currently located.

Other ground floor changes with these revisions resulted in the current Clerk's Office and a new entry door into the room and an operating window into the administrative area from the Entrance Lobby adjacent to the stair – for the public to use. Visual observations indicate that with the building's original design and construction there may have been clear and unobstructed access to either the ground floor administrative area, or to the stairwell to the second floor once anyone passed beyond the building's main entrance doors. This *possibility* emerges from Chilton's drawings that do not indicate any existing walls or doors in this area being removed to accommodate the new privacy separations.

Senior citizens remember a business transaction window being located in the building's entry alcove adjacent to the stair. It appears this counter and perhaps the doorway into the administrative area was added in 1973. Although not in use, the public transaction window remains.

While not indicated on any of Chilton's project drawings, from observing the means by which the current wood framing is assembled, including observable alterations to other portions of the building, it is *likely* that the interstitial space above the ground floor administrative space was constructed, and the removal of the jail occurred with this set of alterations. In all likelihood as part of these changes, access doors to the interstitial space were installed in the stair landing and a number of the original double-hung wood windows used to ventilate and cool the interior spaces were replaced with smaller aluminum-framed windows and masonry and brick infills to reshape the original openings - to receive the interstitial floor framing and new structural connections.

Adding the interstitial space within the building required the ceilings in the first level to be lowered. Gypsum board is now nailed to the bottom of the wood framing members and acoustic tile is glued to the gypsum board. Hardboard with a laminated plastic wood finish was used to sheath almost all first floor wall surfaces in the administrative area, to hide interior alterations from view. From within the interstitial space addition, the original tin ceilings can be seen above.

The plastic finished hardboard used in the alterations is also installed on a segment of the stair and on certain office walls on the second floor for similar purposes. Second floor ceilings have also been dropped and lowered to the heads of the original window trim. The original second floor tin ceilings still exist, although some of the panels appear to have been heavily damaged while revisions were being constructed.

Added improvements during this phase of changes included creating an exterior service stair to the basement, the addition of a steel balcony and fire escape from the second floor along the west building elevation and new concrete exit steps from the stair to the ground. Although it is not addressed in the drawings, it is *likely* that with the new exterior stair to the basement, the original basement stair into the police department was abandoned and the original opening into the ground floor area was framed over and closed.

While never formally documented or memorialized, at some point in time the gabled unreinforced brick-veneered masonry portion of the original parapet wall above the building's main entrance and the roof mounted flag pole were also removed. As well, it appears new brick veneer and masonry was installed as infill when a number of the original windows were removed and reframed to accommodate construction of the interstitial space above the administrative area of the first floor. A close inspection of the brick infill indicates clearly

observable color differences between the original brick material installed along the south building wall and the bricks used for infill.

Critical Improvements

- While the coloration of the existing brick veneer infill does not match the original, it should be saved and cleaned for reuse if necessary around the reframing of the window and door openings - where current windows are to be replaced by new wood windows matching the original units.
- Without documentation it is not possible to determine the exact design or character of the original gable portion of the parapet and the rooftop flag pole that has been removed. In its place a simple painted steel frame and flagpole is indicated as a possible replacement to identify where the gable and flagpole once existed. The proposed steel frame and flagpole is lightweight, simply supported, has minimal structural implications and is metaphorically symbolic of its original history.

Rehabilitation

According to the US Secretary of Interiors:

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, or architectural values.*

The Secretary's 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 in 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. *Archeological 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.*

1. *Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

2. *Designs that were never executed historically will not be constructed.*

Proposed Approach to Rehabilitation Work

1. As previously discussed in this Report, the most critical issue to be resolved before any significant rehabilitation effort proceeds is mitigating existing underground site conditions that caused the north-west corner of the 1953 building addition to fail. Following the recommendations established within the forensic site survey and forensic soils investigation, problematic sheet drainage and any underground waters bleeding across the site can be mitigated and provided with infrastructure improvements to eliminate future damage to the site

and soils. While the forensic soils report was performed by a third party and is not part of this Historic Structures Report, the results of the investigations have been reviewed by this office and its recommendations are incorporated herein. When likely site, soils and any moisture problems are resolved, the north-west corner of the two fire-bay addition can be repaired and any future building settlement concerns alleviated.

2. The majority of the 1973 revisions to the original building should be removed. This includes the removal of interior revisions addressed on Chilton's drawings, the removal of the framing for the interstitial storage areas between the first and second floor; the removal of infill masonry and brick, the aluminum windows, the alterations to the stairwell wall, and revisions to the second floor, including the removal of the dropped ceiling. The removal of the non-compliant aluminum windows and doors and the interior interstitial area allows the original design character and high tin ceilings throughout the building to be reestablished using new matching replacement products. Attention to the inspection, removal and replacement of the south and west handrail in the main stair is necessary for the new stair rails and connectors to match the original east handrail that the *likely* 1973 alterations did not change.

Once the extraneous interstitial framing and dropped ceilings are removed and the tin ceilings are clearly visible it too should be more apparent where all original partitioning was located throughout both floors of the 1928 building. All original partition locations and other findings should be documented for historical purposes.

As part of the removal process all existing electrical, mechanical and plumbing should be removed from the entire building, including existing radiators that are most likely filled with calcium chlorides that restrict performance and increase energy demands for service. These units should be cleaned thoroughly, repainted and stored for future reinstallation. New, more highly energy efficient electrical, mechanical and plumbing systems including a new heating and air-conditioning system throughout the facility will significantly improve the building's environmental comfort. Replaced original radiators will serve as visual reminders of how the building's heating was once provided.

New environmental and energy conservation systems proposed in this report incorporate allowances to accommodate any necessary redundancy, necessities for emergency operations off-line and the capacity to allow for future interior space reconfigurations not now necessary.

While segments of the existing perimeter walls of the building under this proposal are being furred-out to accommodate and conceal new HVAC and electrical systems and insulation, the furring also conceals the structural fiber wrap that is used to strengthen the unreinforced masonry and brick walls. Consequently, in returning the building to its original space configurations, the greatest majority of future insulation value will lie in the insulated ground floor and the roofs. The details of the Mechanical/Electrical and Plumbing systems proposed are described later in the report.

Original (altered) window openings and the original first floor main entrance should be re-framed as necessary using existing masonry and brick, with steel lintels overhead and matching cast concrete sills to receive new wood windows matching the original design and construction. NPS Preservation Brief 9 should guide efforts with this work. Similarly, the building's original entrance doors should be repaired and reinstalled – or designed and reconstructed accordingly to match the original details - along with rehabilitating the exterior wood fire doors for the original fire equipment bay.

The current ADA non-compliant entrance porch, steps, ramp and handrails should be removed and replaced with a new conforming concrete porch that is sympathetic with the building's original porch and stair configuration. Recommendations for the replacement are included herein.

With this rehabilitation, the 1953 two fire-bay fire station addition needs similar masonry and brick, window and door repairs to restore and return that portion of the building's integrity. As the work progresses, all of the masonry walls and brick veneer need to be repaired and repointed with a matching color grout mixture specially formulated for use in historic buildings. A mortar analysis should be performed by the testing laboratory to determine an appropriate mortar rating for repointing.

Please consult NPS Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings. According to Jim Bertolini with the Nevada office of SHPO: "Waterproofing brick is never recommended for ANY masonry building, regardless of historic status. Brick needs to breathe and when water-proofing treatments are applied, the normal performance of exterior masonry is hindered, leading to accelerated water damage as water is trapped in the masonry and expands, contracts, and breaks down the brick and mortar joints." Work with repairing the

existing steel windows should be guided by NPS Preservation Brief 13. This is another likely area where asbestos in the calking and lead paint may exist.

Each aspect of rehabilitation work performed under these tasks should be well documented and archived for future access and historical reference.

3. While this work is underway, the interior perimeter building walls and other load-bearing walls constructed of un-reinforced masonry and/or brick need to be structurally enhanced to withstand horizontal wind loads and stresses resulting from seismic events. There are two optional ways by which the walls can be strengthened to conform to IBC requirements.

The first option is the more traditional means of strengthening existing walls. A structurally designed steel framework of vertical and horizontal steel reinforcement is placed on the inside face of bearing walls and sprayed with a 4" to 6" thick gunite mix of concrete to provide the support necessary. The second option uses newer technology to accomplish the same goal – more economically. This process wraps the back face of the masonry walls using a carbon fiber structural mesh cloth and epoxy adhesive to produce the additional strength necessary. The value of this process is that it takes less time to install and offers a far more simple solution to address the seismic concerns. Once installed, the carbon-fiber wrap is approximately 3/8" to ½" thick.

While enhancing the structural capacity of the existing load-bearing masonry walls, the parapets around the building and the chimney need to have bracing designed by the structural engineer to restrain failure during a seismic event. As part of rehabilitation work at the roofing levels, the existing roofing should be removed, the decking joints and penetrations taped with a rubberized flexible flashing material. When repaired the roofing should be replaced with a heavy-duty single membrane system that extends up the back of the parapet walls where it is flashed and counter-flashed near the bottom of the parapet cap. The roofing system should include additionally strengthened walking paths for the city's maintenance and operations personnel. Each step of this second set of events and activities should be closely documented as well and archived for future reference. NPS Preservation Brief 41 should be used to guide all seismic retrofitting work.

4. With the completion of exterior and interior removals of the 1973 alterations and structural improvements to the original building and the 1953 (2) fire-bay addition, the facility should be structurally sound, water-tight and ready for interior improvements; including repairs associated

with extraneous removals, repairing the original tin ceilings, preparing interior infrastructure for future needs, purposes and comfort, and other alterations necessary to accommodate administrative functions, ADA compliance and life-safety protection for the public-at-large.

The following segment of this Report addresses Soils, Structural Engineering and MP/E aspects of the work performed by outside consultants; by RAFI team members Rimah Nazzal a structural engineer with the Risha Engineering Group, and Melvyn Green, S.E. who specializes in analyzing historic structures; along with team members at PDA Consulting Engineers who provided electrical, mechanical and plumbing assistance.

General Soils Information and Recommendations

While soils investigations were not part of the scope of services for this project, the study was performed through a separate agreement directly between the city and the soils engineers that was coordinated through this office.

A general description of the rehabilitation work associated with repairing the foundations is addressed in an earlier segment of this report.

The soils investigations concluded that the structural failure observed at the northwest corner of the 1953 fire bay addition is the result of soil capacity compressive strength limitations discovered beneath the failed foundation area. Within the report, engineers address current conditions and provide recommendations on how to proceed in future phases of work, including means and methods describing how the issues can be safely mitigated – and the building protected from future settlement.

The Ninyo – Moore Soils Engineering Report for the city is attached to this document as Appendix C.

General Structural Treatment Recommendations

To provide sufficient structural and seismic stability, retro-fitting the unreinforced masonry will have to occur. The evaluation of the current building was performed using the American Society of Civil Engineers (ASCE 31.03) as a standard method, based on Life Safety criteria. The building is currently a Risk Category C that has a moderate seismic risk with its current structural stability. There are two high-priority conditions that require quick attention: settlement and cracking and seismic safety. Mitigating soils failure in general is addressed above and within the Ninyo-Moore appendix report.

Recommendations for seismic rehabilitation and repairs are detailed in each segment of the Mel Green/Risha structural engineering report attached as Appendix D, E, F and G. The report addresses each of the historic building's structural components, settlement issues and seismic findings. Remedies utilize a thin carbon-fiber fabric that is adhered to the interior face of existing all masonry walls including the basement, crawl space and parapet wall area that extends above the roof.

With the next phase of design for the historic building that is developed for permitting and construction, a detailed structural solution based upon actual soil capacities, dead and live loading, seismic and wind-load stresses, foundation mitigation, new construction and revised code requirements will be necessary.

General Mechanical, Electrical and Plumbing Information and Recommendations

As indicated in earlier segments of this investigation, due to age and code issues current electrical, mechanical and plumbing systems throughout the historic building are to be removed and replaced with state-of-the art resource efficient systems. It is also proposed as a recommendation that the City work with others to secure grants to add photovoltaic panels to the north edge of the park property west of the building as a means to make this project as sustainable as economically feasible. A portion of the PV panels can be installed over shade structures for parking.

Since the proposed new mechanical systems are electrically powered, any reductions in electrical demands produced through renewable energy will help reduce future ongoing operating costs for the site and building.

Proposed electrical, lighting, communications, security and plumbing systems for this project including automatic fire-sprinkler systems are simple, straight-forward, economical to acquire and install, and are highly resource efficient.

It is important to note that with Ely's remote location and hard winter conditions, its frequent demand for springtime and summer air-conditioning, its lack of access to natural gas for heating, and the character of the buildings' historic masonry structure, all makes it extremely difficult to achieve high energy conservation ratings.

To insulate the building as much as possible in order to increase R factors and lower winter heat loss and summer heat gain will be a challenge for the future design team. What is proposed herein increases R factors as far upwards as may feasibly be possible. Still, it will be important to have an exceptionally good mechanical engineer that understands sustainability and the influences climate change will have upon this building to improve the efficiency envelop as much as possible. Incorporating new emerging technologies will also help lower demands for heating and air-conditioning.

What is proposed herein provides for a roof and below floor R factor of 50; and a wall factor including glass of 14. It includes the installation and use of interior storm windows throughout the building year around.

In most instances the ideal location for installing insulation on a masonry building is along the outside of its exterior walls blocking temperature from being stored in its masonry materials and being transmitted into the interior space. Using exterior insulation also isolates the masonry wall mass and allows it to be used as a sink in storing indoor temperatures – allowing stored heat and cooling to emit slowly back into the interiors for comfort as room temperatures fluctuate.

When properly managed, heating and cooling efficiency is greatly increased, significantly reducing energy demands year-around. With the historic character and features of this building this option at this time is not possible.

The HVAC system proposed herein is unique and custom designed to be as economical, efficient, flexible, compact and un-intrusive as possible. It utilizes split-system equipment where condensing units are located in an equipment yard to the rear of the existing building.

HVAC equipment and apparatus serving the first floor level are to be located in the existing basement with insulated supply and return piping located within the existing crawl space – that is also proposed to be insulated. The new units proposed are designed to operate at -5 F and are supplemented with interfacing electric radiator boosters installed within the furred areas of exterior walls beneath the windows – along with inserts designed to visually represent the original steam generated radiators as historic architectural exhibits.

The lower ground floor areas of the building currently housing the fire station is proposed to be similarly served by HVAC equipment installed in the interstitial space once used as the fire-men's sleeping quarters. The proposed new Council Chambers and Meeting Rooms are to be served using similar HVAC equipment suspended from the structure above. All new piping

and electrical conduit is concealed within the new furring system attached to the inside face of the perimeter walls and through existing framing.

Equipment serving the proposed new building addition is located in equipment rooms on the ground level and the concealed ceiling space above and below the second floor.

No uncovered documents address or identify lighting. Once the original high tin ceilings are exposed a close inspection of the ceilings will likely provide evidence where suspended lighting fixtures were once installed. In addition to suspended lighting fixtures there may be locations where suspended ceiling fans once operated. If additional locations for suspended ceiling fans do not exist, it may be that the fans and lights were combined, which was fashionable for the period.

More details regarding to the Mechanical/Electrical Engineering Report can be found in Appendix H.

Adaptations to the Historic Building

The space plan proposed herein reflects architectural programming information directed to the RAFI Team by the City of Ely. It is understood that needs and demand for departmental space will change over time necessitating departmental and staff relocations. With the space plan proposed by the team there are only a few adaptions made to the original building. Each can be easily removed and replaced to match the original building configuration if and when necessary. Only those alterations necessary to accommodate provisions for ADA cannot be removed without approved alternatives.

Basement

The Basement area remains principally as it exists today. Antiquated mechanical and electrical systems are proposed to be removed and replaced with new equipment to serve the building. The south half of the basement remains available for archive storage. It will be important to set storage units at least 12” above the basement floor on blocking to protect documents from any possible flood event. Please review photographs in Appendix L for more information.

First Floor Interior Space

The first floor Main Entrance area is revised to accommodate a new interior entry and reception space for city functions. The new entry framing encloses the primary administrative space without impacting the original high tin ceiling above. Systems furnishings are proposed throughout the first floor administrative area, including the area designated for Planning and Building Departments. Exiting for these occupants is through the main entrance and the Planning/Building Department entrance along the southern building elevation.

As an option, Planning and Building operations can remain on the second level if the court remains in its current off-site location. If that is the case, the City Clerk could use the ground floor space currently assigned to planning and building and have a separate public entrance for customer convenience.

Inside the Main Entrance at the First Floor level, a proposed new entrance/exit alcove and doorway is framed to provide access to the proposed location for the Mayor's Office and Main Conference Room. The short stair down to the Ground Floor Level complies with ADA requirements. For those using wheel chairs, with the approval of the building official a side lift can be installed adjacent to the handrail; or ADA access to the lower level can be gained through existing entrance doors along the north elevation of the two existing fire bays; or through the proposed new north building entrance and ramp.

Also, inside the historic building at the First Floor level is a proposed new entrance opening framed along the west elevation. This new entry and doorway is aligned with an existing masonry window opening that will allow internal access to-and-from ADA toilets and the elevator located within the proposed new building addition. Adjacent to the proposed new enlarged opening is a second new framed opening and doorway in the masonry for access and egress from the new west addition to the proposed new location for the Ground Floor level Council Chambers, the Non-Profit Conference Room and Mayor's Office and Main Conference Room. The masonry removed to construct this new opening should be preserved to support future needs. Nighttime and life-safety access and exiting proposed for Ground Level areas are through the new north entrance, and through the two north exits located within the current fire-bays.

Interstitial Spaces

Under this proposal, the existing interstitial space above the original fire bay previously used for overnight housing for firemen, is to become a primary equipment space for mechanical and electrical equipment. As the entire facility will be protected by an automatic fire-sprinkler suppression system, with the building official's approval, the existing interstitial space located within the two-bay fire equipment room could be used for additional administrative office space or for housing additional offices for non-profit organizations. If not allowed, the area could be used for non-ADA accessible purposes.

Second Floor Areas

With this proposal, there are no significant changes to the current second floor spaces. The designated offices address the current needs of the City Attorney and the Court. It should be noted, the space requirements necessary for the Court eliminates any public seating. It is proposed that if the court is located within the building the proceedings be televised on a closed-circuit broadcasting system to areas set aside in designated conference rooms or the Council Chambers for the public to access and view.

The drawings included herein indicate how the second floor can be used for the City Attorney and Court in accordance with program information provided to the team by the City. As an option, the current space can be used equally well also for other city departmental needs as deemed necessary without altering or damaging existing partitions and proposed revisions to perimeter walls.

Proposed Rehabilitation, Restoration, Site Alterations and New Building Addition

The project proposed consists of two components: First; adapting the rehabilitated and restored historic facility to extended service for civic and administrative purposes for the City of Ely. Second, to provide access-egress life-safety provisions for the public including ADA provisions for the disabled. This second component is accommodated through simple building alterations and a proposed new building addition that incorporates ADA toilet facilities, accessible ramps for entering City Hall's first floor uses and an elevator for users to access the second floor.

Alterations to accommodate all proposed adaptive uses shall all be designed and constructed to be removed, if necessary at some time in the future to return to an original state.

Proposed Site Alterations

The current boundaries of the allocated City Hall site have been increased to accommodate ADA provisions around the building, including installing new ADA compliant stairs and an accessible ramp to the building's first floor Main Entrance. The proposed wider drive around the building also accommodates fire equipment better. The new west rear entrance allows for building users to park in convenient locations to the north and west of the property, and be able to access the facility after normal hours of operation for council meetings and other civic gatherings.

Proposed landscaping emulates plant materials used throughout the park, including returning the historic poplar trees to areas surrounding the building. Proposed turf is restricted to designated areas south, west and north of the historic building. Other proposed horizontal surfaces are porous masonry paver units to be laid in a basket-weave pattern. Proposed supplemental ornamental shrubbery is to be installed in planters served by an automatic drip irrigation system.

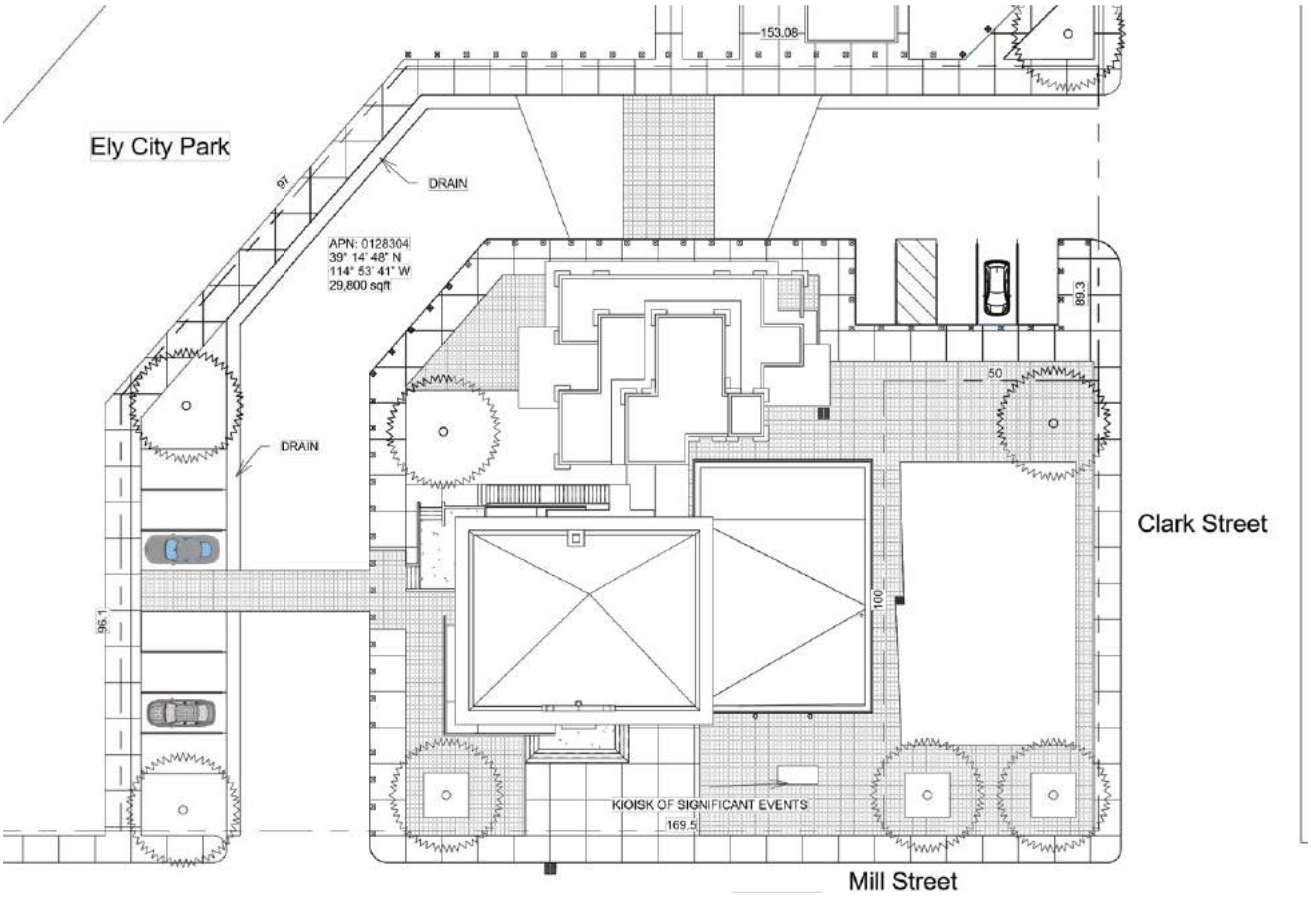
The use of masonry pavers allows outdoor areas and the area set aside for parking and portions of the park to be used for outdoor civic events and a possible future Farmer's Market on the weekends.

A series of concrete tables with concrete benches along three sides are proposed around the building(s) for outdoor lunches, breaks and table games. Benches along the fourth sides of tables are eliminated for access and use by those in wheelchairs. Supplemental chairs are recommended for use when wheelchair accessibility is not needed. A 6' x 6' x 6' concrete kiosk is proposed for the east sitting area to provide a picture map of significant locations, events and buildings that have significantly influenced the historical culture and character of the City of Ely over time.

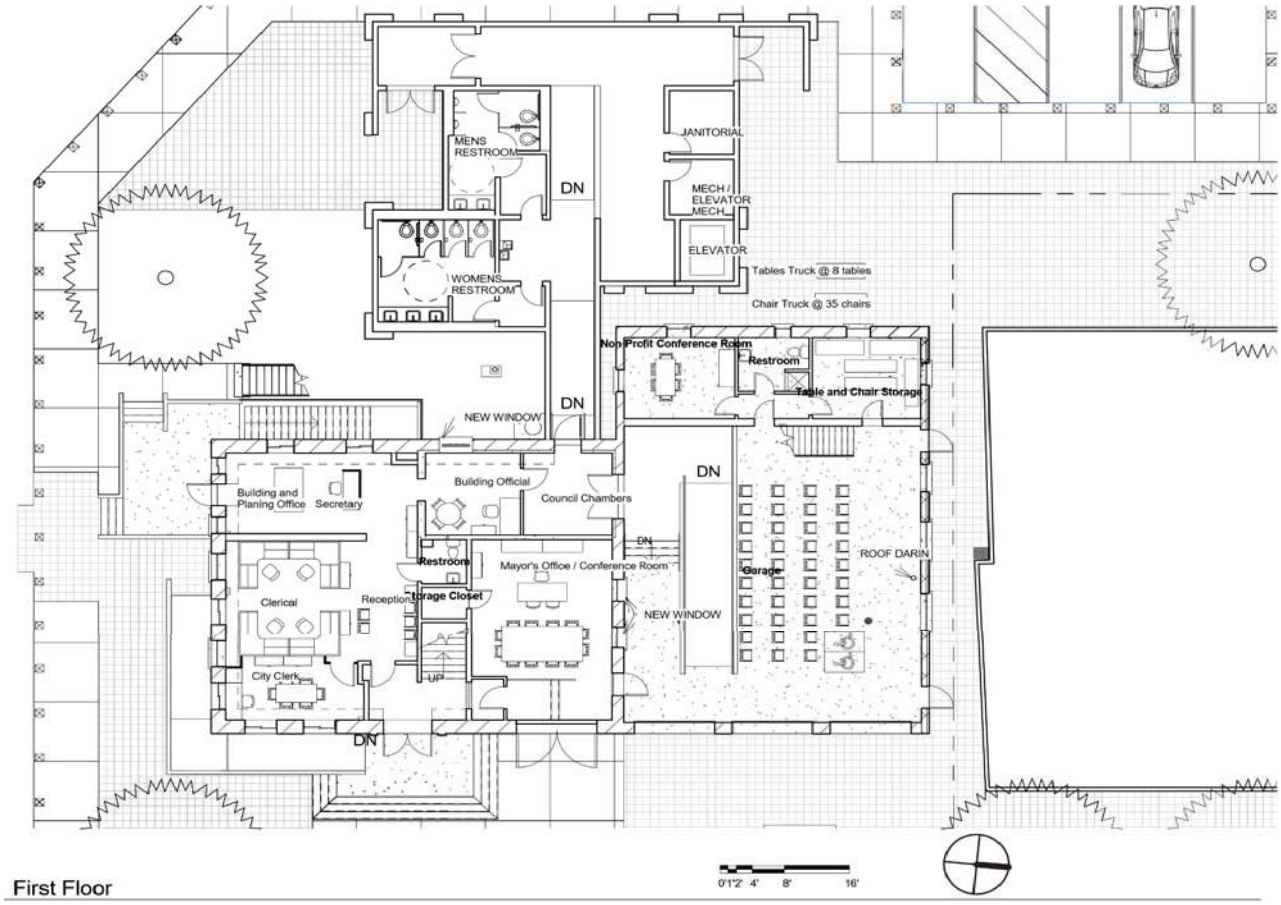
Proposed New Addition to the Historic Building

The proposed City Hall building addition serves multiple purposes. First it provides a new public ADA compliant entrance with immediate access from accessible auto and van parking. Second, the addition provides new ADA compliant rest rooms that are accessible to all areas of the historic building. Third, the addition provides for an ADA compliant elevator accommodating seniors and the disabled to second floor spaces; and fourth, the addition is designed as a life-safety exit connector and circulation route to move people safely out and away from the facility in the case of any emergency or extreme event.

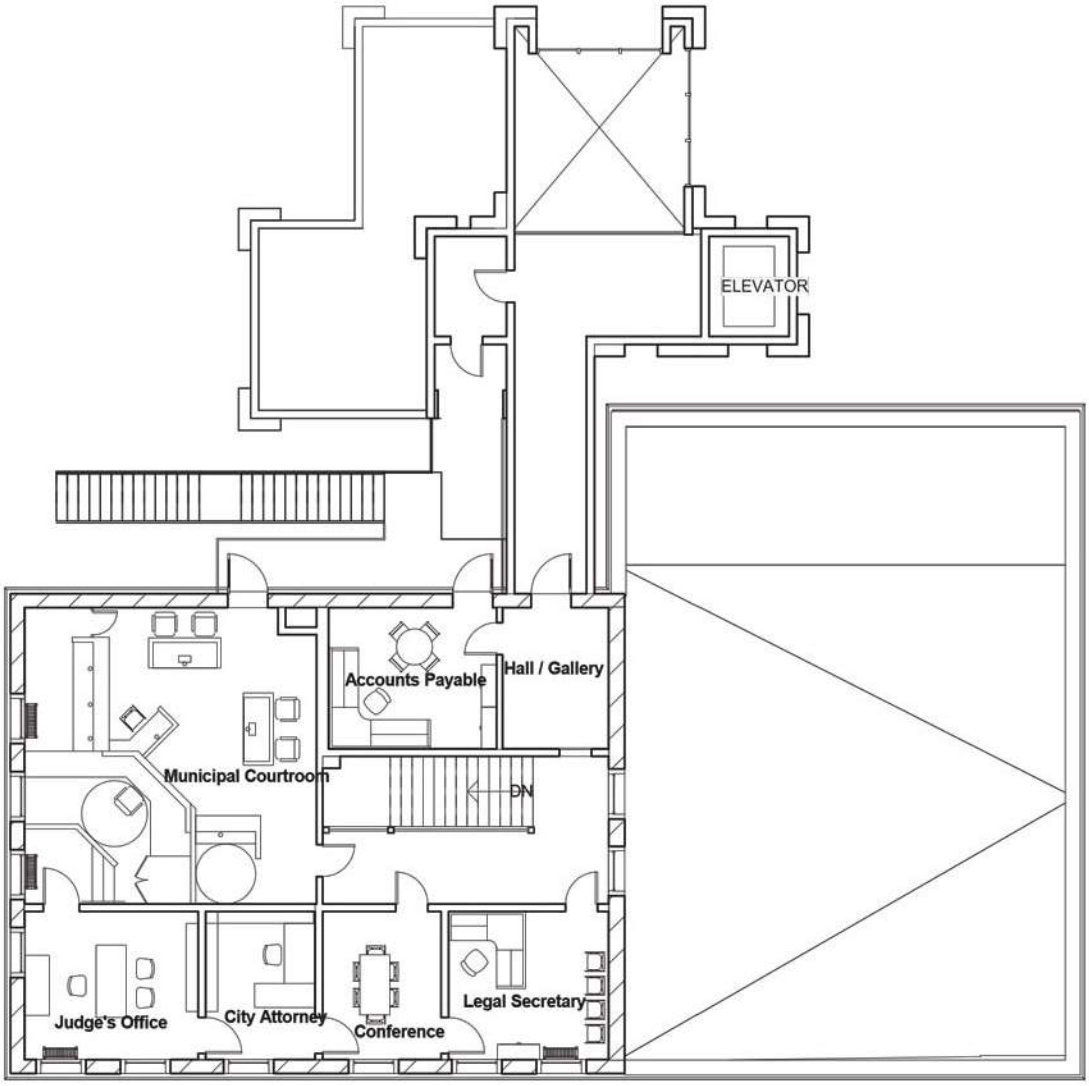
Design for the proposed addition presented herein exceeds LEED Gold minimum requirements. The simple building forms and singular color proposed for non-historic building improvements are extended continuously throughout the project to clearly contrast and visually identify representative differences between historic and non-historic property improvements.


Ely City Park
DRAIN
APN: 0128304
39° 14' 48" N
114° 53' 41" W
29,800 sqft
153.08
89.3
50
DRAIN
96.1
100
Clark Street
KIOISK OF SIGNIFICANT EVENTS
169.5
Mill Street

Site Plan

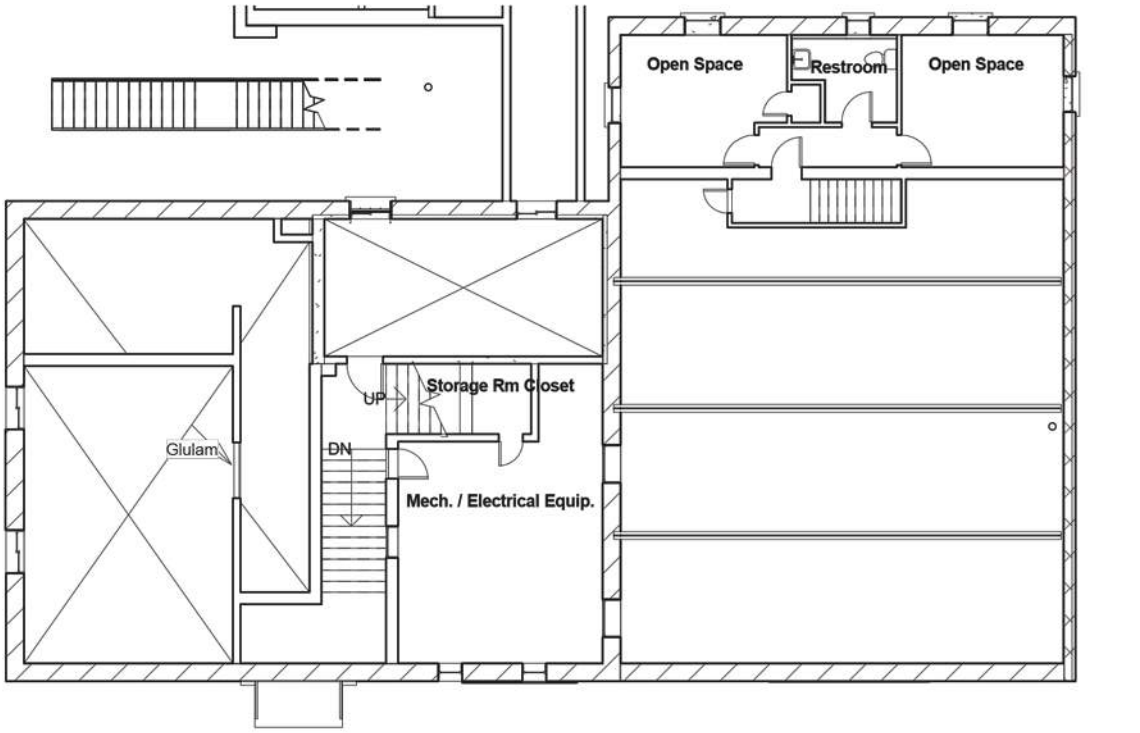

MENS RESTROOM
DN
JANITORIAL
MECH / ELEVATOR MECH.
ELEVATOR
WOMENS RESTROOM
Tables Truck @ 8 tables
Chair Truck @ 35 chairs
Non Profit Conference Room
Restroom
Table and Chair Storage
NEW WINDOW
DN
Building and Planing Office
Secretary
Building Official
Council Chambers
DN
Restroom
Mayor's Office / Conference Room
Garage
ROOF DARIN
Clerical
Reception
Storage Closet
NEW WINDOW
City Clerk
UP
DN
0'1'2' 4' 8' 16'

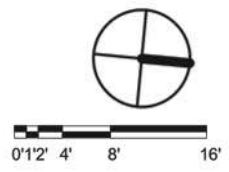
First Floor



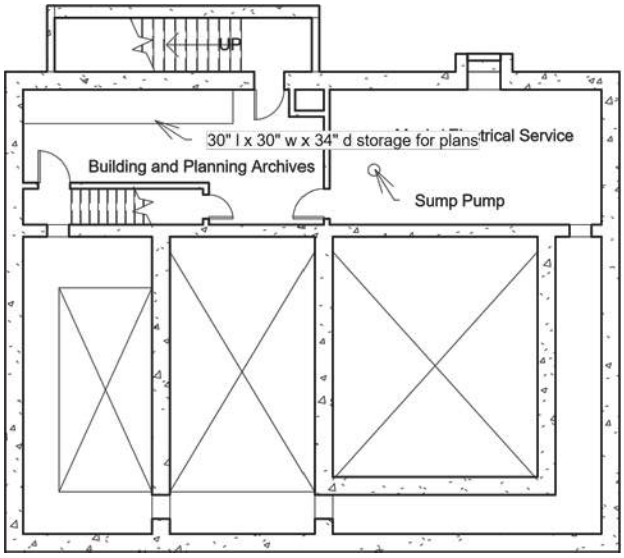
Second Floor

0'1'2' 4' 8' 16'





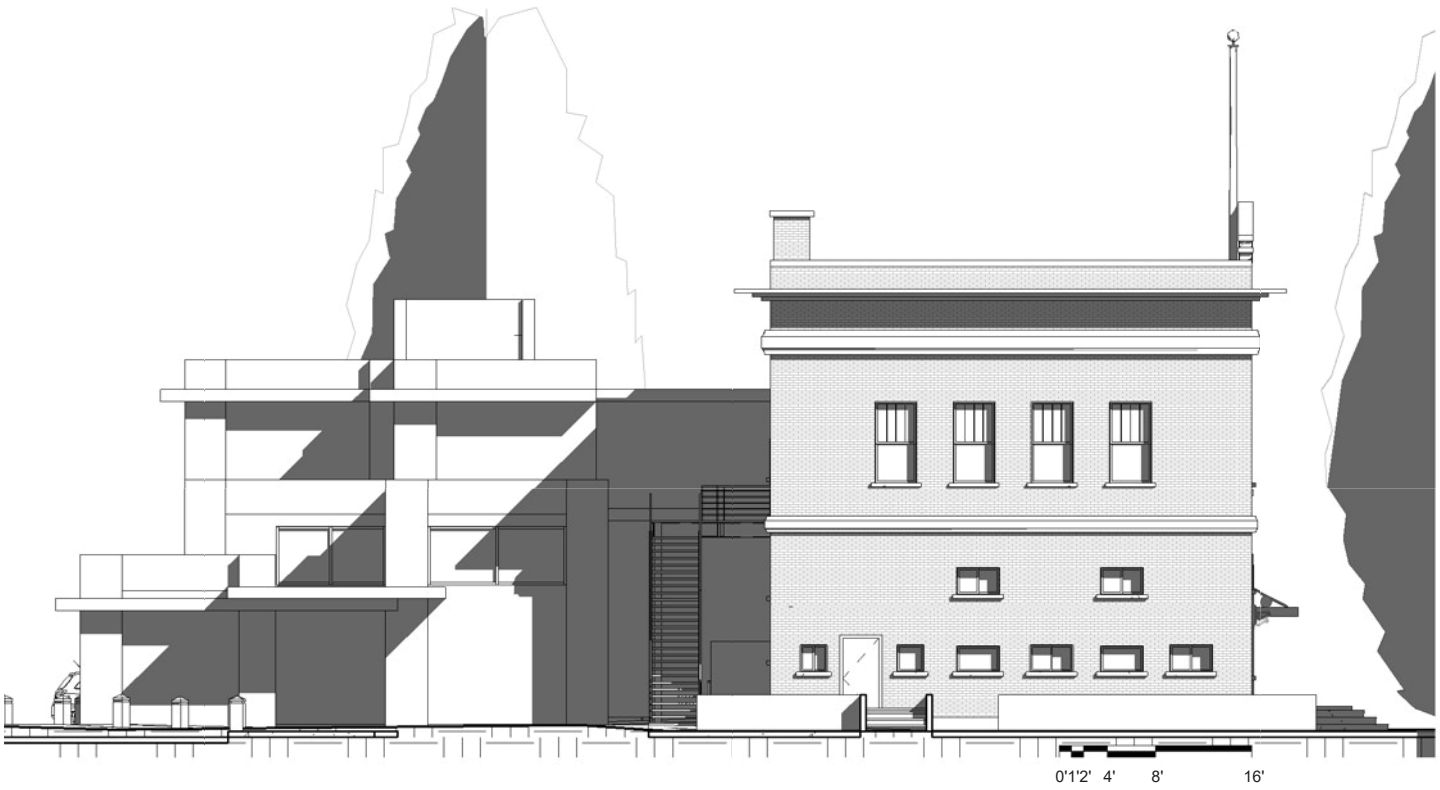
Interstitial Mezzanine


UP
30" l x 30" w x 34" d storage for plans
trical Service
Building and Planning Archives
Sump Pump

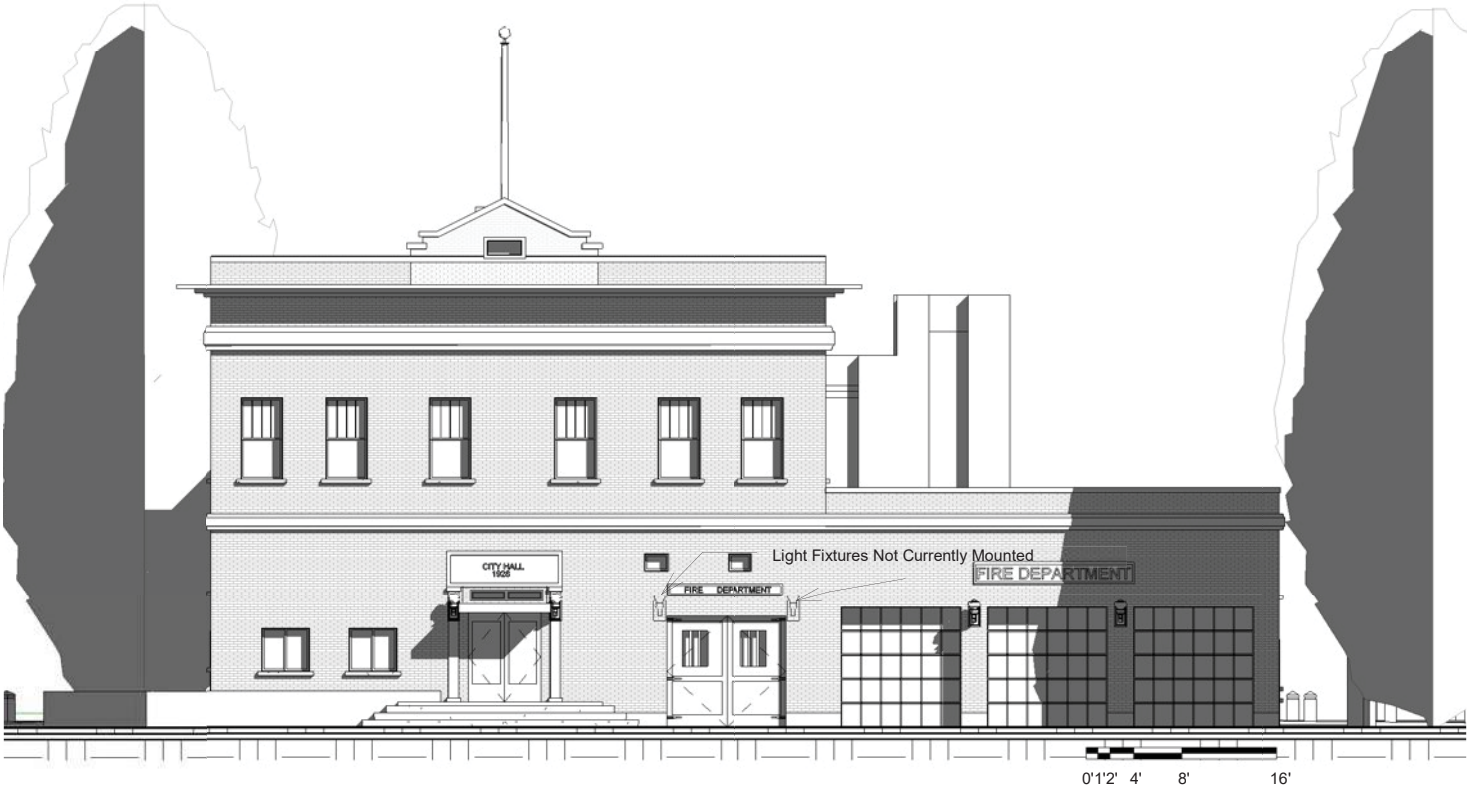
0'1'2' 4' 8' 16'

Basement

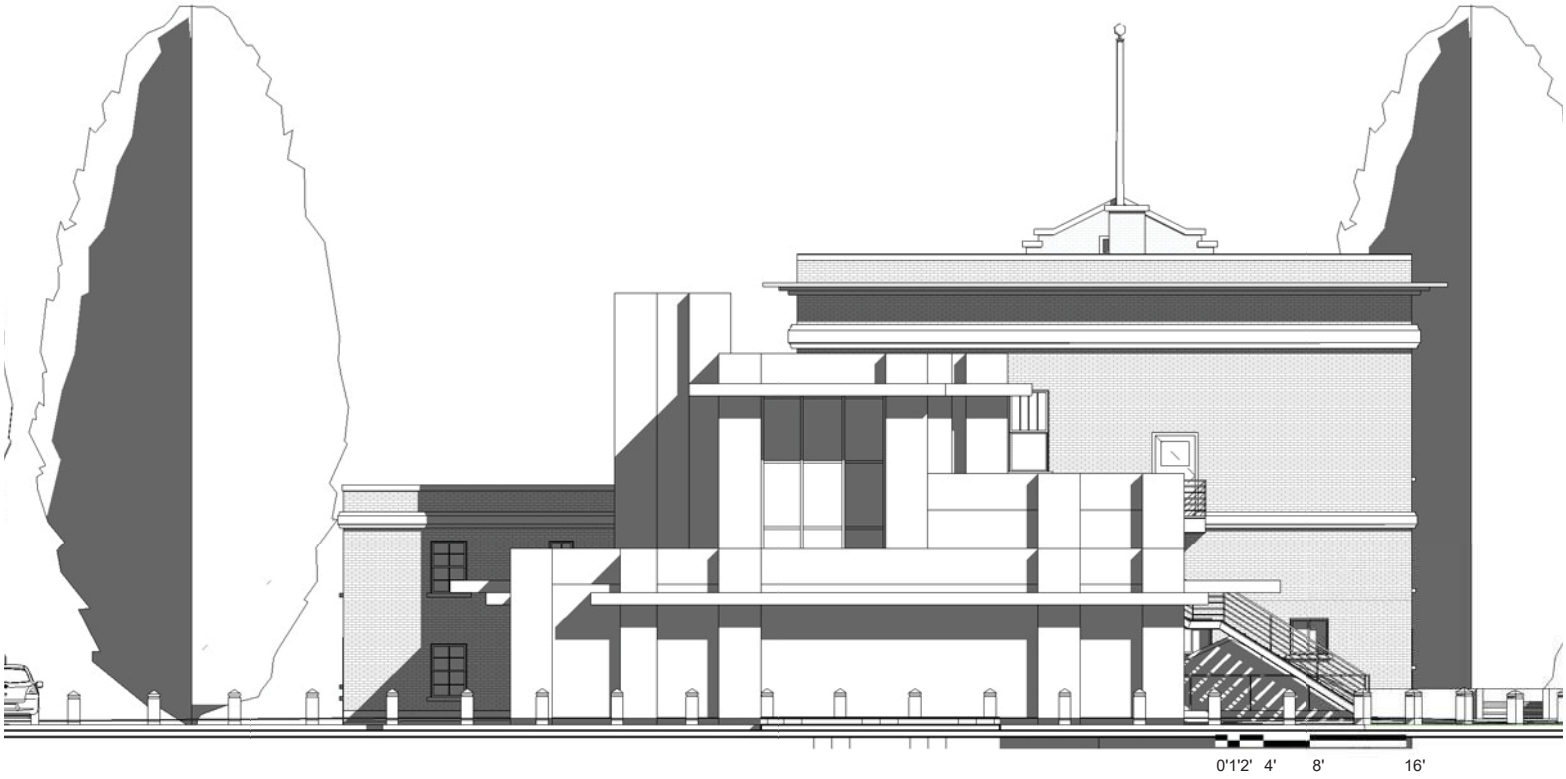
Designated North Elevation



Designated South Elevation



Designated East Elevation



Designated West Elevation


FIRE DEPARTMENT

Estimated 2017 Construction Costs for Property Improvements

The basis for this budget forecast includes is based on estimates established June 30, 2017 and includes the cost of materials F.O.B. Ely; the use of current Prevailing Wage Rates; a 10% upcharge for Ely's remote location and contractor's overhead and profit. Cost information is also based upon past experience with projects that are similar in character, and upon consultant's current information and experience. It is recognized that construction costs escalate and fluxuate over time as a result of inflation, construction activity and location.

With the next phase of work, a construction cost consultant should be included with the project's design team to provide more definitive costs based upon when the project is to be competitively bid and constructed.

Site Improvements:

1. General Infrastructure/Utility Revisions: $50,000 Lump Sum
2. Site Water/Building Foundation Protection/ Water Collection and Drainage: $25,000 Lump Sum
3. New Hard Surface Site Treatments: 25,600 Sq. Ft. X $12.50 $320,000
4. New Landscaping and Irrigation: $40,000 Lump Sum
5. Offsite Improvements: N/A _____

$435,000

Historic Building Improvements:

1. Removal/Repair of Non-Conforming Changes: 6,800 Sq. Ft. X $12.00 $81,600

2. Structural Upgrades:

   a. Seismic Improvements to Unreinforced Masonry Walls/Parapets:

      1). Basement Walls: 490 Sq. Ft. X $85.00 $41,650

      2). Ground Floor Area Walls:

      1120 Sq. Ft. $85.00 $95,200

      3). 2nd Floor Area Walls:

      3896 Sq. Ft. X $85.00 $331,160

   b. Seismic Improvements to Structural Framing/Roof Framing and Parapet Bracing:

4156 Sq. Ft. X $30.00	$124,680
c. Seismic Improvements to Foundation Settlement: Lump Sum	$ 25,000
	$699,390

3. Architectural Improvements to Address US Secretary of the Interior's Standards for Rehabilitating Historic Structures:

a. Window, Door and Hardware Rehabilitation:	
1). Reform (11) Window Openings: $1500 ea.	$ 16,500
2). (11) New Wood Windows/Painted/Installed: $800 ea.	$ 8,800
3). Repair/Paint (27) Windows: $550 ea.	$ 14,850
4). Reinstall/Refinish Main Entry Doors: Lump Sum	$ 1,500
5). Repair/Refinish (3) Sets of Fire Doors:	$ 8,000
6. Repair/Refinish (5) Exterior Doors:	$ 15,000
7. Repair /Refinish (17) Interior Doors/Frames	$ 13,600
b. Add Removable Batt Insulated Perimeter Wall Partitioning with Painted Gypsum Board to Cover Carbon Fiber: 5500 Sq. Ft. X $ 12.00	$ 44,000
c. General Remodeling Improvements: 8375 Sq. Ft. X $ 30.00	$ 125,625
c. Interior Wall Partitioning Rehabilitation/Refinishing: 2840 Sq. Ft. X $ 15.00	$ 37,200
d. Repair/Replace Tin Ceilings: 6871 Sq. Ft. X $ 8.00	$ 54,968
e. New Roofing: 4.156 Sq. X $600	$24,936
	$325,379

4. New 2 Story ADA Building Addition: 2594 Sq. Ft. X $260		$674,440
5. Mechanical, Electrical, Plumbing Improvements:		
a. Mechanical/Plumbing Improvements:		
Historic Building:	6871 Sq. Ft.	$ 171, 532
b. Mechanical/Plumbing Improvements:		
New 2 Story ADA Building Addition:	2594 Sq. Ft.	$ 65,110
c. Electrical Improvements:		
Historic Building:	6871 Sq. Ft.	$ 135,700
d. Electrical Improvements:		
New 2 Story ADA Building Addition:	2594 Sq. Ft.	$ 23,535
		$ 395,878
Total Estimated Construction Cost:	9,465 Sq. Ft.	$ 2,095,087
$221.35 Sq. Ft. for Building Improvements		

Total Project Forecast: Construction	$ 2,095,087
Site Improvements	$ 699, 390
	$ 2, 792,477

End of Report

Appendix

Appendix 01 Supporting Resource Spreadsheet

City of Ely City Hall and Fire Station

Resources for Information	Areas of Knowledge: Archeology	Anthropology	Geogology	History	Architecture
Books					
Publications					
New Paper Articles					
Other Articles					
Papers					
Correspondence					
Web Resource					
Maps and Drawings					
Other Resources					

Appendix 02 Jim Bertolini's Correspondence

From: James Bertolini [mailto:jbertolini@shpo.nv.gov]
Sent: Friday, February 19, 2016 12:59 PM
To: Robert Fielden <rfielden@rafiarchitecture.com>
Subject: NVSHPO - Meeting regarding Ely City Hall & Fire Station

Mr. Fielden,

Thanks for reaching out about Ely City Hall and Fire Station. Julie Ernstein passed on your inquiry to my desk as I've been working with the City of Ely on this project. The building is eligible for the National Register of Historic Places (nomination should be forthcoming from the City in the near future) and the City has applied for CCCHP (Commission for Cultural Centers and Historic Preservation) funds to support their project, a program that typically requires adherence to the Secretary of the Interior's Standards for Treatment of Historic Properties. In the case of the Ely City Hall, our likely recommend Rehabilitation as the primary method to utilize, as that gives the City the most flexibility for adaptive reuse.

Julie mentioned you would be in Reno next week and would like to set up a meeting at our office here in Carson during your visit, either on Tuesday, Wednesday, Thursday, or Friday morning. With the exception of Thursday morning, I have a fairly flexible schedule next week and could meet you here. Just let me know your preference on time and how long you'd like to meet for, and I'd be glad to reserve a conference room here. If you have any draft materials, or specific design or materials questions to seed the conversation, please feel free to forward those in advance.

Thanks again, and I look forward to working with you on this project.

Jim Bertolini
National & State Register Coordinator
Email: jbertolini@shpo.nv.gov
Phone: (775) 684-3436
901 S. Stewart St, Ste 5004
Carson City, NV 89701

Mr. Bertolini – Thanx for your prompt response. Let's meet Tuesday morning about 10:00 for an hour or so.
I will have our draft information forwarded to you prior to our meeting.

Thanx for responding so quickly!

See you Tuesday!

Fielden

155 South Water St. #220
Henderson, NV 89015
P.702-435-7234
F.702-435-6478

RAFIArchitecture.com

Mr. Fielden,

No problem at all, and I've got you on my calendar. We'll be meeting in the Bristlecone Conference Room on the 5th floor of the Bryan Building, 901 S. Stewart St. in Carson. I look forward to it. Have a great weekend!

Jim Bertolini
National & State Register Coordinator
Email: jbertolini@shpo.nv.gov
Phone: (775) 684-3436
901 S. Stewart St, Ste 5004
Carson City, NV 89701

I will be out of the office on Monday, February 22, returning Tuesday, February 23. I will return your message at that time.

Jim Bertolini
NVSHPO

From: Christopher Gaydosh [mailto:cgaydosh@rafiarchitecture.com]
Sent: Monday, February 22, 2016 6:03 PM
To: James Bertolini
Cc: Robert Fielden; LJ Spina; Johny Corona; jlee@elycity.com
Subject: Draft Information

Mr. Bertolini,

Attached you will find the draft information on the Ely city hall.

Chris Gaydosh

Intern, RAFI Architecture
155 South Water St. #220
Henderson, NV 89015

P. 702-435-7234
F. 702-435-6478

Thank you Chris! I'll look this over before 10 this morning.

Jim Bertolini
National & State Register Coordinator (NV SHPO)
(775) 684-3436

From: James Bertolini
Sent: Friday, February 19, 2016 3:02 PM
To: 'Robert Fielden'
Cc: LJ Spina; Johny Corona; Christopher Gaydosh; JenniferLee
Subject: RE: NVSHPO - Meeting regarding Ely City Hall & Fire Station

Mr. Fielden,

No problem at all, and I've got you on my calendar. We'll be meeting in the Bristlecone Conference Room on the 5th floor of the Bryan Building, 901 S. Stewart St. in Carson. I look forward to it. Have a great weekend!

Jim Bertolini
National & State Register Coordinator
Email: jbertolini@shpo.nv.gov
Phone: (775) 684-3436
901 S. Stewart St, Ste 5004
Carson City, NV 89701

Bob,

Thanks again for visiting yesterday. It was a pleasure to meet you and to talk through this project. I've attached a digital version of the guidance letter sent to the City last August after my walk-through. As the letter states, the information contained therein is preliminary and serves as a starting point for developing treatments for the building and its surrounding site. I believe the City is working on a nomination to the National Register which could open the door to (or at least improve chances of securing) additional funding sources for the project.

I think the gaps in the letter that we discussed yesterday center on insulation, mechanical, and site development. Below I've provided some preliminary guidance (with copious hyperlinks to additional resources) for those items under the Standards for Rehabilitation. As always, I'm happy to follow up with further questions from either your team or the City about how to apply these in the unique case of Ely City Hall. You may find the NPS' guidance on successful planning for rehabilitation projects helpful at this

early stage of the project.

1. Insulation – A more comprehensive overview of energy efficiency and how to approach it in historic buildings can be found in NPS Preservation Brief 3: Improving Energy Efficiency in Historic Buildings. Considering that the building is completely masonry, you may not need to insulate the building, and might find more cost-effective solutions for the City via roof/attic insulation (blown-in cellulose or rigid foam tend to be best under the Standards), ensuring the windows are in good repair, and improving the climate control systems. This may also help avoid any potential adverse effects to the interior finishes of the building. The NPS has developed an excellent set of Guidelines on Sustainability for rehabilitation, including some guidance specifically on how to approach insulation. In all cases, including roof insulation, care should be taken that the materials applied are reversible without damaging existing historic materials (masonry, roof framing, etc.). This also helps avoid more serious damage should the product fail decades after installation.
2. Mechanical Systems – NPS Brief 3 above is yet another helpful guide here, but the Guidelines on Mechanical Systems should also be helpful. Note here that emphasis is given to upgrading existing systems rather than full on replacement, although replacement can be acceptable if well-justified. Adapting existing conduits while installing new central heating/cooling units or replacing a boiler with a new unit is generally preferred. Visible historic elements such as radiators or bathroom fixtures are preferred to be retained, even if they are connected to a more modern system. I should note that modernized radiant heating/cooling systems are becoming quite popular for LEED projects due to their inherent efficiency.
3. Site Development – You mentioned the likelihood of a non-historic addition being a component of the proposal. This is fairly common with Rehabilitation projects and the approach you outlined seemed to be headed in the right direction. Note Rehab Standards 9 and 10 lay out that additions to an historic building should be compatible, distinguishable, and reversible. As with most items, the NPS has a section of the Guidelines devoted to additions, and a brief document regarding best practice on planning additions to buildings of this size. We and the NPS tend to encourage approaches that create new adjacent buildings with breezeway connections, which allows for the reversibility component more readily. However, care should be taken not to disrupt the overall character of the site or to impose on other potentially historic landscape elements. While it appears as though the City Hall itself has lost much of its historic setting (what appear to be poplars lining Mill Street prior to the construction of the firehouse addition), I presume the City has an interest in preserving the ball field south and west of the building as important community resources (and potentially historically-significant depending on age). That may limit options for locating an addition that meets the Standards (most successful additions are sited at the rear of a building).

Feel free to contact me with questions. I will pass on further information as it becomes available. Cheers!

Jim Bertolini
National & State Register Coordinator (NV SHPO)
(775) 684-3436

Chris (and all),

Thanks for including me on your early project scoping. In the “Questions” file, I made some comments and suggestions using Track Changes. They are certainly not exhaustive but hopefully helpful guides to your team at this early stage. As I noted in the file, while a certain level of historical background on the building in particular is necessary to date and understand site changes and building modifications, I’d caution the City and RAFI from getting too focused on the broader significance of the City Hall. The National Register nomination, which I believe the City is pursuing separately, will capture most of that, and other reports completed in Ely have developed that story fairly well. From my perspective, what will help Ely most is a focus on the condition of the building, it’s physical history, and most importantly, scoping out some best treatment strategies under the Secretary’s Standards to adapt if for continued use.

I hope these are of help as you move ahead. Please don’t hesitate to contact me should you have any questions. Cheers!

Jim Bertolini
National & State Register Coordinator
Email: jbertolini@shpo.nv.gov
Phone: (775) 684-3436
901 S. Stewart St, Ste 5004
Carson City, NV 89701

Jim – Thanx! Will do. I don’t think the architectural design itself is a significant contributing factor. I do think that Ely’s location as part of the Overland Trail, the old Lincoln Highway and US 50 does have a bearing on the contribution and role the building provided as a symbol of progress within the community – and upon travelers through town.

Also, do you have any idea how to classify this particular 1920’s architectural style?

Fielden

155 South Water St. #220
Henderson, NV 89015
P.702-435-7234
F.702-435-6478

RAFIArchitecture.com

From: James Bertolini [mailto:jbertolini@shpo.nv.gov]
Sent: Tuesday, March 15, 2016 9:53 AM
To: JenniferLee
Cc: ‘Robert Fielden’; ‘Robert Switzer’; ‘Dawn Wholey’; Melody Van Camp
Subject: RE: Historic Ely City Hall Photographs

Jennifer,

Unfortunately we don't have any historic photos in our archives for the building. The only historical photograph I know of is in the University of Nevada, Reno collections. There is a thumbnail floating around the web, which I've attached, but I imagine RAFI might want a better scan. The photo is from some period before the addition of the firehouse, and provides some excellent context on what the landscape around City Hall used to look like. They have several historic photos of downtown Ely from the early 1900s that might be of help if the City Hall shows up in the background. The photograph I'm thinking of does have an online entry, (link below). That might speed up a request for a scan and/or use request from the University.

http://unrspecoll.pastperfectonline.com/photo/362C1291-6AC1-4EF5-B21E-941368233490

Kimberly Roberts is UNR's curator for photography. She can be reached at kroberts@unr.edu or (775) 682-5585.

Perhaps the Ely Daily Times has some photographs archived for the building? Let me know if I can offer any other help to your team. Cheers!

Jim Bertolini
National & State Register Coordinator (NV SHPO)
(775) 684-3436

From: JenniferLee [mailto:jlee@elycity.com]
Sent: Tuesday, March 15, 2016 9:17 AM
To: James Bertolini
Cc: 'Robert Fielden'; 'Robert Switzer'; 'Dawn Wholey'; Melody Van Camp
Subject: Historic Ely City Hall Photographs

Jim:

Bob Fielden of RAFI Architecture, the firm producing a historical structures report on the City's old City Hall, has asked if you have any photos of it archived, particularly from the '30s and '40s.

Thank you for your assistance.

Jennifer Lee
Deputy City Clerk
City of Ely
775-289-2430

From: James Bertolini [mailto:jbertolini@shpo.nv.gov]
Sent: Friday, April 15, 2016 3:06 PM
To: Mel Green; Robert Fielden; Nathan Robertson
Cc: rnazzal@risha.com; LJ Spina
Subject: RE: Soil Test Questions

I'll follow that up and just remind the Ely project team that the Commission for Cultural Centers and Historic Preservation did choose to award funding to the City of Ely in their meeting (congratulations!), but the actual award of those funds is contingent on bond sales which will not happen until later this year. The timing of bond sales varies so the City will want to stay in touch with our office regarding that. Susie Kastens is the primary point of contact for that program and will be handling the funding agreement and other items once we can confirm the timing of the bond sale. Susie can be reached directly at skastens@shpo.nv.gov or (775) 684-3438. Cheers!

Jim Bertolini
National & State Register Coordinator (NV SHPO)
(775) 684-3436

From: Mel Green [mailto:mgreenassoc@earthlink.net]
Sent: Friday, April 15, 2016 2:08 PM
To: Robert Fielden; Nathan Robertson
Cc: rnazzal@risha.com; LJ Spina; James Bertolini
Subject: Re: Soil Test Questions

Bob

I was in Carson City yesterday at the grant hearing. I spent time with Nathan regarding the geotechnical goal vs. ordinary soils report and report intent. The city received some money from the Commission for the work, of course not as much as requested.

Mel

On 4/13/2016 2:31 PM, Robert Fielden wrote:
Nathan – what we need is a forensic topographic survey and a forensic soils test. In both instances we need to know what is happening on the surface and underground with water.

Is the sheet flow of surface water adequately directed away from the historic property to adequate infrastructure designed to remove rainwater and snowmelt to off-site discharge systems?

And, what is happening across the site underground with water? Is there a continuous or seasonally frequent flow of underground water across the site? If there is where does it occur and at what depths; how much underground water flows across the site?

With the building failure from settlement in the north-west corner of the fire station

addition, how can that area be protected from any continuing or additional future settlement?

We need to know the extent of the problem in order to identify a means by which we can rectify any existing or perhaps future issues.

I hope this helps.

Fielden

PS – Thanx for the spreadsheet; it's a real help. How many seats do you want for the new courtroom? Also, is the SNPLA plan for site support still on-line?

We are in the process of creating a new site plan arrangement and new floor plans and elevations for the building and its new west ADA entrance, restrooms, elevator and exit ways for exiting compliance.

An early draft is on the FTP site for you to review.

.

Dr. Robert A. Fielden, Arch D., NCARB, FAIA
Principal

O. 702-435-7234 l F. 702-435-6478
RAFIArchitecture.com

From: Nathan Robertson [mailto:vwnathan@hotmail.com]
Sent: Wednesday, April 13, 2016 9:26 AM
To: Robert Fielden <rfielden@rafiarchitecture.com>
Subject: Soil Test Questions

Bob,

Could I get some additional specifics on the soils test you guys are talking about needing? I know I've had soils tests done on projects in the past, but this sounds different.

Regards,
Nathan Robertson
City of Ely
(775) 293-0010

Mel Green, Structural Engineer
Melvyn Green & Associates, Inc.
3868 Carson Street, Suite 300

Torrance, CA 90503
Tel: 310/792-9252,
Fx: 310/792-8092

From: James Bertolini [mailto:jbertolini@shpo.nv.gov]
Sent: Thursday, May 12, 2016 8:06 AM
To: Robert Fielden <rfielden@rafiarchitecture.com>; Nathan Robertson <vwnathan@hotmail.com>
Cc: Rimah Nazzal <rnazzal@risha.com>; Melvyn Green <mgreenassoc@earthlink.net>; Tom Foster (Tom@pdacorp.com) <Tom@pdacorp.com>
Subject: RE: Historic Ely City Hall

Robert, and all,

I've taken a look at this draft report and provide comments using the "Text Edits" and "Sticky Note" features in PDF. If you have any trouble accessing or reading those comments, please let me know.

Overall, this report is a great start. The analysis of the building's modifications over time is especially helpful and insightful. I would like to call out a few specific recommendations that appear in my comments but I think are worth highlighting here:

1. As you finalize the report, I'd recommend refining your organization so that this is broken up into manageable chunks. At present, it's still heavily narrative (but it's a draft), so as you get further along, I would recommend splitting these up into useable sections that can be pulled out and placed into a construction schedule by the City to streamline their construction contracting process. I have a couple of recent HSRs for Lincoln Hall at UNR and the Red House (part of the Marlette Lake Water System) that might help in finalizing your organization. I can pass those on if you'd like.
2. The National Register evaluation rambles a bit and, if it's kept (which it doesn't need to be in its present form), needs to be heavily re-tooled to tie what you have into the actual standards and guidelines outlined for the National Register program. However, I'd caution against spending too much time here, as all you really need to do is establish, in brief, that the building meets one or more of the four National Register Criteria and under which Areas of Significance. An extensive narrative is not needed. The included historical context for the building need only establish its significance and perhaps select appropriate Areas of Significance under the NRHP program. I've made recommendations that the building is eligible under Criterion C in the area of Architecture and under Criterion A in the area of Politics/Government. I think you have more than enough information in your current report to establish that, and in fact, could cut quite a bit to keep this report streamlined and focused on preservation treatment recommendations.
3. It is too early to finalize most treatment recommendations but I am highly concerned about the recommendation for water-proof treatments for the exterior brick and mortar. Regardless of historic status, water-proof or water-repellant treatments are never recommended for use on mortar buildings. For that reason, these treatments do not meet the Secretary of the Interior's Standards for Rehabilitation. Water-proof or water-repellant treatments do not meet the guidance in Preservation Briefs 1 and 2, and in most cases,

only serve to accelerate damage to exterior mortar by hindering the built-in ability of mortar to breathe and vent moisture, resulting in accelerated cracking, spalling, and potentially catastrophic damage to the envelope of the building. These treatment options should be deleted from the project. I've recommended in my comments that a mortar analysis be completed as part of this HSR and simple repointing with an appropriate rating of mortar be the recommended option to prevent long-term damage to the building caused by inappropriate treatments. You may want to consult your structural engineer, Mel Green, when finalizing recommendations for the exterior mortar.

Please let me know if you have any questions. Thanks again for the chance to look through this at an early stage. Cheers!

Jim Bertolini
National & State Register Coordinator (NV SHPO)
(775) 684-3436

Appendix 03 Ninyo-Moore Soils Report

GEOTECHNICAL EVALUATION
ELY CITY HALL AND FIRE STATION
501 MILL STREET
ELY, NEVADA

PREPARED FOR:
City of Ely
480 Campton Street
Ely, Nevada 89301

PREPARED BY:
Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
6700 Paradise Road, Suite E
Las Vegas, Nevada 89119

April 26, 2017
Project No. 304072001

April 26, 2017
Project No. 304072001

Ms. Jennifer Lee
City of Ely
480 Campton Street
Ely, Nevada 89301

Subject: Geotechnical Evaluation
Ely City Hall and Fire Station
501 Mill Street
Ely, Nevada

Dear Ms. Lee:

Transmitted herein are the results of Ninyo & Moore's geotechnical evaluation for the Ely City Hall and Fire Station building located at 501 Mill Street in Ely, Nevada. The purpose of our geotechnical study was to: 1) assess cause(s) of previous settlement, which has occurred to the northwest corner of the Fire Station building addition to the original City Hall building, 2) provide geotechnical recommendations for stabilization and re-leveling of the foundation/floor slab in this portion of the building, and 3) assess groundwater conditions at the building site and provide recommendations for mitigation of high groundwater, if needed.

We appreciate the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

Brian O. Mundo, PG
Senior Geologist

Bruce D. Bowman, PE, PG
Principal Geological Engineer

BOM/BDB/cas

Distribution: (1) Addressee (via email)
(1) RAFI Architecture (via email)

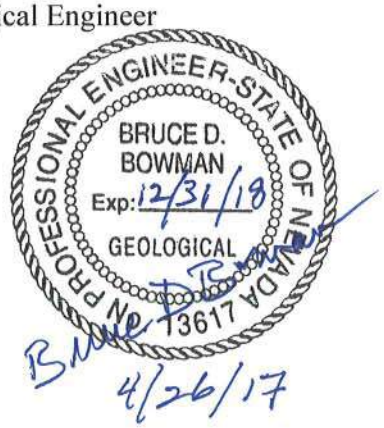


TABLE OF CONTENTS

Page

Tables

Figures

Appendices

1. INTRODUCTION

In accordance with your request, Ninyo & Moore has performed a geotechnical evaluation for the Ely City Hall and Fire Station building located at 501 Mill Street in Ely, Nevada. The location of the site is indicated on Figure 1. The purpose of our geotechnical study was to: 1) assess cause(s) of previous settlement, which has occurred to the northwest corner of the Fire Station building addition to the original City Hall building, 2) provide geotechnical recommendations for stabilization and re-leveling of the foundation/floor slab in this portion of the building, and 3) assess groundwater conditions at the building site and provide recommendations for mitigation of high groundwater, if needed. This report presents the findings of our subsurface exploration, results of laboratory testing, conclusions regarding subsurface conditions at the subject site, and geotechnical recommendations.

2. SCOPE OF SERVICES

The scope of our geotechnical services included the following:

- Review of pertinent background data listed in the References section of this report. The data reviewed included a site plan, in-house geotechnical data, and published geologic and soils literature.

- Coordination and mobilization for subsurface exploration, including clearance of existing utilities at the site conducted through Underground Service Alert (USA) and City Hall personnel.

- Drilling, logging, and sampling of three exploratory borings, which were advanced to depths of approximately 20 feet. The borings were performed to evaluate subsurface soil and groundwater conditions at the site and to obtain soil samples for laboratory testing.

- Performance of laboratory tests on selected soil samples obtained from the exploratory borings to evaluate the in-place moisture content and dry density, consolidation characteristics, expansion/collapse potential, chloride content, pH, redox potential, sodium content, sulfate content, sodium sulfate content, and solubility potential (total salts).

- Preparation of this geotechnical evaluation report presenting our findings, conclusions, and recommendations.

3. PROJECT DESCRIPTION

Based on our conversations with RAFI personnel and review of the referenced information, we understand that the Ely City Hall building is a historic structure constructed in the early 1930's. The Fire Station was constructed as an addition on the north side of the City Hall building. The original City Hall building is three stories above adjacent exterior grade and contains a basement. The fire station addition is slab-on-grade and a portion of the addition is two stories above grade. Foundations for the addition reportedly extend to a depth of approximately 9 feet below exterior grade to approximately match foundation depths for the adjacent original City Hall building.

The northwest corner of the fire station addition has previously settled, which has resulted in severe cracking of the brick exterior wall of the building in the area of settlement. Due to the presence of a nearby creek and springs, it is believed that groundwater may have caused or contributed to the previous settlement of the Fire Station. We understand that underpinning of the northwest portion of the Fire Station and repair of exterior wall cracks and separations are being considered by design professionals for this project.

4. GENERAL SITE CONDITIONS

The Ely City Hall and Fire Station building front on Mill Street to the east and is bordered by a commercial building to the north, parking lot to the west, and an access road to the south. The exterior of the building was constructed of masonry brick. Numerous cracks and separations were observed in the bricks and mortar near the northwest corner of the Fire Station addition.

Improvements adjacent to the building included asphalt concrete pavement and access roads. The front driveway of the Fire Station was constructed of concrete. Indications were noted of overhead and underground utilities, including power, sewer, communication, and water lines. Due to the developed nature of the site, other utilities may be present in the site vicinity.

5. GEOLOGY AND SUBSURFACE CONDITIONS

Based on our field observations, subsurface exploration, and review of referenced geologic and soils data, the subject site is underlain primarily by fill, which is in turn underlain by Quaternary-age alluvium (native soil). Ninyo & Moore's findings regarding the geologic setting,

potential geologic hazards, ground motions, and liquefaction potential at the site are provided in the following sections.

5.1. Geologic Setting

The project site is located in the northern portion of the Steptoe Valley, which lies within the Great Basin Desert and the Basin and Range physiographic province. The valley is a naturally formed structural mountain range formed as a result of block faulting, a fundamental characteristic of the Basin and Range physiographic province. Review of published geology and soil data indicates that the Steptoe Valley is adjacent to Egan Range, which consists primarily of thick formational (bedrock) units referred to as the Ely Limestone and Guilmette Limestone. In the area of the project site, unconsolidated fine- and coarse-grained Quaternary-age soil deposits overlie these formational units. Alluvial, ephemeral, and intermittently active geologic processes contributed to the deposition of these soils.

5.2. Potential Geologic Hazards

Ninyo & Moore's geotechnical study included an evaluation of the possible presence of geologic hazards, such as tectonic faults, in the site area. This evaluation included visual observation of the site for indications of adverse geologic features and review of published geologic and soils maps and literature, and other data listed in the References section of this report. Referenced geologic data were also reviewed to evaluate seismic activity levels, and associated potential earthquake hazards, for faults in the site vicinity. It should be noted that the fault seismic activity levels provided in this section were obtained/interpreted primarily from United States Geological Survey (USGS, 2017b) data.

Based on our field observations and review of referenced data, no faults traverse the project site. Review of referenced geologic data indicates that the nearest active fault (i.e., a fault that has experienced ground surface rupture within the past 11,000 years) to the site is the Southern Spring Valley fault zone. The Steptoe Valley fault system, which is considered potentially active (i.e., faults that have experienced ground surface rupture within the past

1.6 million years) is also located in the site vicinity. The distances from the site to these active and potentially active faults are provided on Table 1.

Table 1 – Faults in Site Vicinity

Fault Name	Seismic Activity Level *	Approximate Distance From Project Site to Fault (miles)
Southern Spring Valley fault zone	Active	20
Steptoe Valley fault system	Potentially Active	0.2
*From United States Geological Survey (USGS, 2017b) data.		

5.3. Ground Motions

Using the referenced United States Geological Survey database (USGS, 2017a), estimated maximum considered earthquake spectral response accelerations for short (0.2 second) and long (1.0 second) periods were obtained for the subject site, which is located at approximately 39.2469 degrees north latitude and -114.8947 west longitude. Based on our previous experience in the area, Seismic Site Class C is appropriate for design purposes for this project and the parameters in the following table are characteristic of the site for design.

Table 2 – Seismic Design Parameters

Parameters	Value		Reference (ICC, 2012)
	Short Period	Long Period	
Mapped Maximum Considered Earthquake Spectral Response Acceleration, S_S and S_1	0.358g	0.116g	Figure 1613.3.1 and referenced database (USGS, 2017a)
Site Coefficient, F_a and F_v	1.2	1.684	Table 1613.3.3
Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Class Effects, S_{MS} and S_{M1}	0.43g	0.195g	Equations 16-37 and 16-38
Design Spectral Response Acceleration, S_{DS} and S_{D1}	0.287g	0.13g	Equations 16-39 and 16-40

5.4. Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated soils lose shear strength under short-term (dynamic) loading conditions. Ground shaking of sufficient duration results in the loss of grain-to-grain contact in potentially liquefiable soils due to a rapid increase in pore water pressure, causing the soil to behave as a fluid for a short period of time. To be potentially liquefiable, a soil is typically cohesionless with a grain-size distribution generally consisting of sand and silt. It is generally loose to medium dense, saturated, and subjected to sufficient magnitude and duration of ground shaking. An in-depth evaluation of the potential for liquefaction at the site was outside the scope of this geotechnical evaluation.

6. FIELD EXPLORATION, LABORATORY TESTING, AND SUBSURFACE CONDITIONS

Ninyo & Moore's subsurface exploration of the project site was performed on February 28, 2017. This exploration consisted of drilling, logging, and sampling of three small-diameter exploratory borings (B-1 through B-3). The borings were advanced to depths of approximately 20 feet with a truck-mounted Mobile B-57 drill rig utilizing 8-inch diameter hollow-stem augers. The purpose of the borings was to evaluate subsurface conditions at the subject site, as well as to collect bulk and relatively undisturbed soil samples for laboratory testing. The approximate locations of the borings are shown on Figure 2.

Laboratory tests were performed on representative soil samples collected from the borings to evaluate in-place moisture content and dry density, consolidation characteristics, expansion/collapse potential, chloride content, pH, redox potential, sodium content, sulfate content, sodium sulfate content, and solubility potential (total salts). The results of the in-place moisture content and dry density tests are provided on the boring logs in Appendix A. The other laboratory test results and descriptions of testing procedures utilized are presented in Appendix B and Appendix C.

6.1. Subsurface Conditions Encountered

Generalized descriptions of the subsurface soils (fill and native soil) and groundwater conditions encountered in the borings are provided in the following sections.

6.1.1. Fill

Fill material was encountered in each of the exploratory borings. In boring B-1, the fill was approximately 0.7 feet thick and was comprised primarily of silty gravel with sand (base material) with overlying pavement. The fill encountered in borings B-2 and B-3 was associated with basement backfill material for Ely City Hall and extended to depths of approximately 9.0 and 10.5 feet, respectively. The basement backfill was comprised primarily of stiff, sandy lean clay and loose, and medium dense, clayey and silty sand. The fill was overlain by asphalt concrete that was approximately 3 inches thick.

6.1.2. Native Soil

Native soil was encountered beneath the noted fill and extended to the total depths of our exploratory borings (approximately 20 feet). The encountered native soil consisted primarily of medium dense and very dense, silty sand; and stiff and very stiff, sandy lean clay.

Laboratory tests were performed on representative samples of native soil obtained from the exploratory borings. Results of these tests are summarized in Table 3.

Table 3 – Summary of Laboratory Test Results

Test Type	Test Results	Remarks
Consolidation Collapse Potential	0.0, 0.0, and 1.3 percent	Low to moderate collapse potential
Expansion Index	40	Low expansion potential
Chloride Content	240 mg/kg	Moderately corrosive to buried metal
pH	8.18 S.U.	--
Redox Potential	190 mV	--
Sodium Sulfate Content	0.001 percent	Negligible chemical heave (salt heave) potential

Table 3 – Summary of Laboratory Test Results

Test Type	Test Results	Remarks
Sodium Content	0.01 percent	--
Sulfate Content	<0.01	Negligibly deleterious to concrete
Total Salts (Solubility)	0.09 percent	Low solubility potential

6.1.3. Groundwater

Due to the presence of a nearby creek and springs, it is believed that groundwater may have contributed to the settlement that has occurred to the Fire Station building addition at the City Hall site. Groundwater was not encountered in our exploratory borings, which were advanced to depths of approximately 20 feet. Although groundwater was not encountered in the borings, groundwater levels are influenced by seasonal factors, variations in ground surface topography, precipitation, irrigation practices, soil/rock types, groundwater pumping, and other factors.

7. DISCUSSION AND CONCLUSIONS

The purpose of Ninyo & Moore's study was to: 1) assess cause(s) of previous settlement, which has occurred to the northwest corner of the Fire Station building addition to the original City Hall building, 2) provide geotechnical recommendations for stabilization and re-leveling of the foundation/floor slab in this portion of the building, and 3) assess groundwater conditions at the building site. The scope of our evaluation included review of project-related background data, performance of exploratory borings and laboratory testing of collected soil samples, and preparation of this report.

Based on findings of this study, it is Ninyo & Moore's opinion that the primary cause of settlement and damage in the area of the northwest corner of the Fire Station building addition was consolidation of underlying native soils. Our opinion is based particularly on the following:

- The magnitude and pattern of observed cracks in the brick exterior wall of the subject building in the area of previous settlement is indicative of settlement-related distress.

- Laboratory test results indicate hydro-consolidation potentials up to approximately 1.3 percent upon inundation with water at overburden pressure.

As discussed in Section 3.0, due to the presence of a nearby creek and springs, it is believed that groundwater may have contributed to settlement that has occurred to the Fire Station building addition at the subject City Hall site. Since groundwater was not encountered in our exploratory borings, which were advanced to depths of approximately 20 feet, it is Ninyo & Moore's opinion that groundwater was not a contributing factor.

8. RECOMMENDATIONS

Laboratory test results indicate a potential for additional settlement of the subject Fire Station building addition upon inundation of underlying soils with water. To adequately reduce the potential for future settlement of the northwest portion of the Fire Station building addition and possible associated additional distress, we recommend that the damaged portion of the building be mechanically underpinned to bypass settlement-prone soils. Recommendations regarding foundation and floor slab underpinning, building foundation and floor slab repair, building wall and cosmetic repairs, concrete to be utilized for the repairs, and monitoring during repair operations are provided in the following subsections.

8.1. Foundation and Floor Slab Underpinning and Re-leveling

To aid in stabilization of the subject building from significant future movement, we recommend that the northwest portion of the Fire Station building be mechanically underpinned. Several patented and non-patented methods of underpinning are available, including Atlas Piers, Chance Anchors, Permajack, and Mini-Piles. Although the details of installation may vary, push piers and helical piers generally consist of small diameter steel piers that are pushed, driven, or augered into the ground typically using hydraulic equipment. Shallow jacking pits will be excavated adjacent to the perimeter building foundation in the area of future piers. If needed, piers may also be considered for the interior of building to underpin the floor slab.

The piers should be advanced through the underlying native soils and founded on competent soils. Blow counts recorded during driving of the soil sampler in our exploratory borings indicate that a layer of very dense, silty sand with gravel is present approximately 15 feet below the ground surface in the area of recommended underpinning. This layer should provide adequate support for driven or augered piles. It should be anticipated that the depth of underpinning will vary, depending on the selected method and anticipated variations in subsurface conditions. Structural design of the underpinning system, including the pier depth and spacing, should be in accordance with recommendations of a qualified structural engineer.

Underpinning operations should be performed by an experienced contractor which specializes in this type of work. Appropriate methods and materials should be utilized. In addition, care should be taken by the contractor during repair operations so that damage to nearby site improvements does not occur. Underpinning operations should be closely monitored by the contractor and observed/evaluated by the project's geotechnical consultant.

Based on previous professional experience, operations to re-level the foundation and floor slab of the subject building could result in significant additional damage to the building and may only be desired for cosmetic purposes. Due to the potential for further damage, Ninyo & Moore does not recommend re-leveling. If it is decided to re-level the building, additional geotechnical recommendations will be provided by our firm upon request.

8.2. Floor Slab Crack Repair

Ninyo & Moore personnel did not observe the interior of the subject building for indications of floor slab cracking. If significant existing floor slab cracks are present or result from underpinning operations, cracks may be repaired saw-cutting out, removing, and reconstructing damaged slab areas in accordance with recommendations provided in this report and those of the project's structural engineer.

After removal of the floor slab, the project's geotechnical consultant should observe and evaluate the condition of underlying soils. Soft, loose, or otherwise unsuitable soils should

be removed and replaced with adequately compacted structural fill, as recommended by the consultant. Prior to placement of structural fill, exposed soils in the area of floor slab removal should be moisture-conditioned and then compacted to a relatively non yielding condition. Structural fill should be moisture-conditioned, placed, and compacted to 90 percent relative compaction in accordance with ASTM D1557.

Figure 3 provides general recommendations for construction of new areas of building floor slab. Floor slab reinforcement, joint spacing, and other structural considerations should be in accordance with recommendations of the project's structural engineer. Recommendations for concrete to be utilized for the repairs are provided in Section 8.5.

8.3. Building Foundation Crack Repair

If significant cracks in the perimeter foundation of the subject building are encountered during repair operations, foundation repairs should be made prior to underpinning operations and in accordance with the recommendations provided in this report and those by the project's structural engineer. Significant building foundation cracks may be repaired by constructing a subfooting in general accordance with details shown on Figure 4. If construction of a subfooting is needed, Ninyo & Moore should be consulting for additional geotechnical recommendations regarding subfooting design and construction.

8.4. Building Wall and Cosmetic Repairs

Structural repairs to the exterior masonry brick wall of the subject building should be performed in accordance with recommendations of the project's structural engineer. Cosmetic repairs inside the building may be performed, as needed.

8.5. Concrete Placement and Corrosion Considerations

To reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete utilized for the repairs have a slump of no more than 4 inches. The slump should be tested at the site by the project's geotechnical consultant. We recommend that the concrete contain Type V cement with a water-cement ratio of 0.45 or less and have an unconfined compressive strength of 4,000 or more pounds per square inch (psi). Structural

concrete should be placed in accordance with the American Concrete Institute (ACI, 2005) and project specifications.

8.6. Observation, Testing, and Monitoring

The project's geotechnical consultant should perform appropriate observation and testing services during repair operations. These services should include observation/evaluation of underpinning operations, subgrade conditions where soil removals are performed, and steel reinforcement placement. The geotechnical consultant should evaluate the depth of removal of soft, loose, or otherwise unsuitable soils, observe and test the placement and compaction of structural fill soils, and observe and test concrete during placement. During repair operations, we also recommend that the consultant monitor building walls and foundations for possible damage that may result from the repair process.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during repair of the subject building. If another geotechnical consultant is selected, we request that the selected consultant provide the owner with a letter (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, and that they are in agreement with recommendations contained in this report.

9. LIMITATIONS

The field evaluation and geotechnical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No other warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

10. REFERENCES

American Concrete Institute (ACI), 2005, ACI Manual of Concrete Practice.

American Society for Testing and Materials (ASTM), 2005, Annual Book of ASTM Standards, Section 4 - Construction: Volume 04.08, Soil and Rock (I), D 420 to D 5779.

Brokaw, A.L., 1967, Geologic map and sections of the Ely quadrangle White Pine County, Nevada: U.S. Geological Survey Geologic quadrangle Map GQ-697, 1 sheet, scale 1:24,000.

International Code Council (ICC), 2012, International Building Code (IBC).

Nevada Bureau of Mines and Geology, 1978, Fault Scarps and Fissures in Las Vegas Valley: Bulletin 95, Plate 1, Scale 1:62,500.

Ninyo & Moore, 2016, Proposed Geotechnical Evaluation, Ely City Hall, 501 Mill Street, Ely, Nevada: Proposal No. 06-00201, dated August 2.

Ninyo & Moore proprietary in-house data.

Occupational Safety and Health Administration (OSHA), 2005, OSHA Standards for the Construction Industry, 29 CFR Part 1926: dated June.

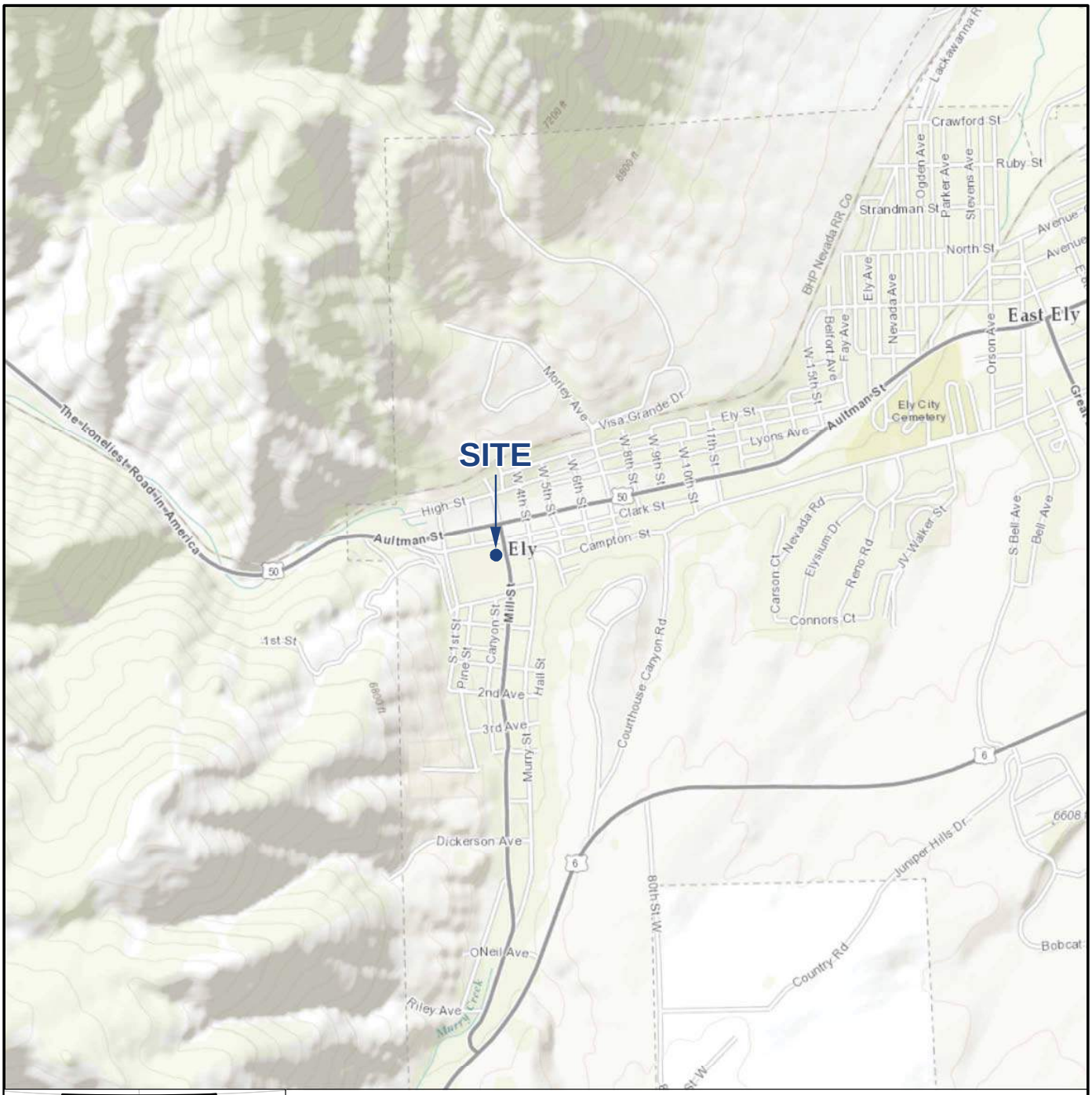
RAFI Architecture, undated, Building drawings and photographs titled, “Ely City Hall, 501 Mill Street, Ely, Nevada 89301 (Not For Construction)”.

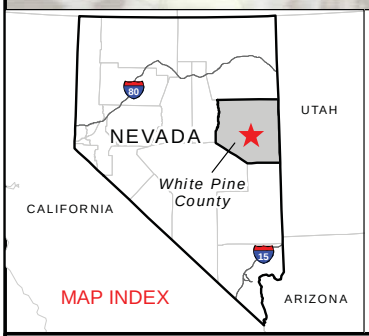
Redsteer, M.H., and Anderson, R.E., 2000, Fault number 1272, Steptoe Valley fault system, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults.

Sawyer, T.L., and Redsteer, M.H., 2000, Fault number 1265, Southern Spring Valley fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults.

United States Geological Survey (USGS), 2017a, Earthquake Hazards Program, Interpolated Probabilistic Ground Motion for the Coterminous 48 States, 2002 data: http://earthquake.usgs.gov.

United States Geological Survey (USGS), 2017b, Quaternary Faults and Fold Database of the United States: http://earthquakes.usgs.gov/qfaults/.





SOURCES: ESRI WORLD TOPO, 2017

N

SCALE IN FEET

0 1,500 3,000

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. 304072001 / DATE 4/17	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	1

1_304072001_SL.mxd 3/6/2017 3:02:03 PM JDL

SOURCES: GOOGLE EARTH, 2017

SCALE IN FEET

0 60 120

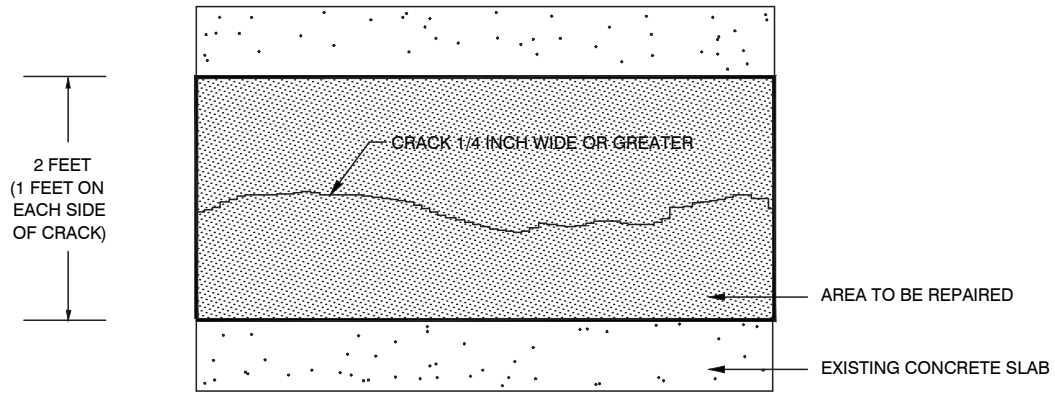
N

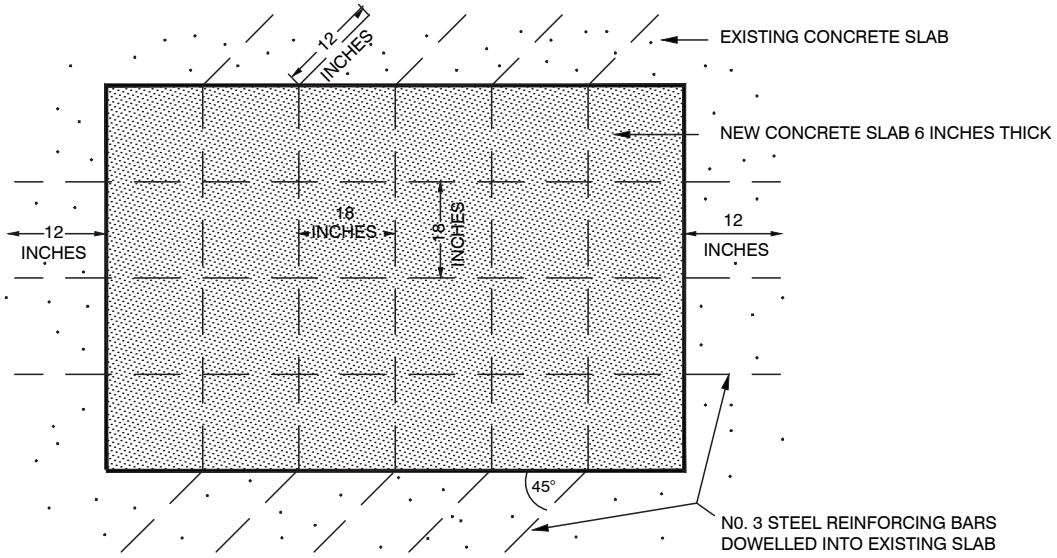
NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore		BORING LOCATIONS	FIGURE
PROJECT NO.	DATE	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	2
304072001	4/17		

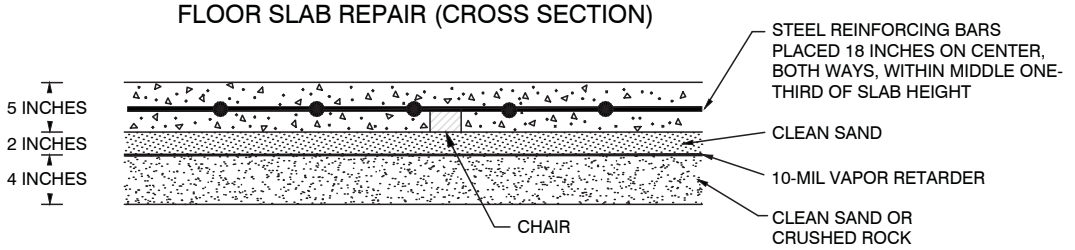
2_304072001_BL.mxd 3/6/2017 3:02:55 PM JDL

FLOOR SLAB REPAIR (PLAN VIEW)





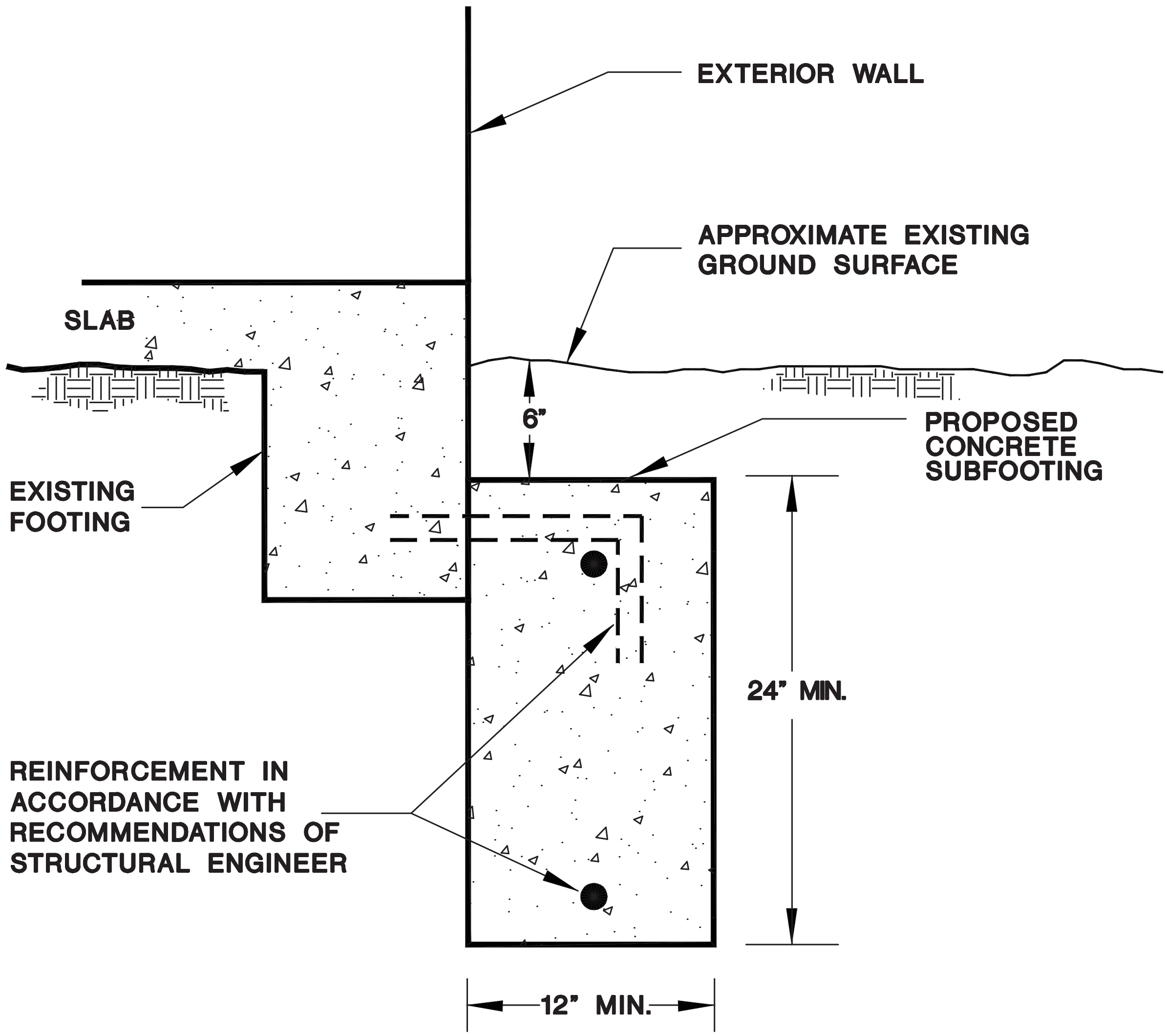
FLOOR SLAB REPAIR (CROSS SECTION)



NOT TO SCALE

3 304072001 d-pfsr.dwg

Ninyo & Moore	PARTIAL FLOOR SLAB REPLACEMENT DETAIL	FIGURE
PROJECT NO. / DATE	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	3
304072001 / 4/17		



NOTES:

1. Subfooting should extend 3 or more feet to each side of footing crack/separation.

2. Care should be taken during excavation of subfooting to minimize reduction of lateral and underlying support. Excavation should be made in sections, as deemed appropriate by the geotechnical consultant.

3. This detail is provided as a minimum design. A structural engineer should be consulted for final design.

NOT TO SCALE

4 304072001 d-subfooting.dwg

Ninyo & Moore		SUBFOOTING DETAIL	FIGURE
PROJECT NO.	DATE	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	4
304072001	4/17		

APPENDIX A

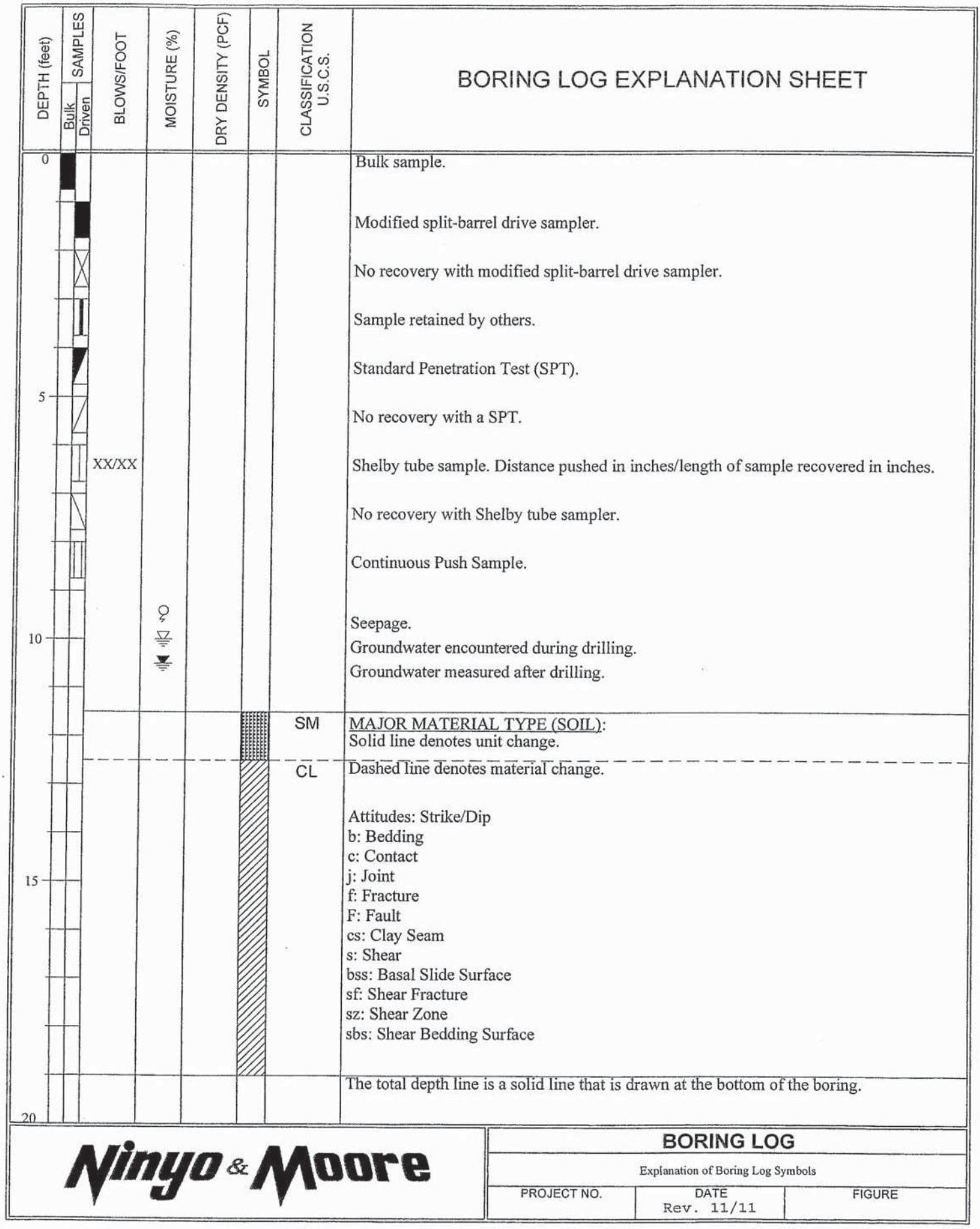
EXPLORATORY BORING LOGS

Field Procedure for the Collection of Disturbed Sample

Disturbed bulk soil sample was obtained in the field from the exploratory excavations. The samples were bagged and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using a modified split-barrel drive sampler. The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows during driving are presented on the excavation logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.


DEPTH (feet)
SAMPLES
Bulk
Driven
BLOWS/FOOT
MOISTURE (%)
DRY DENSITY (PCF)
SYMBOL
CLASSIFICATION U.S.C.S.
BORING LOG EXPLANATION SHEET
0
5
10
15
20
XX/XX
SM
CL
Bulk sample.
Modified split-barrel drive sampler.
No recovery with modified split-barrel drive sampler.
Sample retained by others.
Standard Penetration Test (SPT).
No recovery with a SPT.
Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
No recovery with Shelby tube sampler.
Continuous Push Sample.
Seepage.
Groundwater encountered during drilling.
Groundwater measured after drilling.
MAJOR MATERIAL TYPE (SOIL):
Solid line denotes unit change.
Dashed line denotes material change.
Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface
The total depth line is a solid line that is drawn at the bottom of the boring.
Ninyo & Moore
BORING LOG
Explanation of Boring Log Symbols
PROJECT NO.
DATE
Rev. 11/11
FIGURE

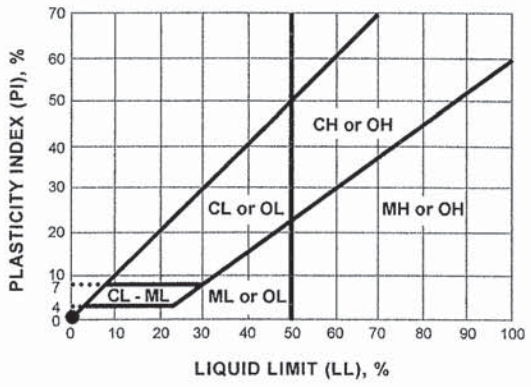
SOIL CLASSIFICATION CHART PER ASTM D 2488

PRIMARY DIVISIONS			SECONDARY DIVISIONS	
			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with clay
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

PLASTICITY CHART



APPARENT DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPOOLING CABLE OR CATHEAD		AUTOMATIC TRIP HAMMER	
	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	SPOOLING CABLE OR CATHEAD		AUTOMATIC TRIP HAMMER	
	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

Ninyo & Moore

USCS METHOD OF SOIL CLASSIFICATION

Explanation of USCS Method of Soil Classification

PROJECT NO.	DATE	FIGURE

DATE DRILLED 2/28/17 BORING NO. B-1

GROUND ELEVATION 6,445' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger Drill Rig

DRIVE WEIGHT 140 lbs. (Auto. Trip) DROP 30"

SAMPLED BY JAJ LOGGED BY JAJ REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						GM	ASPHALT CONCRETE PAVEMENT: Approximately 3 inches thick.
						CL	FILL: Brown, moist, medium dense, silty GRAVEL with sand (base material); trace clay; unit is approximately 4 inches thick.
							NATIVE SOIL: Brown, moist, stiff, sandy lean CLAY.
	Driven	3/6" 3/6" 4/6"	20.0	98.8			
5							Increase in clay content; dark brown.
	Driven	2/6" 3/6" 5/6"	18.9	98.5			
	Driven	3/6" 4/6" 3/6"	22.0	88.6			
10							
	Driven	3/6" 4/6" 5/6"					
						SM	Brown, moist, very dense, silty SAND with gravel.
15	Driven	16/6" 34/6" 55/6"	4.9	127.5			Increase in sand content.
	Driven	45/6" 50/2"	12.1	97.6			
20							

Ninyo & Moore

BORING LOG

ELY CITY HALL AND FIRE STATION
501 MILL STREET, ELY, NEVADA

PROJECT NO.	DATE	FIGURE
304072001	4/17	A-1

DATE DRILLED 2/28/17 BORING NO. B-1

GROUND ELEVATION 6,445' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger Drill Rig

DRIVE WEIGHT 140 lbs. (Auto. Trip) DROP 30"

SAMPLED BY JAJ LOGGED BY JAJ REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	17/6" 50/5"	10.8	110.7	▨	CL	NATIVE SOIL (CONTINUED): Brown, moist, very stiff, sandy lean CLAY with gravel.
								Total Depth = 20.9 feet. Groundwater not encountered during drilling. Backfilled and patched on 2/28/17. Note: Groundwater, though not encountered at the time of drilling, may rise to higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
25								
30								
35								
40								

Ninyo & Moore

BORING LOG

ELY CITY HALL AND FIRE STATION
501 MILL STREET, ELY, NEVADA

PROJECT NO.	DATE	FIGURE
304072001	4/17	A-2

DATE DRILLED 2/28/17 BORING NO. B-2

GROUND ELEVATION 6,445' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger Drill Rig

DRIVE WEIGHT 140 lbs. (Auto. Trip) DROP 30"

SAMPLED BY JAJ LOGGED BY JAJ REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	ASPHALT CONCRETE PAVEMENT: Approximately 3 inches thick.
							FILL: Brown, moist, medium dense, clayey SAND; trace gravel.
		4/6" 3/6" 3/6"	10.7	91.2		CL	Brown, moist, firm to stiff, sandy lean CLAY.
5		3/6" 4/6" 3/6"	20.1	91.9		SM	Brown, moist, loose, silty SAND.
		3/6" 3/6" 6/6"	19.6	81.8		CL	NATIVE SOIL: Brown, moist, stiff, sandy lean CLAY.
10		4/6" 4/6" 6/6"	21.8	84.4			
15		7/6" 13/6" 17/6"	12.8	108.4		SM	Brown, moist, medium dense, silty SAND; few gravel.
		23/6" 50/5"	7.8	113.3		CL	Brown, moist, very stiff, sandy lean CLAY with gravel.
20							

Ninyo & Moore

BORING LOG

ELY CITY HALL AND FIRE STATION
501 MILL STREET, ELY, NEVADA

PROJECT NO.	DATE	FIGURE
304072001	4/17	A-3

DATE DRILLED 2/28/17 BORING NO. B-2

GROUND ELEVATION 6,445' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger Drill Rig

DRIVE WEIGHT 140 lbs. (Auto. Trip) DROP 30"

SAMPLED BY JAJ LOGGED BY JAJ REVIEWED BY BDB

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		X	40/6" 50/3"				CL	NATIVE SOIL (CONTINUED): Brown, moist, very stiff, sandy lean CLAY with gravel.
								Total Depth = 20.8 feet. Groundwater not encountered during drilling. Backfilled and patched on 2/28/17. Note: Groundwater, though not encountered at the time of drilling, may rise to higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
25								
30								
35								
40								

Ninyo & Moore

BORING LOG

ELY CITY HALL AND FIRE STATION
501 MILL STREET, ELY, NEVADA

PROJECT NO.	DATE	FIGURE
304072001	4/17	A-4

DATE DRILLED 2/28/17 BORING NO. B-3

GROUND ELEVATION 6,445' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger Drill Rig

DRIVE WEIGHT 140 lbs. (Auto. Trip) DROP 30"

SAMPLED BY JAJ LOGGED BY JAJ REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SC	ASPHALT CONCRETE PAVEMENT: Approximately 3 inches thick.
							FILL: Brown, moist, medium dense, clayey SAND; trace gravel.
		2/6" 3/6" 4/6"	23.5	93.8		CL	Brown, moist, stiff, sandy lean CLAY; trace gravel.
5		2/6" 2/6" 3/6"	20.7	84.4			Firm.
						SM	Brown, moist, loose, silty SAND.
10		5/6" 4/6" 5/6"	17.5	94.4			
						CL	NATIVE SOIL: Brown, moist, stiff, sandy lean CLAY; trace gravel.
		3/6" 4/6" 5/6"	17.8	93.3			
15						SM	Brown, moist, medium dense, silty SAND; few gravel.
		22/6" 23/6" 18/6"	4.4	115.0			
		18/6" 50/4"	7.1	104.0			Very dense; increase in gravel content.
20							

Ninyo & Moore

BORING LOG

ELY CITY HALL AND FIRE STATION
501 MILL STREET, ELY, NEVADA

PROJECT NO.	DATE	FIGURE
304072001	4/17	A-5

DATE DRILLED 2/28/17 BORING NO. B-3

GROUND ELEVATION 6,445' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger Drill Rig

DRIVE WEIGHT 140 lbs. (Auto. Trip) DROP 30"

SAMPLED BY JAJ LOGGED BY JAJ REVIEWED BY BDB

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		40/6" 50/5"				SM	NATIVE SOIL (CONTINUED): Brown, moist, very dense, silty SAND with gravel.
							Total Depth = 20.9 feet. Groundwater not encountered during drilling. Backfilled and patched on 2/28/17.
							Note: Groundwater, though not encountered at the time of drilling, may rise to higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
25							
30							
35							
40							

Ninyo & Moore

BORING LOG

ELY CITY HALL AND FIRE STATION
501 MILL STREET, ELY, NEVADA

PROJECT NO.	DATE	FIGURE
304072001	4/17	A-6

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory excavations in Appendix A.

In-Place Moisture and Density

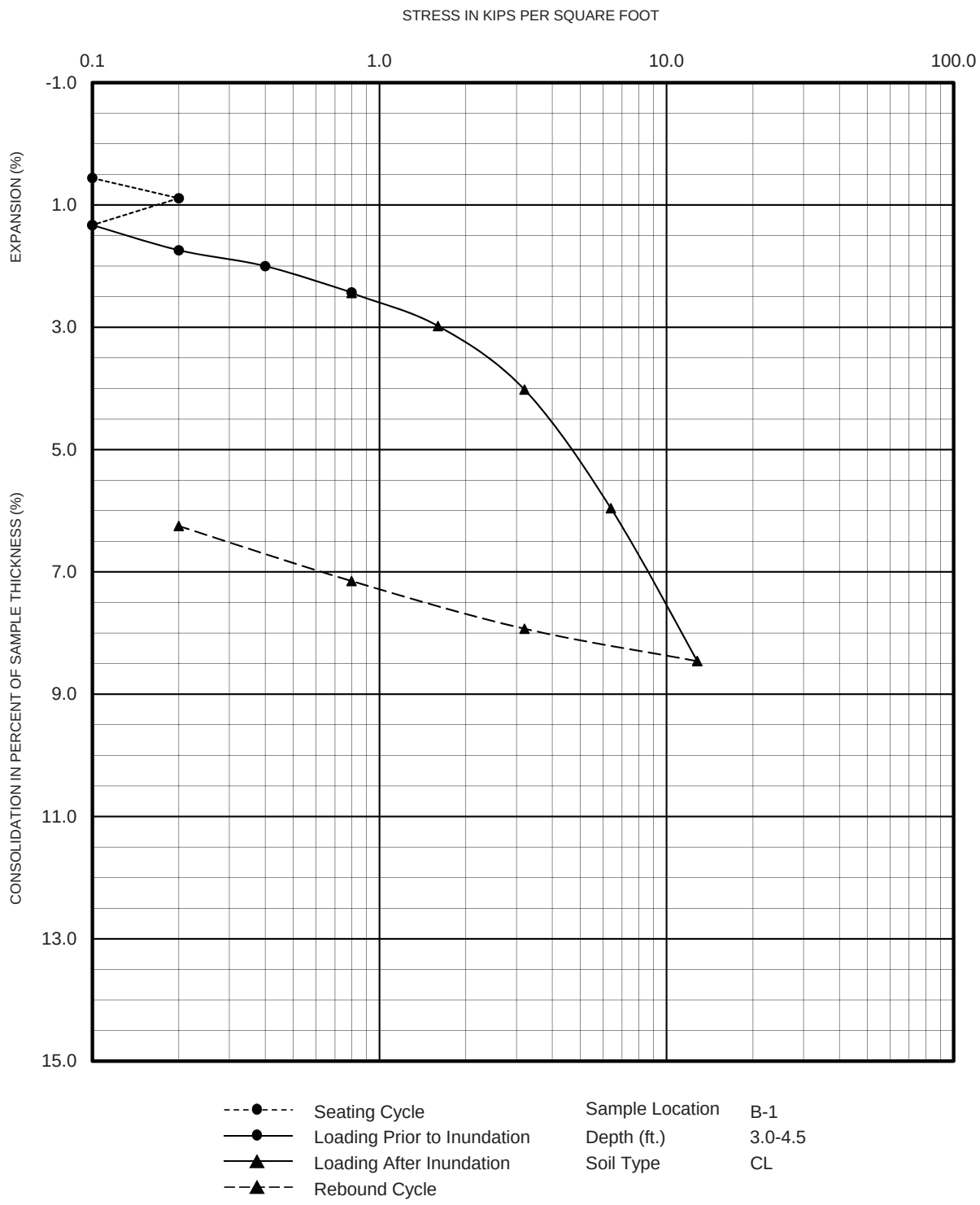
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory excavations were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory excavations in Appendix A.

Consolidation

Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The consolidation test results are shown graphically on Figure B-1 through Figure B-3, and summarized on Figure B-4.

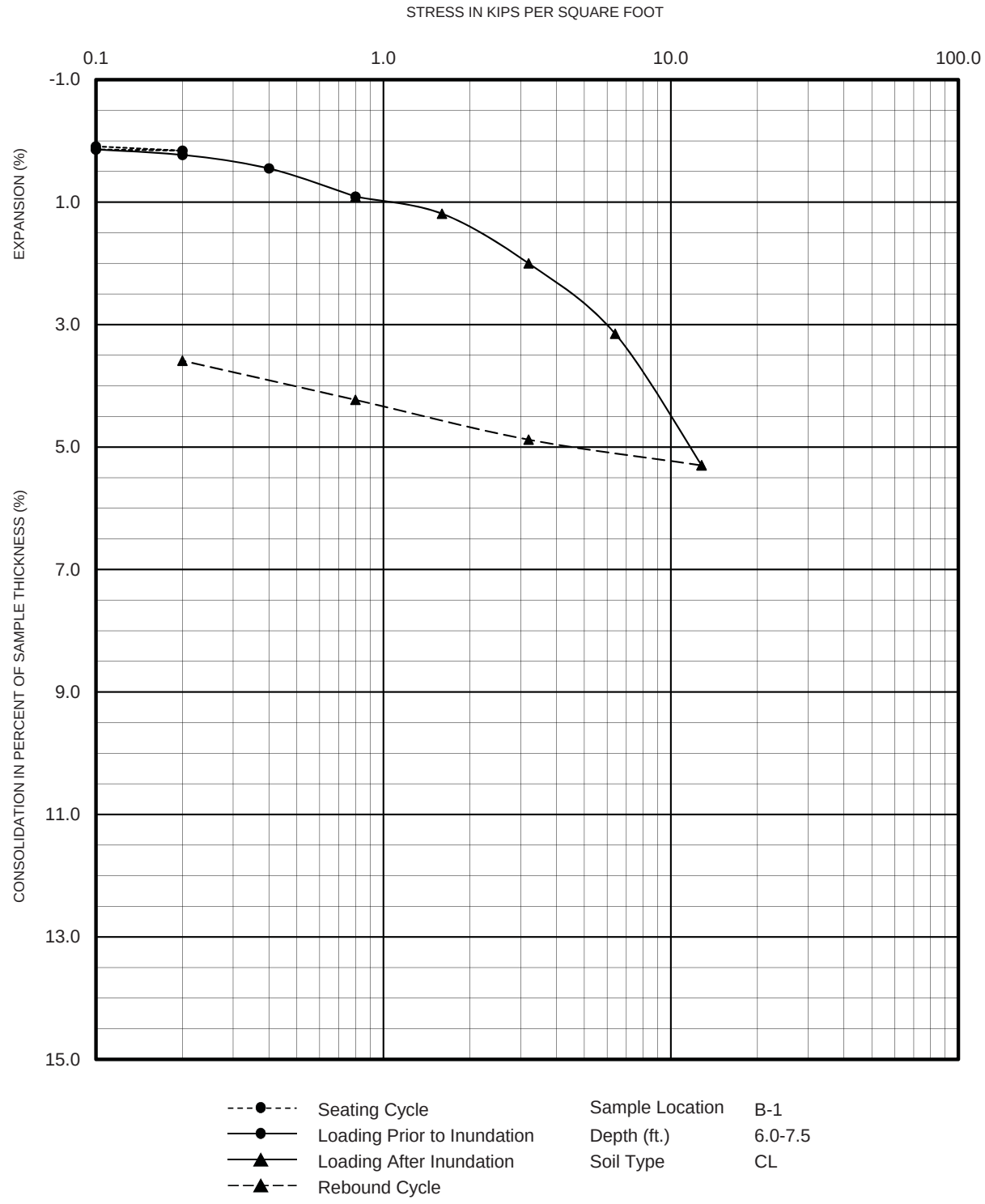
Expansion Index

The expansion index of selected materials was evaluated in general accordance with ASTM D 4829. Specimens were molded under a specified compactive energy at approximately 50 percent saturation. The prepared 1-inch thick by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and were inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The results of these tests are presented on Figure B-5.



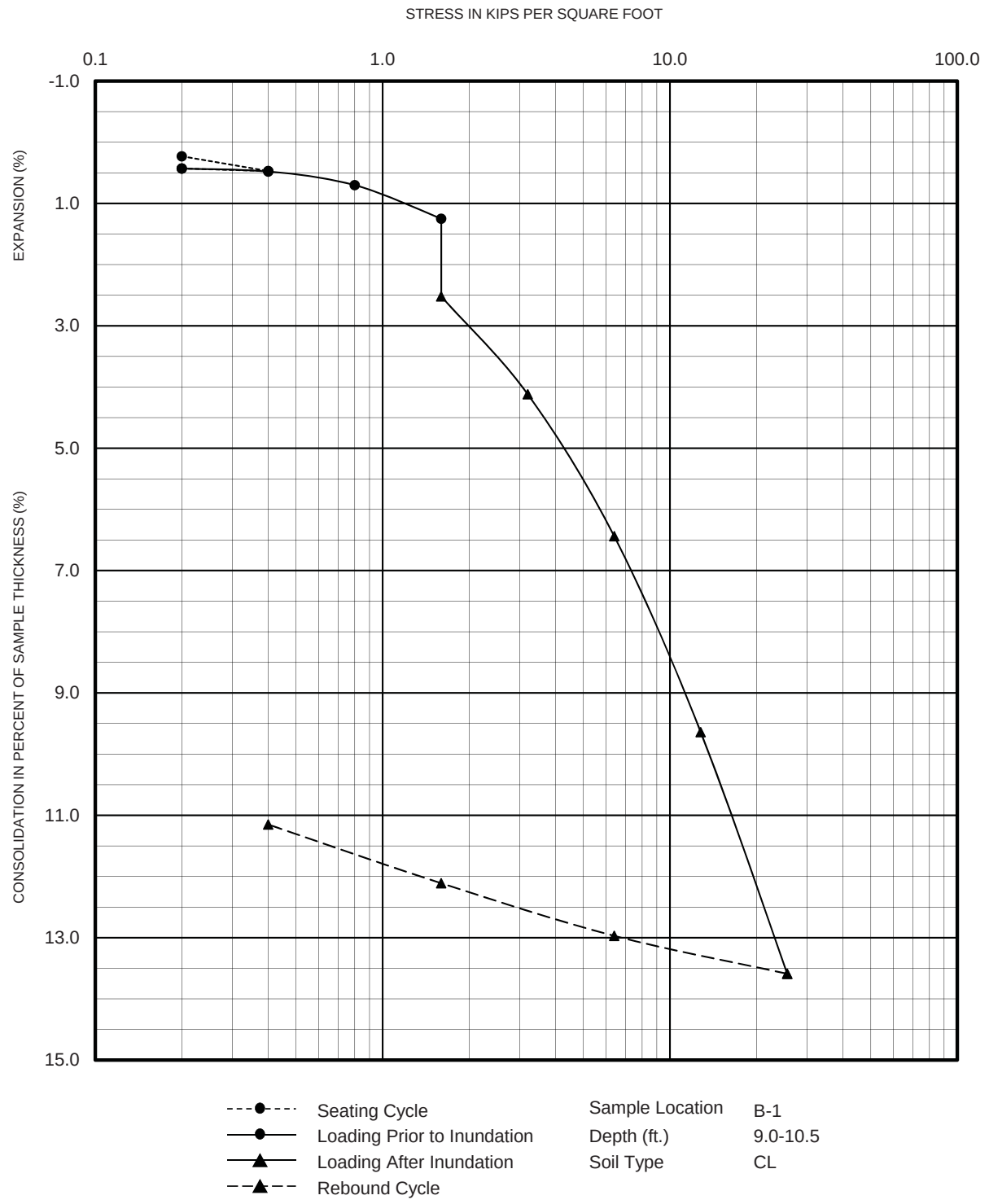
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. 304072001 / DATE 4/17	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	B-1



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. 304072001 / DATE 4/17	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	B-2



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore	CONSOLIDATION TEST RESULTS	FIGURE
PROJECT NO. 304072001 / DATE 4/17	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	B-3

SAMPLE LOCATION	DEPTH (FT)	IN-PLACE MOISTURE CONTENT (%)	IN-PLACE DRY DENSITY (PCF)	FINAL MOISTURE CONTENT (%)	SURCHARGE (PSF)	EXPANSION POTENTIAL (%)	COLLAPSE POTENTIAL (%)
B-1	3.0-4.5	23.2	98.7	19.8	800	--	0.0
B-1	6.0-7.5	18.9	102.4	19.4	800	--	0.0
B-1	9.0-10.5	23.5	87.5	26.1	1,600	--	1.3

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

Ninyo & Moore		EXPANSION/COLLAPSE POTENTIAL TEST RESULTS	FIGURE
PROJECT NO.	DATE	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	B-4
304072001	4/17		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (PCF)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (IN)	EXPANSION INDEX	POTENTIAL EXPANSION
B-1	3.0-4.5	11.0	105.6	23.5	0.040	40	Low
B-1	6.0-7.5	11.0	105.7	23.7	0.040	40	Low

PERFORMED IN GENERAL ACCORDANCE WITH UBC STANDARD 18-2 [x] ASTM D 4829

Ninyo & Moore		EXPANSION INDEX TEST RESULTS	FIGURE
PROJECT NO.	DATE	ELY CITY HALL AND FIRE STATION 501 MILL STREET ELY, NEVADA	B-5
304072001	4/17		

APPENDIX C

CHEMICAL TEST RESULTS

The results of chemical tests performed are provided in this appendix.

Silver State Labs-Las Vegas
3626 E. Sunset Road, Suite 100
Las Vegas, NV 89120
(702) 873-4478 FAX: (702) 873-7967
www.ssalabs.com

Analytical Report

WO#: **17031032**
Date Reported: **3/25/2017**

CLIENT: Ninyo & Moore
Collection Date:
Project: 304072001
Lab ID: 17031032-01
Matrix: SOIL
Client Sample ID: B-1@3.0'-4.5'

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
SOIL-CORROSION SUITE PLUS SOLUBILITY SULFIDE - SOILS			**SM 4500S2 F**			Analyst: **NM**
Sulfide	ND	1.00		mg/kg	1	3/22/2017 3:34:00 PM
SOIL-CORROSION SUITE PLUS SOLUBILITY CHLORIDE - SOILS			**SM 4500 CL-B**			Analyst: **NM**
Chloride	240	5.0		mg/Kg	5	3/22/2017 11:18:00 AM
SOIL-CORROSION SUITE PLUS SOLUBILITY SODIUM SULFATES - CALCULATION 0NLY.			**CALCULATION**			Analyst: **NM**
Sodium Sulfate as Na2SO4	0.00100	0		%	1	3/22/2017 11:20:00 AM
SOIL-CORROSION SUITE PLUS SOLUBILITY PH - SOILS			**SM 4500H+ B**			Analyst: **NM**
pH	8.18	0		pH Units	1	3/22/2017 4:32:58 PM
SOIL-CORROSION SUITE PLUS SOLUBILITY REDUCTION - OXIDATION POTENTIAL - SOILS			**SM 2580 B**			Analyst: **NM**
Oxidation-Reduction Potential	190	1.00		mV	1	3/22/2017 11:21:00 AM
SOIL-CORROSION SUITE PLUS SOLUBILITY WATER SOLUBLE SULFATE (SO4)			**SM 4500 SO4 E**			Analyst: **NM**
Sulfate	ND	0.0100		%	1	3/22/2017 11:17:29 AM
SOIL-CORROSION SUITE PLUS SOLUBILITY WATER SOLUBLE SODIUM (NA)			**ASTM D2791**			Analyst: **NM**
Sodium	0.0100	0.0100		%	1	3/22/2017 11:18:00 AM
SOIL-CORROSION SUITE PLUS SOLUBILITY TOTAL SALTS (SOLUBILITY)			**SM 2540 C**			Analyst: **NM**
Solubility	0.0900	0.0100		%	1	3/22/2017 11:16:00 AM

Qualifiers: (Qual)

*	Value exceeds Maximum Contaminant Level.	C	Value is below Minimum Compound Limit.
DF	Dilution Factor.	H	Holding times for preparation or analysis exceeded.
MCL	Maximum Contaminant Level.	ND	Not Detected at the PQL.
PQL	Practical Quantitation Limit.		

Original

Appendix 04 ASCE Forms

3.7.15 Basic Structural Checklist for Building Type URM: Unreinforced Masonry Bearing Walls with Flexible Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the Tier 2 Special Procedure for Unreinforced Masonry or the Tier 3 Evaluation Procedure.

C3.7.15 Basic Structural Checklist for Building Type URM

These buildings have bearing walls that consist of unreinforced (or lightly reinforced) brick, stone, or concrete block masonry. Wood floor and roof framing consists of wood joists, glulam beams, and wood posts or small steel columns. Steel floor and roof framing consists of steel beams or open web joists, steel girders, and steel columns. Lateral forces are resisted by the brick or concrete block masonry shear walls. Diaphragms consist of straight or diagonal lumber sheathing, structural wood panels, or untopped metal deck, and are flexible relative to the walls. Foundations consist of brick or concrete spread footings or deep foundations.

Building System

C	(NC)	N/A	LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)
(C)	NC	N/A	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building shall be greater than 4 percent of the height of the shorter building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.1.2)
C	NC	(N/A)	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3) Assumes mezzanine will be removed.
C	NC	(N/A)	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)
C	NC	(N/A)	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)
(C)	NC	N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)
(C)	NC	N/A	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)

C NC N/A MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)

C NC N/A DETERIORATION OF WOOD: There shall be no signs of decay, shrinkage, splitting, fire damage, or sagging in any of the wood members, and none of the metal connection hardware shall be deteriorated, broken, or loose. (Tier 2: Sec. 4.3.3.1)

C NC N/A MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7)

C NC N/A MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec. 4.3.3.8)

C NC N/A UNREINFORCED MASONRY WALL CRACKS: There shall be no existing diagonal cracks in the wall elements greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, or out-of-plane offsets in the bed joint greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.11)

Lateral-Force-Resisting System

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C NC N/A SHEAR STRESS CHECK: The shear stress in the unreinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 30 psi for clay units and 70 psi for concrete units for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.5.1)

Connections

C NC N/A WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 3.5.3.7. (Tier 2: Sec. 4.6.1.1)

C NC N/A WOOD LEDGERS: The connection between the wall panels and the diaphragm shall not induce cross-grain bending or tension in the wood ledgers. (Tier 2: Sec. 4.6.1.2)

C NC N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2 Sec. 4.6.2.1)

C NC N/A GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

3.8 Geologic Site Hazards and Foundations Checklist

This Geologic Site Hazards and Foundations Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Geologic Site Hazards

The following statements shall be completed for buildings in levels of high or moderate seismicity.

C NC N/A LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.1.1)

C NC N/A SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure. (Tier 2: Sec. 4.7.1.2)

C NC N/A SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated. (Tier 2: Sec. 4.7.1.3)

Condition of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

C (NC) N/A FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.1)

The following statement shall be completed for buildings in levels of high or moderate seismicity being evaluated to the Immediate Occupancy Performance Level.

C NC (N/A) DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.2)

Capacity of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

C NC (N/A) POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 feet for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.3.1)

The following statements shall be completed for buildings in levels of moderate seismicity being evaluated to the Immediate Occupancy Performance Level and for buildings in levels of high seismicity.

C NC (N/A) OVERTURNING: The ratio of the horizontal dimension of the lateral-force-resisting system at the foundation level to the building height (base/height) shall be greater than $0.6S_a$. (Tier 2: Sec. 4.7.3.2)

NC N/A TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C. (Section 3.5.2.3.1, Tier 2: Sec. 4.7.3.3)

NC N/A DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.4)

NC N/A SLOPING SITES: The difference in foundation embedment depth from one side of the building to another shall not exceed one story in height. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.5)

3.9.1 Basic Nonstructural Component Checklist

This Basic Nonstructural Component Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Partitions

C NC (N/A) UNREINFORCED MASONRY: Unreinforced masonry or hollow clay tile partitions shall be braced at a spacing equal to or less than 10 feet in levels of low or moderate seismicity and 6 feet in levels of high seismicity. (Tier 2: Sec. 4.8.1.1)

Ceiling Systems

(C) NC N/A SUPPORT: The integrated suspended ceiling system shall not be used to laterally support the tops of gypsum board, masonry, or hollow clay tile partitions. Gypsum board partitions need not be evaluated where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.2.1)

Light Fixtures

C NC N/A EMERGENCY LIGHTING: Emergency lighting shall be anchored or braced to prevent falling during an earthquake. (Tier 2: Sec. 4.8.3.1)

Cladding and Glazing

C NC (N/A) CLADDING ANCHORS: Cladding components weighing more than 10 psf shall be mechanically anchored to the exterior wall framing at a spacing equal to or less than 4 feet. A spacing of up to 6 feet is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.1)

C NC (N/A) DETERIORATION: There shall be no evidence of deterioration, damage or corrosion in any of the connection elements. (Tier 2: Sec. 4.8.4.2)

C NC (N/A) CLADDING ISOLATION: For moment frame buildings of steel or concrete, panel connections shall be detailed to accommodate a story drift ratio of 0.02. Panel connection detailing for a story drift ratio of 0.01 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.3)

C NC (N/A) MULTI-STORY PANELS: For multi-story panels attached at each floor level, panel connections shall be detailed to accommodate a story drift ratio of 0.02. Panel connection detailing for a story drift ratio of 0.01 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.4)

C NC (N/A) BEARING CONNECTIONS: Where bearing connections are required, there shall be a minimum of two bearing connections for each wall panel. (Tier 2: Sec. 4.8.4.5)

C NC (N/A) INSERTS: Where inserts are used in concrete connections, the inserts shall be anchored to reinforcing steel or other positive anchorage. (Tier 2: Sec. 4.8.4.6)

C NC (N/A) PANEL CONNECTIONS: Exterior cladding panels shall be anchored out-of-plane with a minimum of 4 connections for each wall panel. Two connections per wall panel are permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.4.7)

Masonry Veneer

C NC (N/A) SHELF ANGLES: Masonry veneer shall be supported by shelf angles or other elements at each floor 30 feet or more above ground for Life Safety and at each floor above the first floor for Immediate Occupancy. (Tier 2: Sec. 4.8.5.1)

C (NC) N/A TIES: Masonry veneer shall be connected to the back-up with corrosion-resistant ties. The ties shall have a spacing equal to or less than 24 inches with a minimum of one tie for every 2-2/3 square feet. A spacing of up to 36 inches is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.5.2)

C NC (N/A) WEAKENED PLANES: Masonry veneer shall be anchored to the back-up adjacent to weakened planes, such as at the locations of flashing. (Tier 2: Sec. 4.8.5.3)

C NC (N/A) DETERIORATION: There shall be no evidence of deterioration, damage, or corrosion in any of the connection elements. (Tier 2: Sec. 4.8.5.4)

Parapets, Cornices, Ornamentation, and Appendages

C (NC) N/A URM PARAPETS: There shall be no laterally unsupported unreinforced masonry parapets or cornices with height-to-thickness ratios greater than 1.5. A height-to-thickness ratio of up to 2.5 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.8.1)

(C) NC N/A CANOPIES: Canopies located at building exits shall be anchored to the structural framing at a spacing of 6 feet or less. An anchorage spacing of up to 10 feet is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.8.2)

Masonry Chimneys

C (NC) N/A URM CHIMNEYS: No unreinforced masonry chimney shall extend above the roof surface more than twice the least dimension of the chimney. A height above the roof surface of up to three times the least dimension of the chimney is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.9.1)

Stairs

C NC (N/A) URM WALLS: Walls around stair enclosures shall not consist of unbraced hollow clay tile or unreinforced masonry with a height-to-thickness ratio greater than 12-to-1. A height-to-thickness ratio of up to 15-to-1 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.10.1)

C NC (N/A) STAIR DETAILS: In moment frame structures, the connection between the stairs and the structure shall not rely on shallow anchors in concrete. Alternatively, the stair details shall be capable of accommodating the drift calculated using the Quick Check procedure of Section 3.5.3.1 without including tension in the anchors. (Tier 2: Sec. 4.8.10.2)

Building Contents and Furnishing

C NC N/A — TALL NARROW CONTENTS: Contents over 4 feet in height with a height-to-depth or height-to-width ratio greater than 3-to-1 shall be anchored to the floor slab or adjacent structural walls. A height-to-depth or height-to-width ratio of up to 4-to-1 is permitted where only the Basic Nonstructural Component Checklist is required by Table 3-2. (Tier 2: Sec. 4.8.11.1)

Mechanical and Electrical Equipment

C NC N/A — EMERGENCY POWER: Equipment used as part of an emergency power system shall be mounted to maintain continued operation after an earthquake. (Tier 2: Sec. 4.8.12.1)

C NC N/A — HAZARDOUS MATERIAL EQUIPMENT: HVAC or other equipment containing hazardous material shall not have damaged supply lines or unbraced isolation supports. (Tier 2: Sec. 4.8.12.2)

C NC N/A — DETERIORATION: There shall be no evidence of deterioration, damage, or corrosion in any of the anchorage or supports of mechanical or electrical equipment. (Tier 2: Sec. 4.8.12.3)

C NC N/A — ATTACHED EQUIPMENT: Equipment weighing over 20 lb that is attached to ceilings, walls, or other supports 4 feet above the floor level shall be braced. (Tier 2: Sec. 4.8.12.4)

Piping

C NC N/A — FIRE SUPPRESSION PIPING: Fire suppression piping shall be anchored and braced in accordance with NFPA-13 (NFPA, 1996). (Tier 2: Sec. 4.8.13.1)

C NC N/A — FLEXIBLE COUPLINGS: Fluid, gas, and fire suppression piping shall have flexible couplings. (Tier 2: Sec. 4.8.13.2)

Hazardous Materials Storage and Distribution

C NC N/A — TOXIC SUBSTANCES: Toxic and hazardous substances stored in breakable containers shall be restrained from falling by latched doors, shelf lips, wires, or other methods. (Tier 2: Sec. 4.8.15.1)

Appendix 05 Calculations

ASCE 31-03 — URM

3.5 Tier 1 Analysis

$V = C S_a W$

$C = 1$ (Table 3-4)

$S_a \leq S_{DS}$ (3-4)

$S_{DS} = \frac{2}{3} F_a S_s$

$S_s = 0.372$ (USGS Maps/Website)

$F_a = 1.502$ (Table 3-6)

$S_{DS} = 0.372$ ← Moderate Level of Seismicity

$S_a = 0.372$

$V = 0.372\ W$

$S_{D1} = \frac{2}{3} F_v S_1$

$S_1 = 0.119$ (USGS)

$F_v = 2.324$ (Table 3-5)

$S_{D1} = 0.184$ ← Moderate Level of Seismicity

City Hall: 51' x 40'

Total Wt: Roof DL = 15 psf

Floor DL = 20 psf

Wall DL = 120 pcf: 9" x 2'-0" Parapet
9" x 5'-8" Wall
13" x 13'-0" Wall
17" x 8'-0" Wall
} reduce wt by 12% to account for openings

Total Wt Trib to Base Shear = 676,300 #

Base Shear = 0.372 (676,300) = 251,570 #

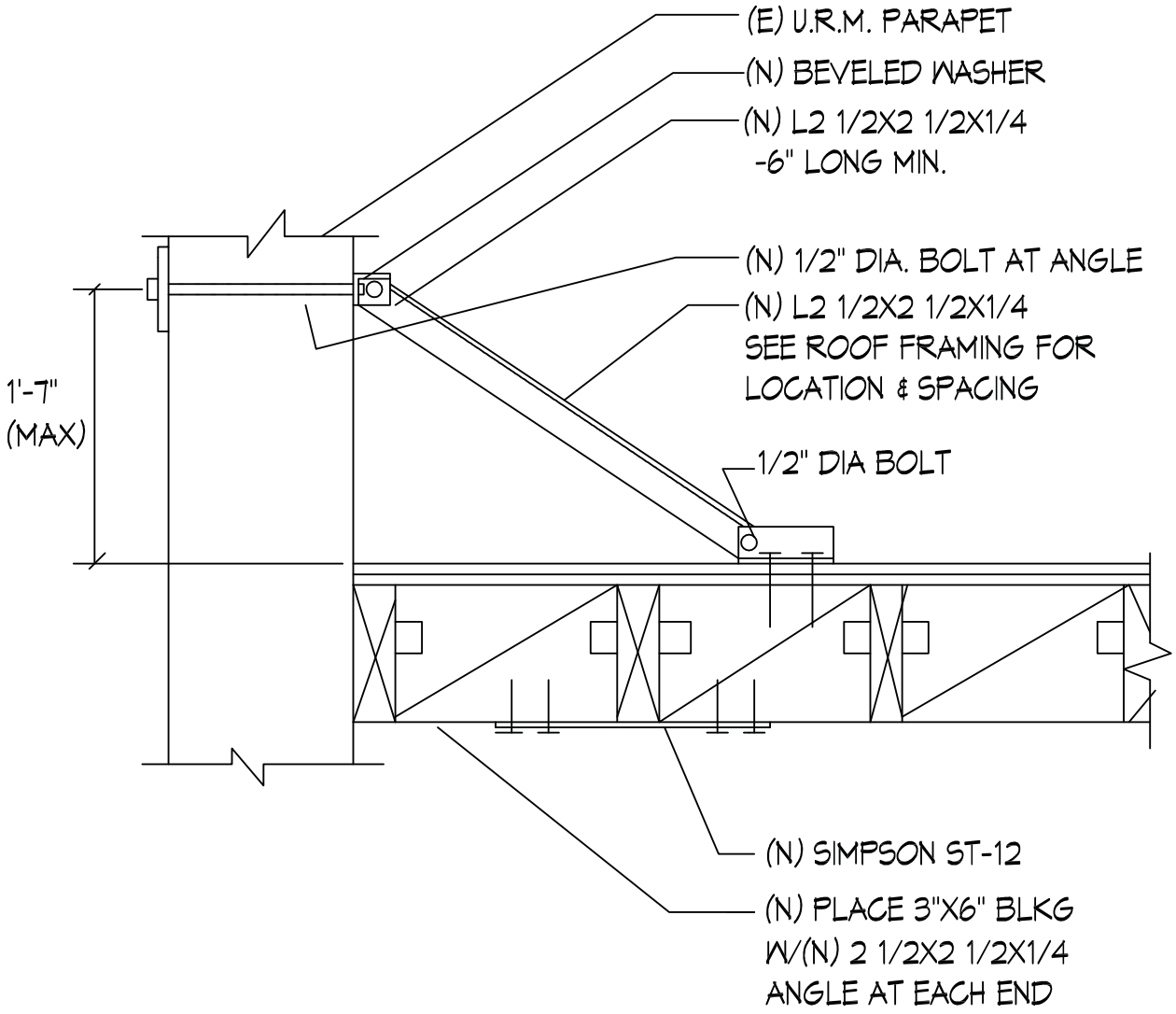
Shear Stress Check:

Critical Wall: 17" thick

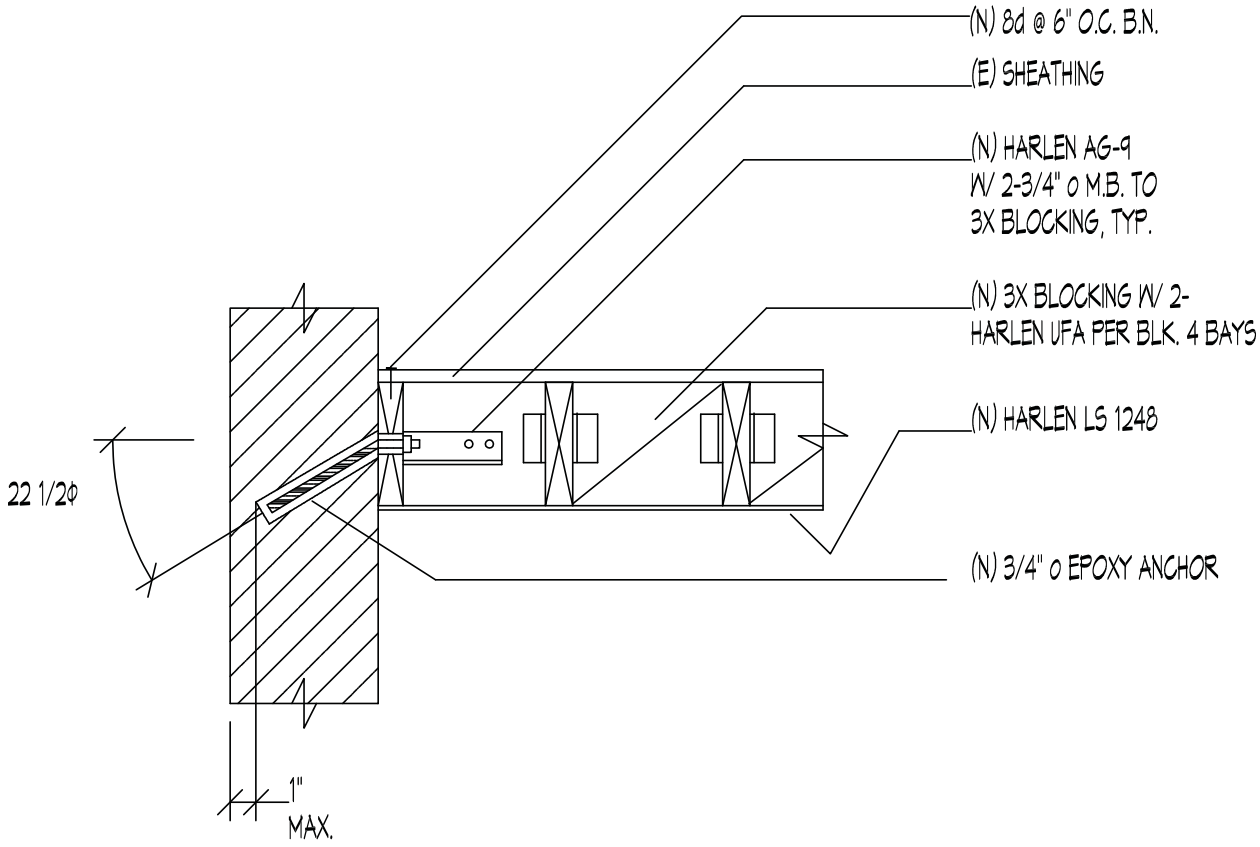
Total Piers Length = 212 in

$$\text{Shear Stress} = \frac{251{,}570/2}{17 \times 212} = 35 \text{ psi} > 30 \text{ psi} \quad \text{NC}$$

Appendix 06 Sample Retrofit Details

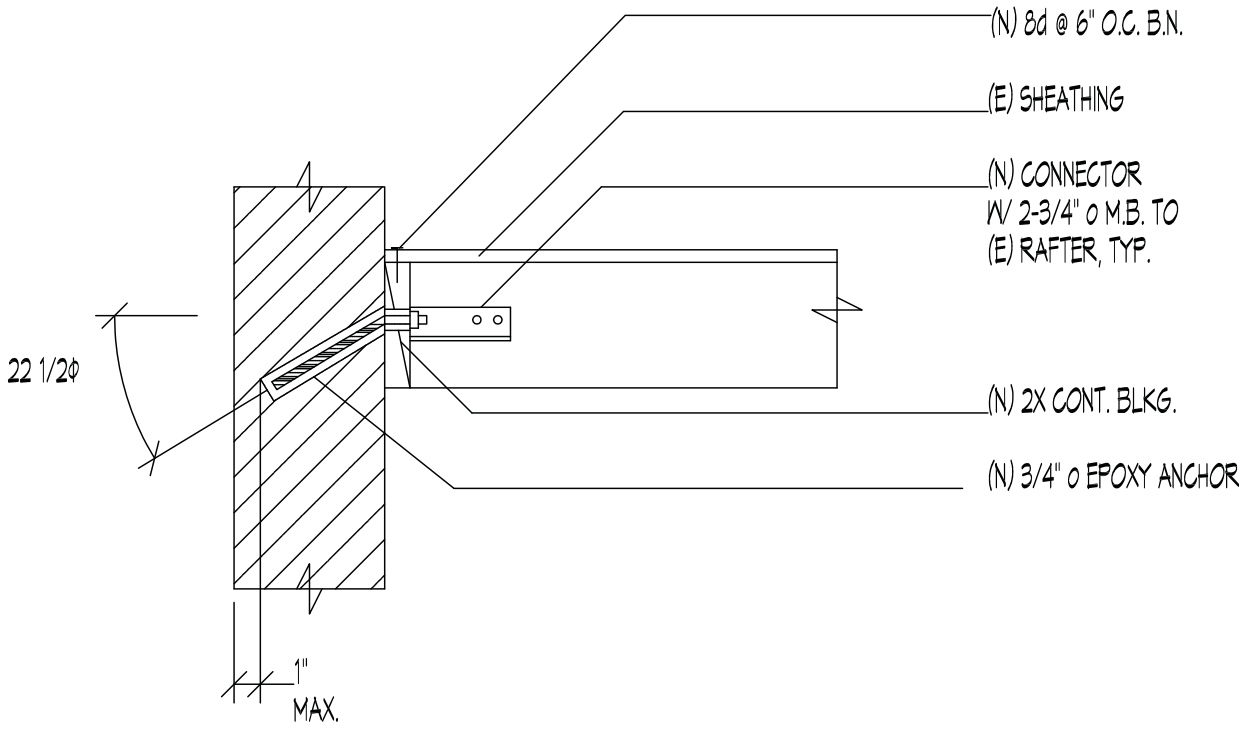


PARAPET BRACE
JOIST PARALLEL



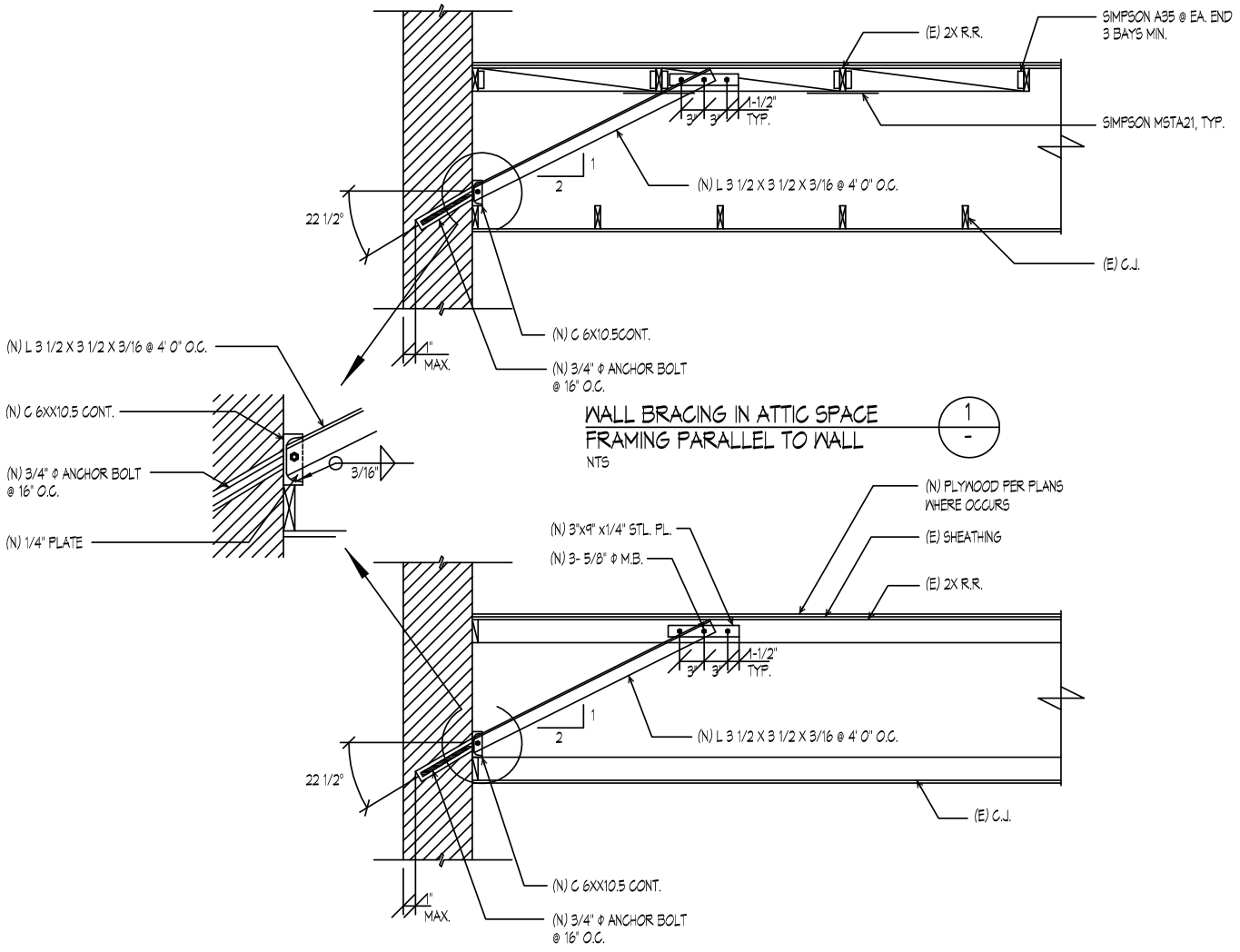
COMBINATION ANCHOR DETAIL
RAFTER PARALLEL TO WALL

1
-



COMBINATION ANCHOR DETAIL
RAFTER PERP TO WALL

2
-


(E) 2X R.R.
SIMPSON A35 @ EA. END
3 BAYS MIN.
1-1/2"
TYP.
SIMPSON MSTA21, TYP.
1
2
(N) L 3 1/2 X 3 1/2 X 3/16 @ 4' 0" O.C.
22 1/2°
(E) C.J.
(N) C 6X10.5CONT.
1"
MAX.
(N) 3/4" ϕ ANCHOR BOLT
@ 16" O.C.
(N) L 3 1/2 X 3 1/2 X 3/16 @ 4' 0" O.C.
(N) C 6XX10.5 CONT.
(N) 3/4" ϕ ANCHOR BOLT
@ 16" O.C.
3/16"
(N) 1/4" PLATE
WALL BRACING IN ATTIC SPACE
FRAMING PARALLEL TO WALL
NTS
1
-
(N) PLYWOOD PER PLANS
WHERE OCCURS
(N) 3"x9" x1/4" STL. PL.
(N) 3- 5/8" ϕ M.B.
(E) SHEATHING
(E) 2X R.R.
1-1/2"
TYP.
1
2
(N) L 3 1/2 X 3 1/2 X 3/16 @ 4' 0" O.C.
22 1/2°
(E) C.J.
(N) C 6XX10.5 CONT.
1"
MAX.
(N) 3/4" ϕ ANCHOR BOLT
@ 16" O.C.
WALL BRACING IN ATTIC SPACE
FRAMING PERP TO WALL
NTS
1
-

Appendix 07 Structural and Seismic Evaluation

I. Project Overview

A. Project Scope and Intent

The intent of this study is to determine the historic Ely City Hall building's ability to withstand seismic events that may occur in the region. The goal is to determine whether seismic retrofit is needed and what may be required.

The Ely City Hall, constructed in 1928, is a two story structure of unreinforced masonry bearing wall construction. The floors are double layer wood sheathed with wood joists that span between walls. The roof consists of wood rafters and a straight board sheathed roof.

An intermediate floor was constructed between the first and second floor. Preliminary discussions are that this floor will be removed so the historic space can be restored. If the decision is made not to remove the floor, then the retrofit recommendations included herein will also apply to that level.

B. Evaluation and Methodology Criteria

Seismic evaluation is based on the methods developed by the Applied Technology Council, funded by FEMA. It has been developed into a national consensus standard by the American Society of Civil Engineers. The methodology is now called ASCE 31-03 and was recently updated as ASCE 41-13. ASCE 41 is adopted by reference in the International Existing Building Code.

Using this standard, the building was evaluated using the Tier 1 method and based on the Life Safety criteria. There is a Tier 2 evaluation level to takes a more in-depth analysis of selected possible deficiencies. However, in this type of construction none of the identified deficiencies would be eliminated by additional structural analysis and calculations.

The methodology used includes:

Site and Building Inspection – All accessible areas of the building were inspected including the attic and basement. No destructive removals were undertaken. The site is approximately 51' N-S x 40' E-W.

Structural Analysis – Structural calculations required by the evaluation method were conducted. These included in-plane shear, preliminary anchorage, and wall height to thickness ratio review.

C. Site Description and Seismicity

The site is generally flat with a slight slope towards the north. Water drainage is through underground piping. Some areas of the property are sloped resulting in ponding of water

adjacent to the building.

Site seismicity defines the building's Risk Category as C. This is based on the USGS site seismicity information. A geotechnical investigation may verify this or change the rating.

Risk Category C is a moderate risk category.

D. Building Description

Structural Description:

City Hall

Foundation:

The building foundations are concrete. There was no information on whether they were reinforced. The adjacent Fire Station calls for foundations to be 4 feet 9 inches below grade. This should be a reasonable assumption for this City Hall Structure.

Basement:

The basement is under the west part of the building. The walls are of concrete construction.

First Floor Framing:

The first floor on the west side of the building is reinforced concrete construction. This is the floor of the jail and police department. The concrete beams are at 8 feet on center.

The remainder of the floor is wood frame. Joists are 2 inch by 12 inch members spaced at 16 inches on center. These span north to south. There are pier and some continuous footings under walls and supporting the joists.

Second Floor Framing:

The second floor joists are 2 inch by 11 inch lumber spaced at 12 inches on center. There is a double layer wood floor. First layer diagonally sheathed the second straight boards.

The floor over the jail is reinforced concrete construction. Concrete beams 8 inches wide and 10 inches deep (plus slab thickness) are at 6 feet on center. Slab thickness is not known.

Mezzanine Floor Framing:

The floor framing of the intermediate floor was not visible. The finish floor is plywood. Not known is what is supporting the floor joists adjacent to masonry walls.
Roof Framing:

The roof framing consists of a series of trusses 80 inches in depth. The top and bottom chords are 2 inch by 6 inch members. There is 1 inch by 6 inch diagonal web members. The trusses are at 2 feet 0 inches on center. There are metal straps to the wall every 4 feet on center.

The roof diaphragm is straight board sheathing. The bottom chord of the truss acts as the ceiling joists for the second floor.

First Floor Walls:

Walls are 17 inches thick, consisting of four wythes of masonry. The exterior wythe is brick veneer. No information could be determined on the veneer ties.
Second Floor Walls (Second to Roof):

Walls are 13 inches thick, 3 wythes of masonry. The exterior layer is brick veneer. Interior walls appear to be conventional stud construction. The walls of the jail on the first floor are concrete estimated to be 8 inches thick.

Parapets:

The parapets are 9 inches thick, double wythe of masonry. The exterior layer is brick veneer.

At the front wall was a taller gable that no longer exists.

Fire Station Addition (1950)

The Fire Station is an addition. It consists of three walls, the fourth being the City Hall with approximately 15' extension for the fire station. The building size is approximately 38 feet from north to south and 55 feet in depth in the east west direction.

Foundations:

The foundation is an inverted "T" shape of concrete construction. Depth is 4 ft. 9 inches.

Floor:

The floor of the Fire Station is a concrete slab on grade.

Roof Framing:

Roof framing consists of three steel trusses span across the 38 foot direction of the structure. Rafters span between the steel trusses. These are 3 inch by 11 ½ inch (actual size), spaced at 4 feet on center. The roof sheathing is flat 1 x boards.

Trusses are supported on concrete pilasters embedded into the east wall of the City Hall building. The depth of the pilasters is unknown. They are estimated as 4 inch minimum depth. The roof system was not as shown on the structural drawings for the Fire Station.

These showed wood trusses.

At the back of the fire station there is a two story office and crew area. This is of wood construction.

Wall Construction:

Wall construction consists of 8 inch concrete masonry units (pumice stone material). There is a single wythe of brick veneer on the exterior resulting in a 12 inch thick wall. The front wall consists of concrete piers with brick veneer. The piers support a steel beam over the wide door openings (not verified). The brick wall matches the City Hall at 17 inches thick, 4 wythe construction. Bricks are placed on the steel beams above the door up to the roof and parapet.

Parapets:

The front parapet has a maximum height 4 ft. 8 inches. It is constructed of brick, similar to the City Hall wall. The north and east side is pumice block with the upper two courses being brick and veneer and topped with concrete coping.

II. Summary of Findings

The study's findings are that there are two conditions with the building that require attention, settlement and cracking and seismic safety.

Settlement:

Major settlement has caused a crack at the north-west corner of the Fire Station. The crack appears to the result of settlement of the foundation. From the field observations it is probably caused by water and soil consolidation.

The repair of this might be to underpin the foundation in this area and tie the walls that have settled to the rest of the building walls. This might be accomplished with horizontal steel rods epoxied into the walls. Then the crack should be repointed to tighten up the building and prevent water entry.

Seismic Evaluation:

The attached Check Lists show the findings of features that comply with the standard and those that do not. The findings are as follows:

Parapet Bracing:
Parapets beyond a certain height to thickness ratio may topple in an earthquake. Typically these fall outward, often on the public way. In this building the parapets on both the City Hall and the Fire Station exceed the height to thickness ratio and require bracing.

Wall Anchorage:

Masonry walls are typically inadequately connected to the floor and roof. (These are called diaphragms. The diaphragm is a stiff element that can brace the wall. Early masons provided some anchors from the wall to the joists and rafters with one nail into the joist at about 6 feet on center. The attachment is significantly less that the anticipated forces and requires strengthening. This is accomplished by placing a bolt in the wall which is adhered with epoxy. The bolt is connected to a metal anchor bolted to the joist or rafter.

Wall Stability:

Wall stability is measured by the walls height to thickness (h/t ratio). This is measured between the floors or floor to roof. (This assumes that the wall anchors are in place,) The findings were that the first floor walls have sufficient stability but the second floor walls will require additional bracing.

In-plane Shear:

Forces in the plane of the wall will cause the wall to crack and be damaged if they do not have sufficient strength. Obviously solid walls are stronger than walls with windows and doors. So the wall needs to be analyzed to determine whether it complies or not. Each exterior wall will have different results. If walls have inadequate capacity they require strengthening. Methods include applying shotcrete (creating a reinforced concrete wall), closing a window or other openings, and possibly the application of carbon fiber on the interior wall surface.

III. Recommendations

Based on the analysis and findings the building should be retrofitted. See example details. The work includes:

- Parapet Bracing – All parapets, on both buildings, require bracing.

- Wall Anchors – All walls need to be anchored for out-of-plane and shear loads at the roof and second floor level.

- Wall Stability Bracing (Second Floor) – Wall on the second floor of the City Hall will requires bracing as it spans from the second floor line to the roof. By placing a diagonal brace just above the ceiling line in the attic, the effective wall height may be reduced so no bracing is required in the rooms.

- In-plane Shear - In-plane shear improvements are required. The extent of the shearwall work will be determined in design.

Phasing of Work:

Sometimes projects and retrofit can be phased. The parapet work is done from the roof and often while a building is occupied. However the wall anchors, shear improvement,

and similar work will require removal and reinstallation of interior finishes and ceilings. Obviously this is messy work and requires the building be vacated. Also a single stage project is typically less expensive that a phased project.

Appendix 08 Mechanical/Electrical Report

HVAC SYSTEMS:

General Design shall include:

- New ductwork. Ductwork design shall be low velocity, designed at 2.0” static pressure and insulated per 2012 IECC.

- New refrigeration piping shall be insulated.

- Provide new exhaust system for all restrooms. The exhaust system shall comply with 2012 Uniform Mechanical Code.

First floor design shall include:

- New dedicated outdoor air split system located in basement shall be provided. The ductwork distribution system shall be installed in the basement system with a floor mounted supply grille at each space.

- The air condition system shall be a Variable Refrigerant Flow (VRF) system with capability to perform at -5 degrees. The indoor units shall be floor mounted ductless fan coils at each space/room.

- New electric radiators shall be provided for supplemental heat at each space/room. The electric radiator shall interlock with the ductless fan coil unit.

New building addition:

- New ducted split heat pump unit(s) with electrical supplemental heat shall be provided in the attic space. Outside air shall be provided from the roof or exterior wall.

Meeting Room design shall include:

- New ducted split heat pump unit(s) with electrical supplemental heat shall be provided in the attic space. Outside air shall be provided from the roof.

Second floor design shall include:

- New dedicated outdoor air split system located in interstitial mezzanine with a duct riser from interstitial mezzanine to the second floor. Provide supply wall grille at each space.

- The air condition system shall be a Variable Refrigerant Flow (VRF) system with capability to perform at -5 degrees. The indoor units shall be floor mounted ductless fan coil at each space/room.

- New electric radiators shall be provided for supplemental heat at each space/room. The electric radiators shall interlock with the ductless fan coil units.

PLUMBING SYSTEMS:

Plumbing system shall include:

- New roof and overflow in accordance with the architectural floor plans.

- New cold and hot water piping distribution system. Piping shall be Type L copper with wrought copper fittings, joined with 95-5 or Sil-Fos solder. Piping installation shall comply with 2012 Uniform Plumbing code.

- New condensate drain system for the HVAC system. The piping shall be Type L copper with insulation.

- New sewer piping below grade shall be Sch 40 solid wall PVC pipe with solvent welded fittings. Storm sewer, sanitary waste and vent piping above grade shall be cast iron, no hub. Cold and hot water piping shall be insulated per the 2012 IECC.

- New electric storage water heater for the new building addition and instantaneous water heaters for the restrooms in the main building.

The Conceptual Estimate of Probable Cost will be $211,000.00

Rehab of the existing building - Estimate of probable construction costs - HVAC and Plumbing: $171,532

New Building - Estimate of probable construction costs - HVAC and Plumbing: $65,110

ELECTRICAL SYSTEMS:

Power

Replace the (3) existing overhead 1-phase services with a new 208V 3-phase service. The 1-phase service at the Northeast corner of the building is serviced from a power pole several feet away on Mill Street. The second and third services are served from a power pole at the Northwest corner of the property.

The new service will be located in the addition adjacent to the elevator, or exterior to the building on the South side of the passageway between the existing building and addition. The basement is not suitable for the new service due to possible flooding.

3-phase service primary will be underground from the power pole at the Northeast corner of the property to the proposed utility transformer location, near the Northwest corner of the existing building. Transformer secondary service conductors will then enter underground into the new service equipment. 208Y/120V power will be supplied to the HVAC equipment, including supplemental heat strips. Additionally, 120/208V will be supplied to electric radiators throughout the facility.

All devices (switches and receptacles) will be replaced, including GFCI and arc fault where code required. New devices will be added as required to accommodate new space uses.

Existing conductors will be replace throughout with new, including ground conductors, using existing conduit where possible.

Lighting
Lighting will be LED for minimum long term operating and maintenance.
All existing fixtures will be updated with LED light sources, including replacements with period correct reproductions.

Lighting controls will conform with the current IECC requirements, including dual switching, daylight harvesting, and occupancy sensors.

Existing conductors will be replace with new throughout, including ground conductors, using existing conduit where possible.

Communications
New underground telephone/cable/internet service will be served from an existing Mill Street telephone pole, adjacent to the Mill Street Northwest power pole.
The telephone/cable/internet service will terminate in an Equipment Room in the interstitial electrical room.

Data, Telephone and TV outlets will be located throughout according to the new space uses.

Estimate of probable electrical construction costs:

Rehab of the existing building - Estimate of probable construction costs - Power, Lighting and communications: $135,700

New Building - Estimate of probable construction costs - Power, Lighting and communications:
$23,535

Appendix 09 Ely Nevada: Community Development Phases

Little has been found during this initial phase of RAFI's work pertaining to life in Ely prior to1880, the era Nevada SHPO defines as its *settlement phase*. There are peripheral references in Effie O. Read's book *White Pine Lang Syne*, A True History of White Pine County, Nevada, but little else; nor have any photographs as of yet been uncovered.

Ely's second phase of development, the *camp phase*, for the purpose of the registry nomination may aptly be considered as the timeframe of 1880 to1900 where the town now has a larger population, more permanent, wood-framed buildings, and town grids – and is the center for county governance. There are photographs, maps, relics and historical information available for use to draw upon in framing evidence for the nomination for this era in Ely's development progress. Likewise, there is ample evidence in terms of photographs, historic literature and elements of the urban fabric of the early twentieth century available to support SHPO's third level of community development: *the town phase*. Along with the introduction of the Northern Nevada Railroad and its headquarters location in Ely, there is a dramatic increase in mining productivity; the town is organized formally and there is an emerging established infrastructure. After 1900, buildings are more permanent, elaborate, and are being constructed of stone and brick.

First, Transportation. Ely's location in proximity to the Overland Trail that moved early American pioneers westward contributed greatly to it becoming recognized as a place of respite for weary travelers. As an early settlement, Ely had access to an abundance of spring water. There was also ample game available for food. While winters were snowy and cold, spring and summers were mild compared to more southern passages across the desert.

As east to west transportation increased after the Civil War, the Overland Trail through Nevada later became designated as State Route 2, a segment of the historic Lincoln Highway, the first transcontinental highway to cross the United States coast to coast. Additionally, with access to the new Northern Nevada Railroad, Ely quickly became even more important as a strategic stop and place for respite along the popular transportation route. The Northern Nevada Railroad through its connectivity with other rail lines afforded Ely ready access to food, fuel and goods travelers frequently needed for continuing their journeys onward. It was a primary resource for moving freight and livestock. Until, July 31, 1941 when passenger service ceased, the railroad transported passengers to the central Nevada community for business, family visits or for delivering new residents to the town.[1] It's reported that during its 35 years of passenger service the railroad moved more than 6 million travelers by rail.

By the time the new city hall and fire station was constructed in 1928, the famed Lincoln Highway was beginning to emerge nationwide as US Highway 50. In 1926, the federal government designated Ely, Nevada as a strategic north/south stop along a soon to be constructed new national transcontinental highway, US Highway 93. The roadway was aligned with other highways under construction to travel from the nation's border with Canada in the province of British Columbia southwards, ultimately traveling through Ely and Las Vegas, on into Arizona and then south to the Mexican border.

---

1 Friends of the Northern Nevada Railway, *Nevada Northern Railway and the Copper Camps of White Pine County, Nevada (Texas: Taylor Publishing Company, 1991),* 61.

By 1932 when the completed highway linkages were in operation, Ely became a nexus for highway and railroad transportation nationally. US 93 later became recognized as the 19,000 mile long Pan American Highway, as roadways were extended farther north to Fairbanks Alaska and further south through Central America, across the marshlands of the Darién Gap, (that is not yet drive-able) into South America, continuing on to the southern tip of the continent at Ushuaia, Argentina. It's was stated by Glenn Terry a long-time resident and local resource on the region's history that in its "hay-day" Ely had the state's tallest building, the Nevada Hotel; it had the state's second largest population, behind Reno, and there was 600 hotel and motel rooms serving business and overnight highway travelers through town.

Although little information has been uncovered regarding the early history of the Ely Airport, Yelland Field, Mr. Terry states that airplane activity at the airport dates back to the early 1920's. Named for Henry J. Yelland, White Pine County's first, World War I casualty,[2] it was frequently used during the early years of World War II for some training activities. In the 1950's prior to deregulation there were commercial flights serving Ely daily with connections to and from Las Vegas, Reno and Salt Lake City via United Airlines. With access to commercial airline service, Ely arrived as a member of this nation's overall plan and program to establish a comprehensive network of coast-to-coast transportation hubs.

In preparing the National Register nomination another important consideration is the manner in which immigrants to the United States from every corner of the world settled in Ely for work during its mining boom. On arrival, they were warmly accepted and quickly integrated into community life. In a new 2016 book, *Where the World Met and Became One*, Stories Give Voice to Early Ancestors, edited by Patricia White, Ph.D., early immigrants along with pioneers from other parts of the United States tell their stories in their own words of the memories, events and activities of their families' early lives during the late 1800's and early 1900's in Ely and White Pine County.

As Dr. White states early in the introductory text, the book is "about (those) who made their homes and fostered the culture of their home countries. While the men worked in the mines, on the railroad, as sheepherders and ranchers, the women delivered diversity and strengths to the early settlements."[5] As a melting pot of immigrants, it is apparent from the immigrant's stories early Ely openly accepted these new residents as neighbors and friends. Every new immigrant was proud to live in America and was excited to learn the new language. For them English was necessary to understand American culture. At the same time, they were diligent in preserving their native culture, their native food and recipes for their family meals, and in sharing their heritage with their new community.

According to Virginia Terry, a native of Ely and one of the founders of the Ely Renaissance Society, of the early Asian immigrants she grew up amongst, a large majority of the Chinese families living in the community's "China Town" district moved on soon after the railroad was completed and the initial mining boom plateaued, to seek new opportunities elsewhere. According to her and the new book many of the early immigrant families that were Japanese remained on to become highly respected citizens, business owners and operators - and farmers growing fresh vegetables for local restaurants and resident's tables.

As indicated in the new book, in addition to Asians there were European immigrants

---

2 Jack Flemming, *Copper Times, An Animated Chronicle of White Pine County* (Seattle: Jack Fleming Publications, 1987), 116.

from Greece, Italy, England, Spain, Serbia and Croatia, France, Ireland, Germany and the disputed area of the Pyrenees, that still today is home to the Basque. People representing all of these nationalities chose Ely, Nevada to settle to begin a new life. Today the family names of these early immigrant pioneers and their descendants are widely recognized for the contributions they have made and continue to make here in Nevada.

What's important to recognize is that as immigrants to the United States, *the world did meet here – and it did become one!*

Without the new demand for copper wire in 1880 to transport electricity it's questionable where Ely would be today. While the supply of gold and silver ore discovered around Ely was minimal, there was an abundance of copper ore available within the Robinson District that "in the early (18)70's comprised the small towns of Ely, Mineral City, Keystone, Ruth, Copper Flat, and Riepe Town."[3] By 1905, the vast deposits of copper ore in and around Ruth indicated there were deposits in excess of ten million tons that could be practically extracted.[4]

D. H. Smith adds, after copper mining began for earnest and the railroad arrived in 1906, Ely began its boom. "Ely could not muster more than 525 on the census returns for 1910. Ten years later, the population increased almost five-fold 2,600 people being accounted for by the census marshals." [5]

The necessity for the railroad was realized by investors in early 1904.[6] According to F. Sommer who then was an assistant to Mark L. Requa, the initial principal investor in the copper mine, the railroad was originally envisioned to travel to Wells, Nevada to connect to the Southern Pacific Railroad. In a paper and article presented to the 1958 Nevada Mining Association, the route was revised to the railroad at a new, closer junction named Cobre, the Spanish word for copper. Begun in 1905, the rail line was completed and ready for operation in 1906.[7] Its goal was to transfer a thousand tons of ore a day from the Ruth mine and another 1,000 tons a day from the mine at Copper Flat.[8] As more mines came on line the daily tonnage increased. Over the major mining years almost 3.5 million tons of copper ore were delivered from the pits to smelters for refining.[9] While Ely is not as prominent as a mining community today as it was earlier, the mines are still producing ore for the world's use.

---

3 D.H. Smith, *White Pine County, From the Beginning,* (United Airlines, n.d.), 23.
4 Ibid, page 31.
5 Ibid, page 32.
6 F. Sommer Schmidt, *Early Days at the Nevada Consolidated Copper Company Ely, Nevada*, "Old Timer Remembers" (article, Nevada Mining Association, 1958), 10.
7 Ibid, page 11.
8 Ibid, page 16.
9 --, "*The Patron Saint of Ely: Mark L. Requa,*" City of Ely Centennial (Ely, NV), 1987.

Appendix 10 Bibliography

References

--. "A Rich Failings Pile Attracted Ely, Its First Architects." City of Ely Centennial (Ely, NV), 1987.

--. "The Patron Saint of Ely: Mark L. Requa." City of Ely Centennial (Ely, NV), 1987.

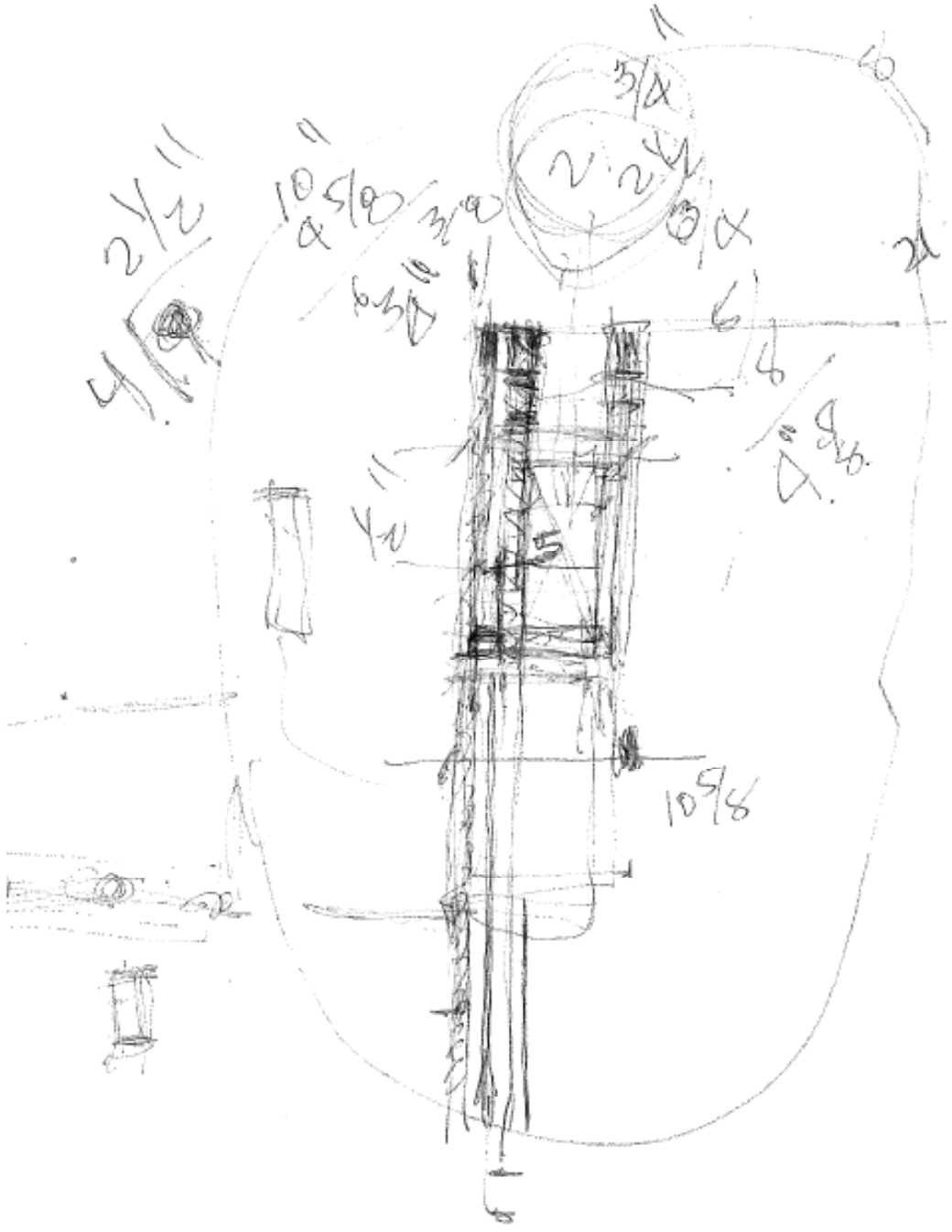
Flemming, Jack. Copper Times, *An Animated Chronicle of White Pine County.* Seattle: Jack Fleming Publications, 1987.

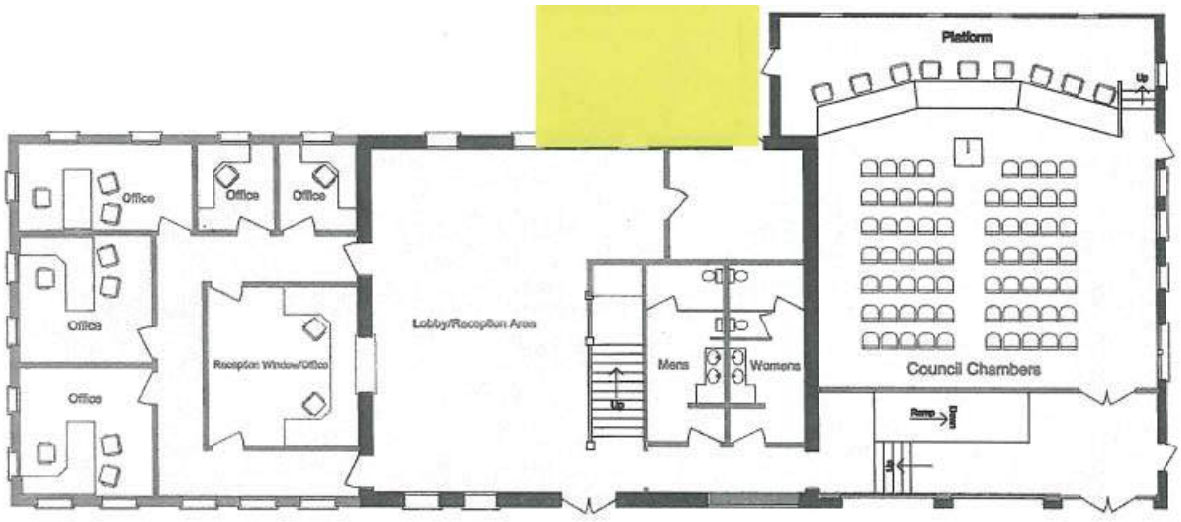
Friends of the Northern Nevada Railway. *Nevada Northern Railway and the Copper Camps of White Pine County, Nevada. Texas: Taylor Publishing Company*, 1991.

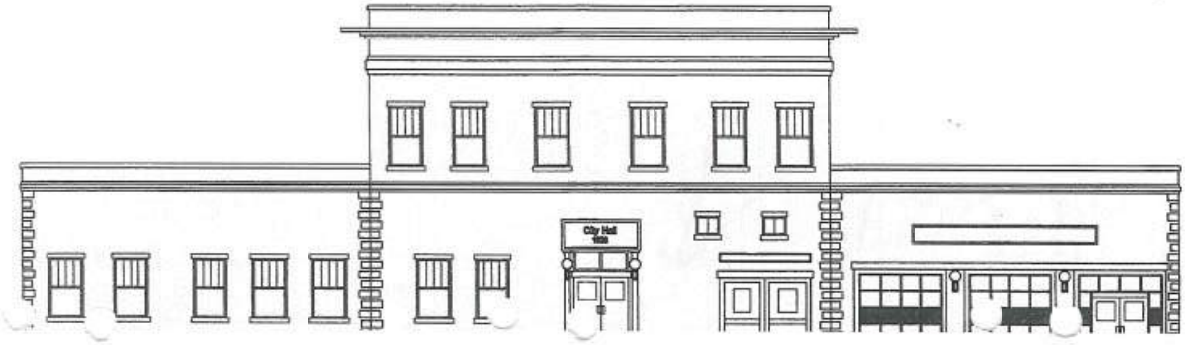
Schmidt, F. Sommer. *Early Days at the Nevada Consolidated Copper Company Ely, Nevada*, "Old Timer Remembers" Article, Nevada Mining Association, 1958.

Smith, D.H. *White Pine County, From the Beginning.* United Airlines, n.d.

Appendix 11 Field Notes




Platform
Up
Office
Office
Office
Office
Office
Reception Window/Office
Lobby/Reception Area
Up
Mens
Womens
Council Chambers
Ramp
Up


City Hall

ELY project

- Risha Engineering Jawahat Rimah
  702 · 485 · 4200

- Mel Green – (Historic preservation)
  MGreen Assoc @ earthlink.net
  310 · 792 · 9252

- Tom Foster
  (Electrical)
  Tom @ pdacorp.com
  702 · 567 · 1022 x102

Risha (W) Green/4M

VIRGINIA CITY > MEETING FOR HISTORIC RESEARCH.

- EYE HOPE FROM LAST CITY HALL
- JIM GARZA SMALL FUNDS. MULTIPLE GRANTS.
- NO GRANT WRITTER.
- LAKE CITY ~~HIGHLAND~~ COLORADO STILL GOING THROUGH SOME SMALL COMMUNITY EVENT 417 POPULATION.
- NO ADVERTISING, MISSING ON ENGAGING AND DOING.
- WHY FIRST WHAT YOU WANT OUT COMMUNITY TO BE HAS TO BE A SPIRIT THING — THE WHAT'S FALL INTO PLACE
- ELY STAGNET NO CHANGE IN THE COMMUNITY.
- WINTER EVENTS IN ELY
- 6° OF SEPERATION - ONE PERSON INFORMATION WILL TRICKLE DOWN TO THE NEXT PERSON
- JACK TRAINER — CRAIG RANCH SEND INFO TO MELODY.

△ to do

Ely (Nathan) — Grant, Art & Historical Volunteering Citizens

1. March 31st — Can Ely turn around in one week
   - OR TO move deadline — Can this date be moved?
   - Does it need to be moved?

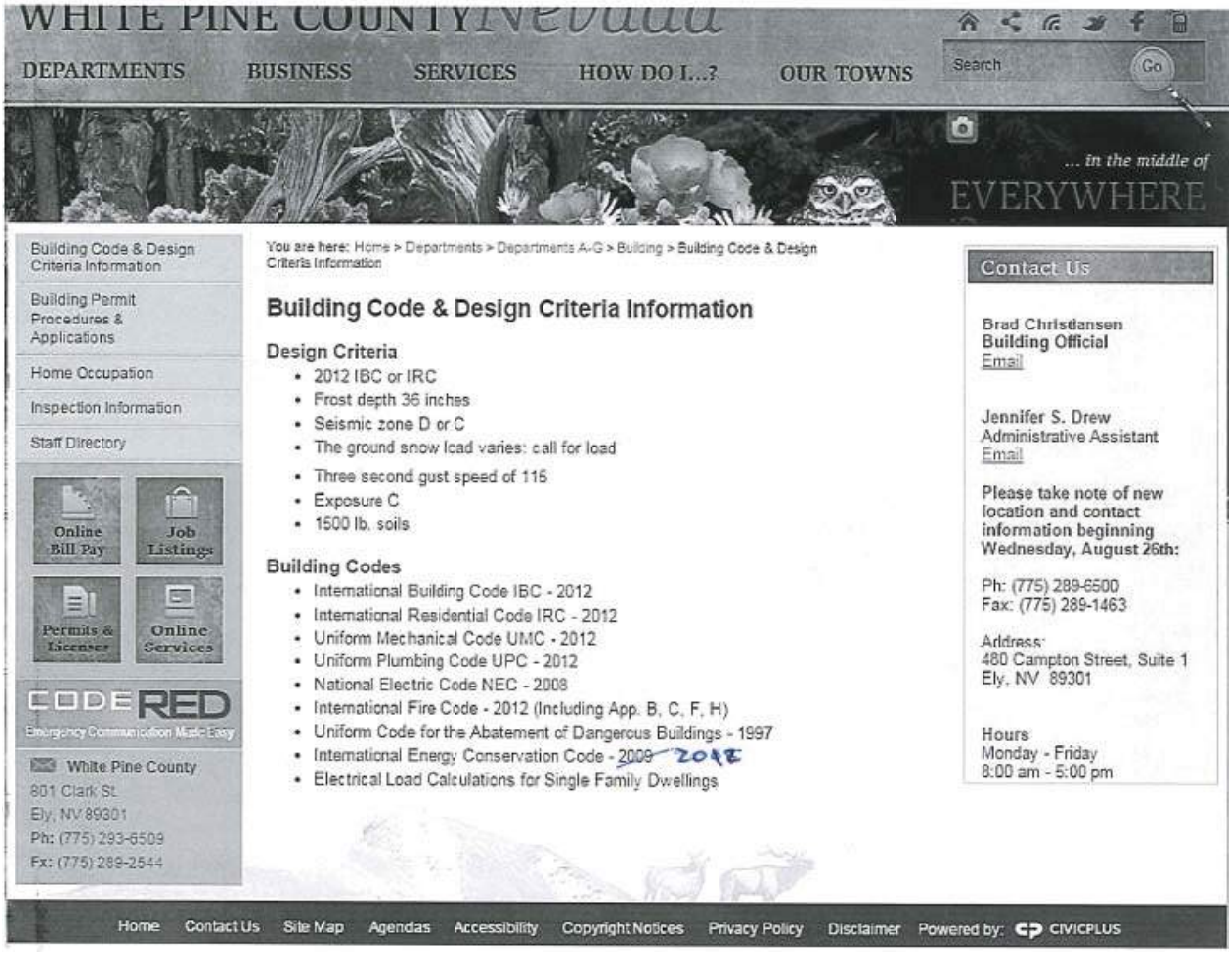
2. Confirm Bldg Dimensions (3 days)
   - what do they want the bldg to be and how it's to be used?
     - Restrooms (ADA)
     - Mtg Rms
     -

3. Print
   - Secretary of the Interior's Standards for Rehabilitation
   - Ely local codes
     - City of Ely / and County (find out what County)
     - look to see if special sections related to historic structures
   - "Cherry Picker"
     - 1 "E" BC E = Existing
     - SITE PLAN & SURROUNDING Parcels

4. Ely to do site survey & Geo-Tech report
   Tom — Order magnatt report
5. ASK about water & sewer component

6 weeks
30%, 90%, 100%
15% 60%

- trying to track down existing plans
- Th the 11th @ 9:00am


WHITE PINE COUNTY Nevada
DEPARTMENTS
BUSINESS
SERVICES
HOW DO I...?
OUR TOWNS
Search
Go
... in the middle of
EVERYWHERE
Building Code & Design Criteria Information
Building Permit Procedures & Applications
Home Occupation
Inspection Information
Staff Directory
Online Bill Pay
Job Listings
Permits & Licenses
Online Services
CODE RED
Emergency Communication Made Easy
White Pine County
801 Clark St.
Ely, NV 89301
Ph: (775) 293-6509
Fx: (775) 289-2544
You are here: Home > Departments > Departments A-G > Building > Building Code & Design Criteria Information
Building Code & Design Criteria Information
Design Criteria
2012 IBC or IRC
Frost depth 36 inches
Seismic zone D or C
The ground snow load varies: call for load
Three second gust speed of 115
Exposure C
1500 lb. soils
Building Codes
International Building Code IBC - 2012
International Residential Code IRC - 2012
Uniform Mechanical Code UMC - 2012
Uniform Plumbing Code UPC - 2012
National Electric Code NEC - 2008
International Fire Code - 2012 (Including App. B, C, F, H)
Uniform Code for the Abatement of Dangerous Buildings - 1997
International Energy Conservation Code - 2009 2012
Electrical Load Calculations for Single Family Dwellings
Contact Us
Brad Christiansen
Building Official
Email
Jennifer S. Drew
Administrative Assistant
Email
Please take note of new location and contact information beginning Wednesday, August 26th:
Ph: (775) 289-6500
Fax: (775) 289-1463
Address:
480 Campton Street, Suite 1
Ely, NV 89301
Hours
Monday - Friday
8:00 am - 5:00 pm
Home
Contact Us
Site Map
Agendas
Accessibility
Copyright Notices
Privacy Policy
Disclaimer
Powered by: CIVICPLUS

Ned Durkee
Colins Engineering
702 243 3429
Prospecting

Empire Development
1800 367 5320

SOILS REPORT

NEED A REPORT SAYING ASBESTOS HAS BEEN CURED

3 SUBMITTAL
30%
60%
90%

- LEAVE MONDAY NOON.
- DELIVERABLES
  ASSESSMENT REPORT TO USE FOR OPTIONAL USE OF NEXT
  SAIPO STORMLIC
  UNDERGROUND SOILS TREATMENTS
- EMERGENCY CENTER LOCATION ← ★
- ARCHITECTURAL ASSESSMENT REPORT
- STRUCTURAL ASSESSMENT REPORT

SHUT CREEK
HALF QUALITY DRAWINGS

- PROPOSED ANALYSIS BASIS ON CURRENT BUILDING CODE BUILDING
- MARCH 31ST OR AS SOON AFTER AS POSSIBLE.
- OVERALL POP INCREASE PEAKED IN 50 ←
  9 AM TO CALL IN A CONFERENCE CALL IN.
- PREVAILING WAGE JOB. COST ON PERCENTAGES BESTOWS HVAC
- CAN WE DO SOLAR HEAT SYSTEM, NO CANT GET TO FUNCTION IN COLD AREA.
- LOCATE ROOF DRAINS ON TOP OF ROOF.
- FIND A SPOTE OF OUTDOOR CONDENSOR UNIT. WITHIN LESS THAN 50'.
  10'x30', 12x10', 12 X 30'
- ROUGH FRAMING, PUT THE NEW SOLAR PANELS ON TOP
- L.J. SITE CONTACT NOA.

"CITY HALL BUILDING TRUE FACILITY OF THE COMMUNITY."
FORECAST FOR PUBLIC NEEDS.
OFFICE SPACE FOR USE PROFIT.

SITE
↳ ASBESTOS
  SITE SURVEY
  GEOTECHNICAL REPORT

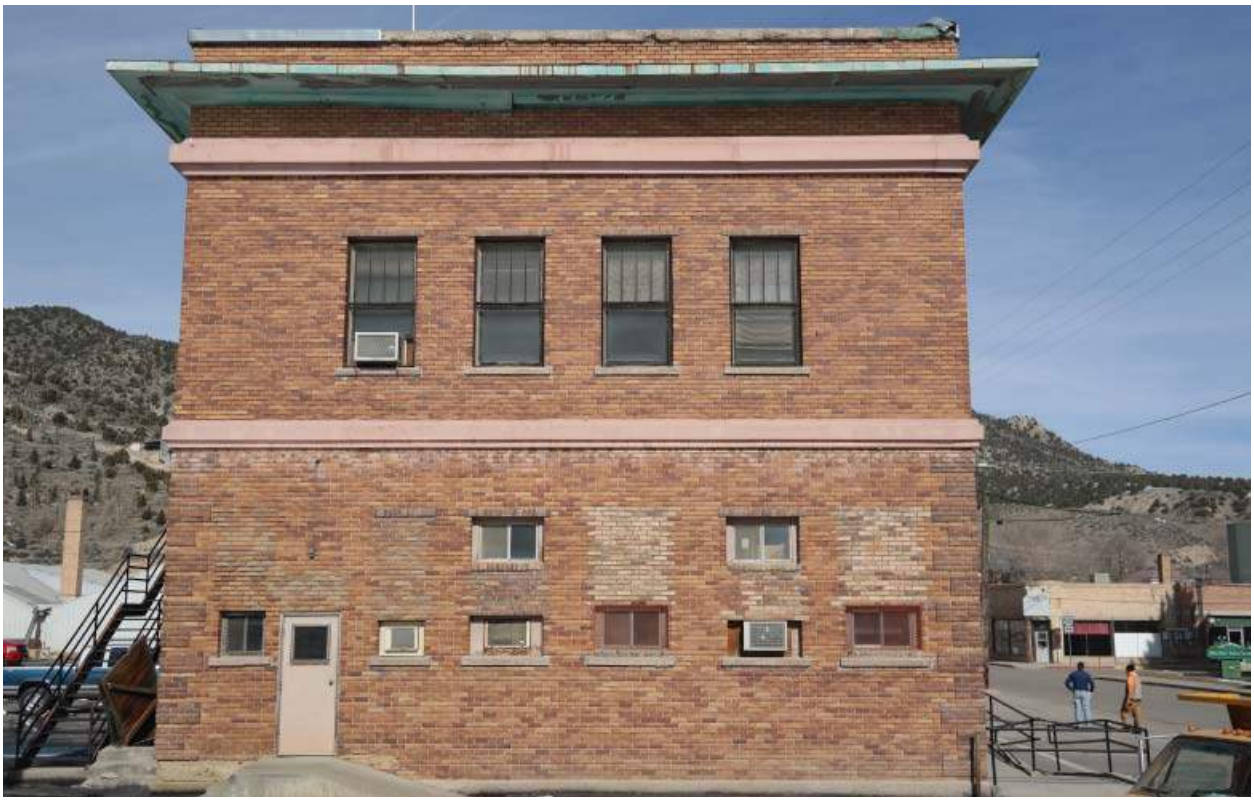
MEETING
PUBLIC COMMENTS TO COMMENTS

500 MILLION FUNDS AVAILABLE

- PUBLIC LANDS FOR SALE TO THE PUBLIC.
  COMMUNITY CAN HAVE ACCESS TO THOSE FEDERAL FUNDS FOR REDEVELOPMENT.
- COMMUNITY CAN ACCESS FUNDS
- PLAN READY BY SEPTEMBER TO PRESENT AT NOV.

Appendix 12 Site Photos

View of the City Hall on Mill St.



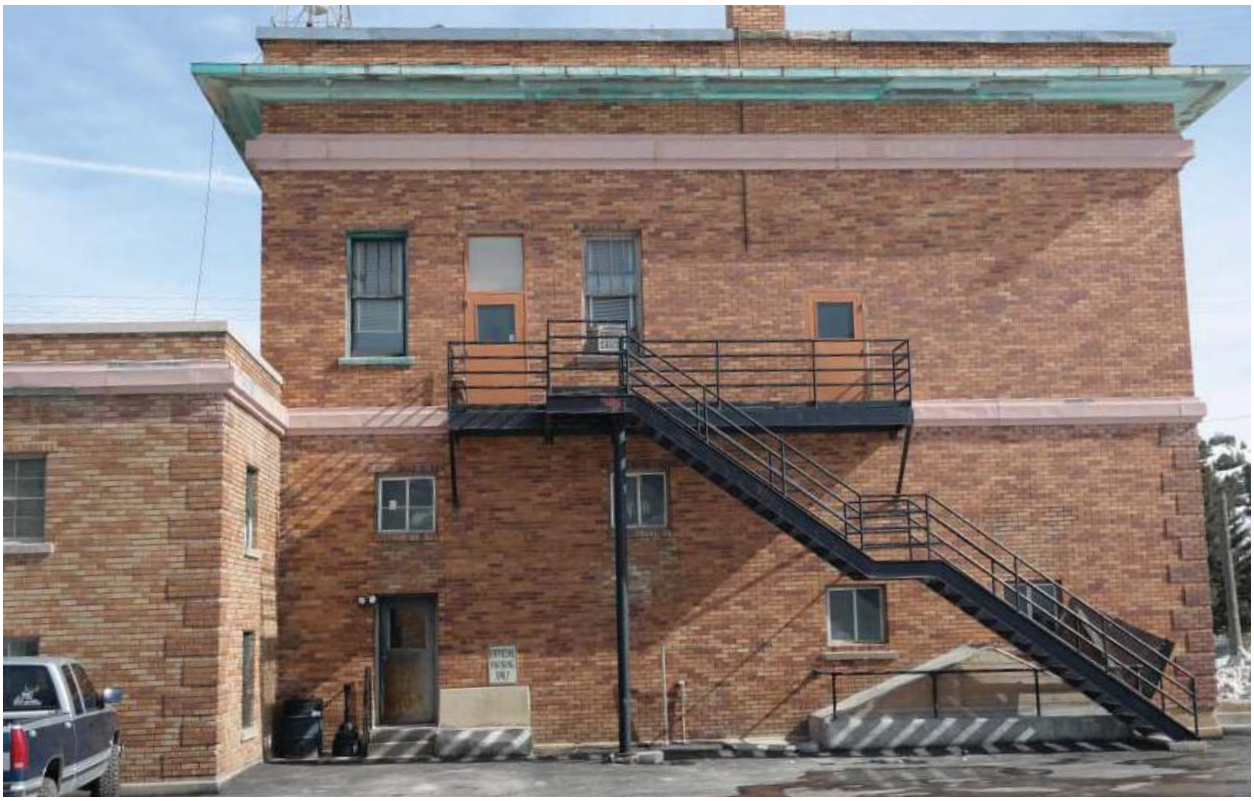
South Elevation.

West Elevation.

Alley Way along the North Facade.

Emergency stairway behind building.

Damaged stairs to the basement.



West elevation.

Main entrance to the building.

Entrance to the old firehouse.

Entrance along the south elevation.

Corbel detail at entrance.

Lower cornice on the firestation.

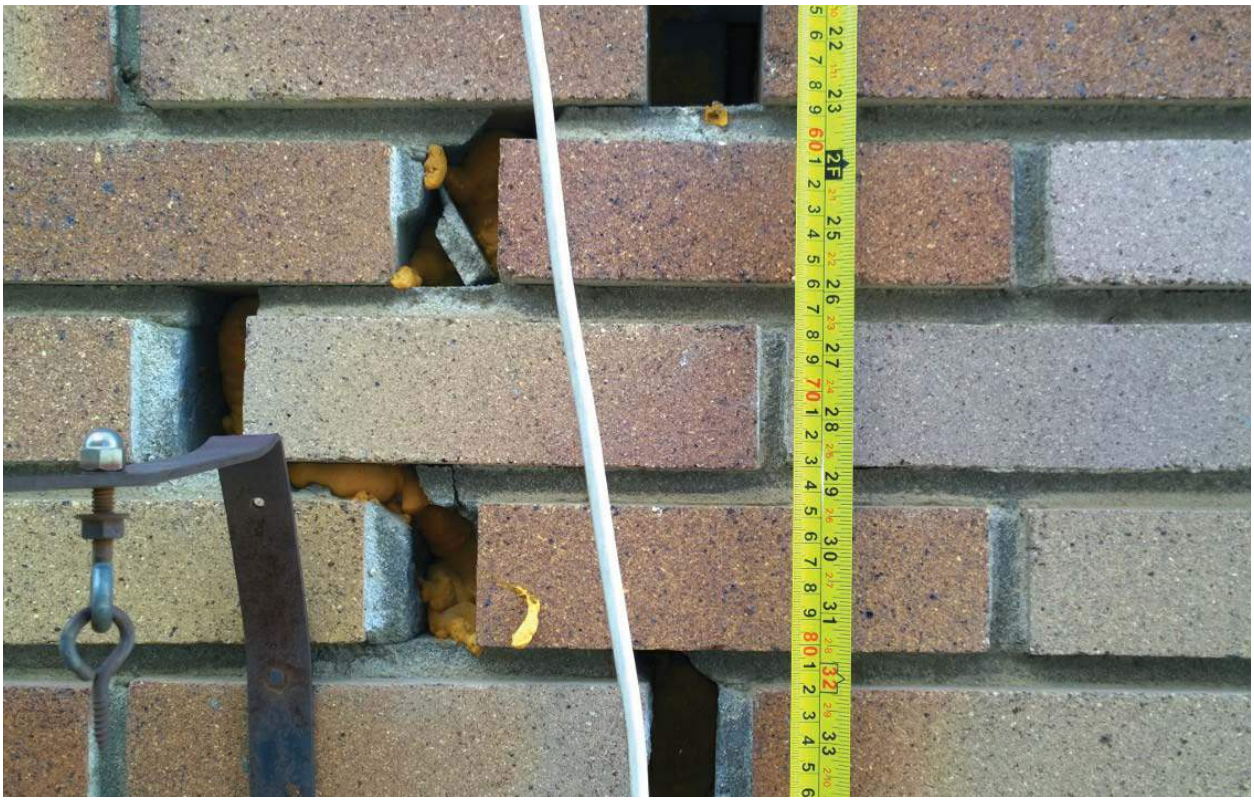
Corner brick detail.

Damage to the entrance of the building.

Damage to the cornice.

Damage to basement entry.

Large crack in the Nort facade.



Large crack in North facade.

Unitilities in the crawlspace.

Utilities and storage in basement.

Storage and overflow pump in basement.

Utilities in the basement.

Utilities in the crawspace.

Utility line in crawlspace .

Origical ceiling pattern.

Current office space.

Current office space.

Women's bathroom.

Office storage.

Office storage.

Old firestation garage.

Current firestation garage.

HVAC unit in firestation.

Ceiling access above firestation.

Firestation garage.

Door covered by bulliton at entrance.

Large crack on North facade.

Storage are in the firestation.

Current office for the maintenance crew.

Storage are in the firestation.

Upper bathroom in the firestation.

Lower bathroom in the firestation.

Electrical work in messanine level.

Original tin modling.

Original tin ceiling pattern detail.

Storage on the messanine level.

Storage and original tin ceiling at messanine level.

Molding and wall detail.

Entrance to room on messanine level.

Storage on messanine level.

Electrical box on messanine level.

Storage on messanine level.

Office space on the second level.

Office space on the second level.

Roof access ladder on the second level.

Office space on the second level.

Office space on the second level.

Typical door elevation.

Railing on the secodn floor.

Central stairwell of the building.

Space oin ceiling between tin ceiling and dropped ceiling.

Electrical wires haging through the ceiling.

Wall to structure connection in attic space.

Attic space.

Wall to structure connection in attic space.

Wooden structure in the attic.

Masonry infill from previous renovation above the current firestation garage.

Structure to wall connection above firestation garage.

Roof to beam to truss connection.

Masonry infill from previous renovation.

Structural truss above the firestation garage.

Structural truss above the firestation garage.