











Thank you.

Thank you to Helena Public Schools and the Helena Public Schools Board of Trustees for their commitment to seeing the 7th Avenue Gym preserved and put to use for the benefit of the community.

Special thanks to the Big Sky Economic Development Trust Fund (MT Department of Commerce) for providing the grant funding that helps make this project possible.

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Note to reviewers: this is a 50% progress draft and some sections are incomplete due to the natural development of the report, others are partially completed at this time and shown in their 'unvarnished' state, and others are partially completed and not included in the report at this time or shown as 'grayed out' graphically to imply where the content will ultimately go. Additional notes for clarity and to show where content will be filled in are noted in red text throughout this draft document.

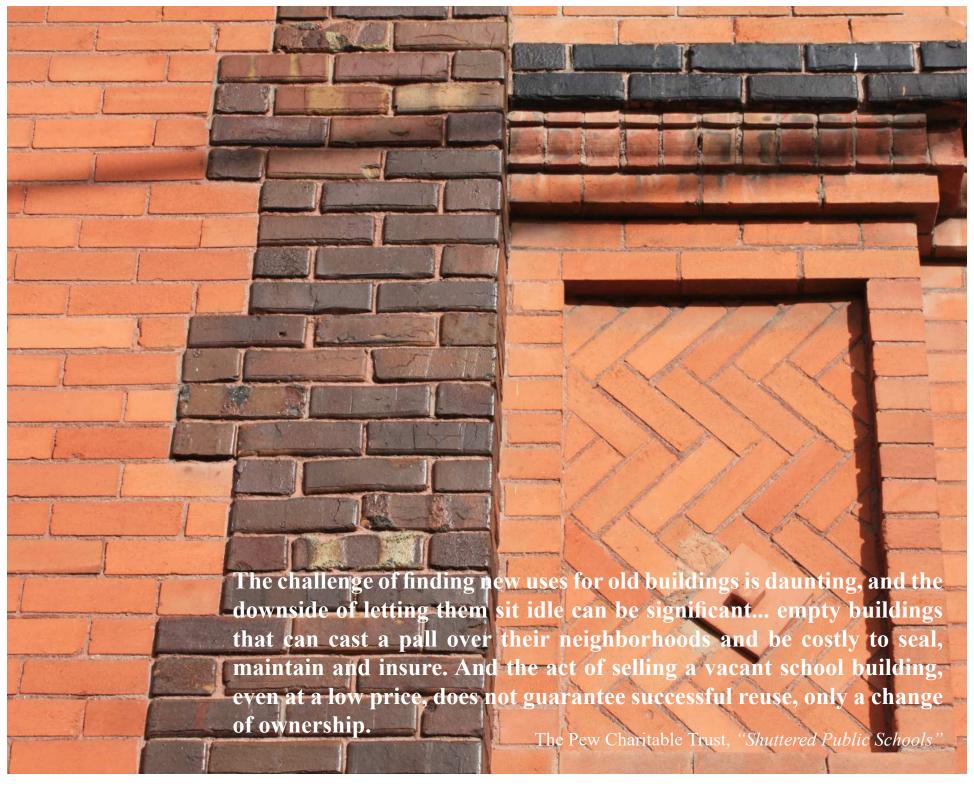
In addition, please note that this is an unusual document that is not just a PAR, but also an economic feasibility analysis and a document to court a developer. So, it is formatted in a manner different than the standard outline for a PAR, as its audience is more broad and there is more/different content. Included in the appendices will be a complete PAR outline with specific answers to all items, and page numbers for where they can be found in-depth in the report.

Thank you for understanding the nature of this project and progress draft.



# Needs Assessment & Opportunity/Challenge Identification





### The Need For Downtown Redevelopment

The need for downtown revitalization is pervasive throughout Montana and is palpable in the experience of many of our communities. Programs at the Federal, State, and local levels have recognized the significance of this need through incentive programs (tax credits, 'Opportunity Zones,' grants and loans, tax abatement, TIF districts, etc.) and through direct action (prioritized private and public investment, economic development assistance, updating City codes and master plans, advocacy, how towns are marketed, etc.). The need is felt deeply and personally by individuals and communities as well. As committed citizens have formed preservation organizations, nonprofit downtown business and development associations, volunteer for downtown groups, then conduct and locate their businesses in a place they believe in. Montanans are urgently working to keep their communities intact, build their businesses, maintain our sense of place, and use our past to build a viable future.

These formalized responses to this need is evident in the widespread support and partnerships in this project that range from State level economic development grant funding to local businesses wanting to locate in the building, from pursuing Federal/State historic preservation tax credits to building programming from downtown groups aimed at increasing downtown activity, and from implementing the City's new master plan to maximizing the public benefit embodied in the building. Informally, the importance of vital downtowns and how our history is intertwined with our current branding and future plans is evident in a simple 'Google Image' search of any given Montana community or the scrolling images on any Chamber of Commerce webpage. One will inevitably see a majority of three types of images: a dramatic Montana landscape, people enjoying outdoor recreation, and their historic downtown. The need for vital (or revitalized) downtowns is evident through the amount of financial and human resources dedicated to them, and community support is evident through how we communicate our towns to others.

However, most historic downtowns throughout Montana are in need of some form of help and investment. Common issues are aged buildings in need of deferred maintenance, blighted buildings, empty spaces, aging infrastructure, and lack of experience/expertise to manage the challenges. Endemic issues of rural communities (and most of Montana is technically rural) such as lack of capital, services, public services, physical distance, technical expertise, aging population, retention of young residents, and significant social issues can all play a role in lack of investment. In addition, the complexity and expense of developing a building is often beyond a single local developer or small community group. Collaborative catalyst projects are needed at this time in many communities to show that these projects can be reasonably accomplished, and can start the ball rolling for other projects.

In fast-growing communities like Missoula, Bozeman, Whitefish, Billings, Kalispell, threats come from new development and displacement of local residents as neighborhoods are gentrified. Super-heated real estate gives way to

projects of higher density. Investment may come from out of town or out of state, with return on investment the primary goal over local heritage or impact on neighbors. In slower growth urban towns like Helena, Great Falls, Miles City, Livingston, downtowns have declined as investment has migrated beyond city limits, to box store zones and commercial strips leaving alarming numbers of downtown buildings empty and blighted. Drawing investment back to the core requires collaborative local efforts between local government, economic leaders, developers and preservationists.

In rural communities, where limited capacity and funding have led over time to disinvestment in buildings and commercial districts. Once the anchors to community, these districts now struggle to remain vibrant in towns that saw their heyday more than a century ago. In static rural hubs like Townsend, Lewistown, or Dillon, essential services such as county government, schools and health care provide a basis for the local economy, though each downtown suffers from lack of business, fewer residents and building vacancy. Depressed rural towns such as Roundup, Paradise, Winnett, Augusta have dwindled in population and activity.

In all of these communities, investment in critical downtown properties is a required intervention where vacant and under-utilized buildings are both symptoms and causes of serious civic decline and failure of communities to fully leverage the resources they have.

Indeed, downtown Helena is in need of revitalization. It is a truly unique and beautiful downtown with many valuable and interesting assets and features, an interesting and marketable history, an important and vital collection of historic buildings, and brimming with opportunities. Many organizations such as MBAC, the Helena BID, and Downtown Helena, work tirelessly to promote the downtown, foster businesses, recruit developers, and maintain its unique character. However, our downtown needs significant investment, improvement, and help from many sectors of the community to become the vibrant and complex vision shown in the recent Downtown Helena Master Plan. In fact, the recent planning effort for a downtown public market identified a vacant or significantly under-utilized property on every block in the downtown district.

Helena has uniquely complex challenges and opportunities in its downtown as well. The historic districts along Last Chance Gulch have a unique character in the buildings and streets, although the districts were severely diminished through disasters such as earthquakes and fires in the first half of the last century, and later through the ravages of Urban Renewal. Other factors such as the high level of large and governmental employers in the community mean fairly steady economic conditions and activity levels. However, it also seems to reflect in lifestyles that don't foster the same type of commerce and activity of a community such as Bozeman or Missoula. Being the State Capitol also makes our economy unique in the type of activity, tourism, spending, and investment that occurs. There are both needs and desires for more activity, amenities, and diversity in the economy of downtown. Helena has the infrastructure, downtown identity, community will, and viable properties/buildings to make investment in its vision attractive. A catalyst project is what is needed right now.

### Vacant & Under-Utilized Buildings in Downtown Helena (limited selection)

























#### The Need For Historic Preservation As An Economic Driver

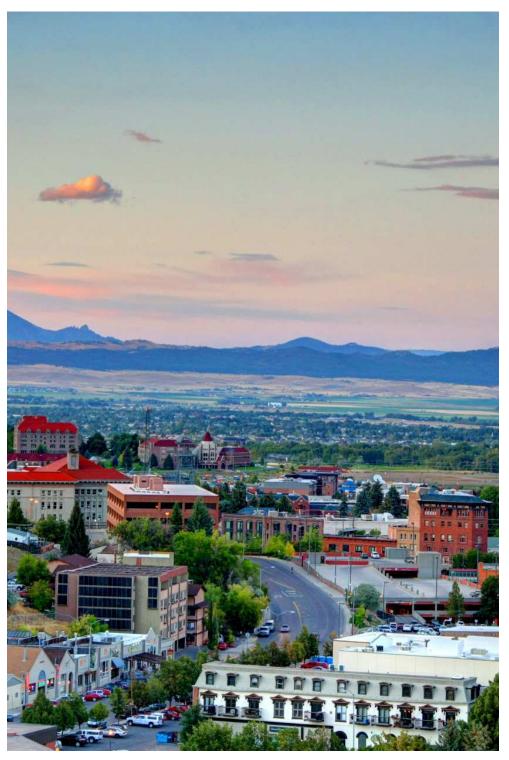
Historically, preservation of important buildings and sites has always been practiced on an intuitive level by individuals and governments for both practical and cultural reasons. In the U.S., the historic preservation movement was formalized by the Historic Preservation Act of 1966 as a response to the rapid loss of many important buildings and districts due to the destructive pressures of urban flight to suburbs, interstate highways dividing communities, Urban Renewal, the rise of the automobile, and other societal perceptions. This act of legislation set up a technical framework for preservation and incentives for investment in historic downtowns and buildings.

Currently, a variety of different factors are putting pressures on historic buildings in downtowns across Montana: building stock that is 100 years old or more, significant deferred maintenance (or neglect), aging public infrastructure, lack of access to technical expertise, rapid development, lack of investment, and widespread misperceptions on the challenges and expense of addressing older buildings. These factors often mean that preservation is not considered as an option for buildings and downtowns, when it should be the primary option. It should be a primary option not only for connecting us to our past, but for its ability to positively affect local economies through construction dollars, job creation, creating active and attractive commerce zones, developing the heritage tourism industry, and currently unforeseen economic opportunities. While Montana does not specifically track statistics on this topic yet, evidence from around the country and region is showing that our economic sustainability requires preservation, and investing in our downtowns is very efficient.

The common wisdom and much national data suggest that, in general, it can be anticipated that \$1 spent on construction will turn over in a community at least four times. However, (regardless of number of times turned over) with revitalization projects, communities can expect a significantly higher return per dollar invested. Economic Development Consultant, Donovan Rypkema, further explains:

"...new construction will be half materials and half labor. Rehabilitation, on the other hand, will be sixty to seventy percent labor with the balance being materials. This labor intensity affects a local economy on two levels. First, we buy an HVAC system from Michigan and lumber from Oregon, but we buy the services of the plumber, the electrician, and the carpenter from across the street. Further, once we buy and hang the sheet rock, the sheet rock doesn't spend any more money. But the plumber gets a hair cut on the way home, buys groceries, and joins the YMCA - each recirculating that paycheck within the community."

This means that for every dollar spent on a rehabilitation construction project has 7%-10% more money going directly back into the community, plus the increased amount turning over within the community. Preservation Colorado's 15-year study of economic impacts suggests that preservation projects compare favorably to new construction in terms of both direct and indirect economic impact as well.



Revitalization is a powerful tool for job creation. Jobs are directly created through the construction projects and the businesses that inhabit the buildings. Indirectly, increased spending in the community fosters higher wages and more jobs. Rypkema's national data suggests that 35.4 jobs are created for every \$1 million invested in a rehabilitation project, as compared to 30.6 jobs for new construction. Preservation Colorado's data shows job creation nearly equal between rehab/new at around 14 jobs created for every \$1million invested. They also compare this across industries showing that for every \$1 million spent in the oil and gas industry results in only 9 jobs. National data from the "Main Street" program also indicates meaningful economic impacts:

"Main Street started as a program for downtowns of small towns. In the last 25 years some 2000 communities in all 50 states have had Main Street programs. Over that time the total amount of public and private reinvestment in those Main Street communities has been \$41 Billion. There have been 78,000 net new businesses created generating nearly 350,000 net new jobs. There have been 187,000 building renovations. Every dollar invested in a local Main Street program leveraged nearly \$26 of other investment. The average cost per job generated - \$2,500 - less than a tenth of what many state economic development programs brag about."

Again, a higher return for the same amount of money is a multiplier that adds to the positive economic effect of rehabilitation. More jobs equals more spending, and a positive cycle can grow. And more jobs for less money invested is practical, efficient, and needed across Montana.

Fostering small businesses is also an efficient investment in job creation and a local economy. Historic districts and other older but not historic building stock in downtown areas are particularly good for supporting and incubating these businesses. Jane Jacobs put it simply in The Death and Life of Great American Cities, "As for really new ideas of any kind – no matter how ultimately profitable or otherwise successful some of them might prove to be – there is no leeway for such chancy trial, error and experimentation in the high-overhead economy of new construction. Old ideas can sometimes use new buildings. New ideas must use old buildings." This idea is backed up by the fact that in 2016, 89% of all jobs in the US are from businesses with fewer than 20 people, not large companies. These businesses represent major contribution to job creation, local economies, and are tied inextricably to older buildings.

The efficiency of this investment is multiplied further when considering increases in activity and tourism in a downtown district, the efficiency of using existing infrastructure, and civic efficiency of those working/living downtown having easier access to public amenities like transit, city government, city services, social services, etc. Likewise, real economic benefits can come from revitalizing blighted or underused buildings or blocks as they stabilize or improve property values, tax roles, civic pride, and positive activity. The same investment continues to become more efficient financially, and more impactful on the community, which multiplies the value of every dollar further.

Revitalization of downtowns can also foster entire industries, such as the fast-growing heritage tourism industry. As tourism establishes itself as a leading part of Montana's economy, many communities are competing to stand out, be the reason a driving route is preferred, and take advantage of the opportunity. Publicly available data from the Institute for Tourism and Recreation Research (ITRR) at the University of Montana shows that the primary reason for 35% of all nonresident travel is for vacation/recreation. And of their list of the top 32 sites visited, 28 are historical sites, which means heritage tourism represents a significant portion of the over \$3.4billion tourists spent in Montana in 2017 (source: ITRR). Cultivating this idea fosters unique local businesses like Havre Beneath the Streets or the Tour Train in Helena, along with visionary projects like Headframe Spirits in Butte. Vibrant historic downtowns full of activity and character are the key resource for most communities to capitalize on this opportunity and merit prioritized investment.

Downtown districts provide a meaningful economic development opportunity that is both of its place and big in its thinking. Investing in properties to redevelop these districts is a highly efficient use of funding with benefits that reach far beyond the long list of direct and indirect economic benefits.

**Every \$1 million spent on historic** preservation in Colorado leads to \$1.03 million in additional spending, 14 new jobs, and \$636,700 in increased household income across the state.

### Helena's Historic Character (limited selection)



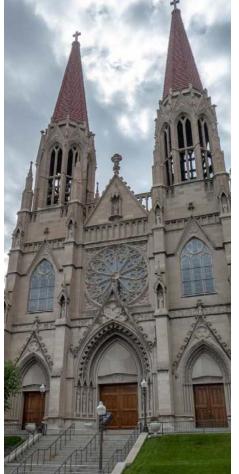














### Recently Demolished or Threatened Buildings Significant to Montana Downtowns' (limited selection)







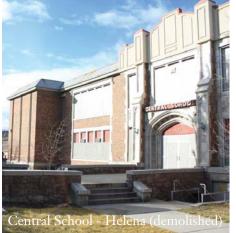














7TH AVE. GYM - HELENA, MT

### The Need For Historic Preservation & Downtown Redevelopment

### Preservation is an Integral Tool For Good Community Planning

The University of Kansas (KU) "Community Toolbox" (a comprehensive community planning and urban design reference) encourages and emphasizes preservation because:

- It preserves the historic, architectural, and aesthetic character and heritage of a community or area, and aesthetic character and heritage of a community or area, and helps to provide a sense of place and continuity. As suburban sprawl and roadside development make more and more places look the same, it becomes important for communities to keep their identities intact. Even one or two striking historic buildings can help to define a community and hint at its past. If whole peighborhoods or rural areas can be preserved, the effect is that much greater. The sense of history
  - make more and more places look the same, it becomes important for communities to keep their identities intact. Even one or two striking historic buildings can help to define a community and hint at its past. If whole neighborhoods or rural areas can be preserved, the effect is that much greater. The sense of history can contribute to community pride, and to a better understanding of the community's present.
- It is an efficient use of resources.

Historic preservation conserves resources, reduces waste, and saves money by repairing and reusing existing buildings instead of tearing them down and building new ones. Reusing a historic structure versus tearing it down and building with new materials helps to greatly reduce the carbon footprint of a building.

3 It preserves old methods of workmanship.

Because many modern buildings are built on the assumption that they will only be needed for a relatively short time – 25 to 30 years – before they are replaced, workmanship and building methods of all but the most significant buildings are not as careful or durable as methods used in the past, when buildings were expected to last indefinitely. By working on historic buildings, new generations of craftsmen learn the techniques to improve modern buildings as well.

4 It can add character and/or charm to a community, and emphasize its uniqueness.

The preservation of old buildings, neighborhoods, and landscapes can determine the look of a community, and may be an attraction for tourists as well. If these elements are historically significant or unusual, they can also be a source of community pride, and lead to other improvements.

5 It can attract investment and change the nature of a deteriorating neighborhood or area.

A rehabilitated historic building or neighborhood might be the focus of a new residential or commercial development. An area restored to its original appearance could serve as a magnet for tourists, and provide jobs for local residents. Local residents could also be employed in rehabilitation or restoration as artisans or workers, if they have the skills, or as trainees. In the latter case, by the end of the project, many may have developed enough competencies as carpenters, masons, or the like to start new careers.

All of these justifications/benefits reflect needs that have been expressed by citizens, downtown groups, and economic development advocates across the State. And they are in-line with the needs and desires expressed for the redevelopment of the 7th Avenue Gym. KU goes on to explain "Historic preservation – of buildings and other structures, neighborhoods, archeological sites, landscapes, and other historic properties – can add to a community's understanding of and pride in its history, and bring economic and other benefits as well. It therefore makes sense for communities to encourage the preservation, rehabilitation, or restoration of historic properties." And that "A community that respects its history respects itself. The preservation of that history through the preservation of sites important to it can help a community realize its strengths and use them to improve the lives of all its residents." In short, preservation matters and preservation is needed because it makes all of our lives more rich.

### **Practical Reasons to Save Old Buildings from PreservationNation**

### Old buildings have intrinsic value.

Buildings of a certain era, namely pre-World War II, tend to be built with higher-quality materials such as rare hardwoods (especially heart pine) and wood from old-growth forests that no longer exist. Prewar buildings were also built by different standards. A century-old building might be a better long-term bet than its brand-new counterparts. Take, for example, the antebellum Kennedy-Baker-Walker-Sherrill House in West Knoxville, Tennessee. Until the City Council approved a zoning deal, the house was threatened by developers' interests. However, following its classification as a historic site, the house - and its five-brick-thick walls - will be reborn as an office building that could withstand the fiercest of tornadoes.

### 2 When you tear down an old building, you never know what's being destroyed.

A decade ago, the Daylight Building in Knoxville was a vacant eyesore. A developer purchased the property with plans to demolish the building to make way for new construction. However, following multiple failed deals to demolish the building, the Daylight went back on the market. Dewhirst Properties bought it and began renovations only to discover the building's hidden gems: drop-ceilings made with heart-pine wood, a large clerestory, a front awning adorned with unusual tinted "opalescent" glass, and a facade lined with bright copper. Beyond surviving demolition and revealing a treasure trove of details, the Daylight reminds us that even eyesores can be valuable for a community's future.

### New businesses prefer old buildings.

In 1961, urban activist Jane Jacobs startled city planners with The Death and Life of Great American Cities, in which Jacobs discussed economic advantages that certain types of businesses have when located in older buildings. Jacobs asserted that new buildings make sense for major chain stores, but other businesses—such as bookstores, ethnic restaurants, antique stores, neighborhood pubs, and especially small start-ups - thrive in old buildings. "As for really new ideas of any kind - no matter how ultimately profitable or otherwise successful some of them might prove to be - there is no leeway for such chancy trial, error, and experimentation in the high-overhead economy of new construction," she wrote. "Old ideas can sometimes use new buildings. New ideas must use old buildings."

### Old buildings attract people.

Is it the warmth of the materials, the heart pine, marble, or old brick - or the resonance of other people, other activities? Maybe older buildings are just more interesting. The different levels, the vestiges of other uses, the awkward corners, the mixtures of styles, they're at least something to talk about. America's downtown revivals suggest that people like old buildings. Whether the feeling is patriotic, homey, warm, or reassuring, older architecture tends to fit the bill. Regardless of how they actually spend their lives, Americans prefer to picture themselves living around old buildings. Some eyes glaze over when preservationists talk about "historic building stock," but what they really mean is a community's inventory of old buildings ready to fulfill new uses.

### Old buildings are reminders of a city's culture and complexity.

By seeing historic buildings- whether related to something famous or recognizably dramatic - tourists and longtime residents are able to witness the aesthetic and cultural history of an area. Just as banks prefer to build stately, old-fashioned facades, even when located in commercial malls, a city needs old buildings to maintain a sense of permanency and heritage.

### 6 Regret goes only one way.

The preservation of historic buildings is a one-way street. There is no chance to renovate or to save a historic site once it's gone. And we can never be certain what will be valued in the future. This reality brings to light the importance of locating and saving buildings of historic significance - because once a piece of history is destroyed, it is lost forever.

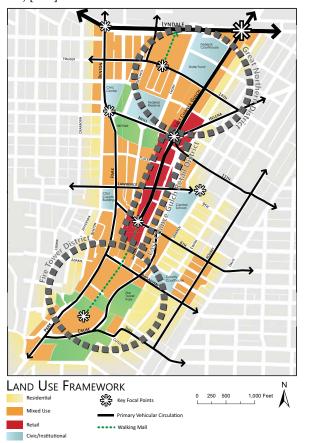
All of these reasons to save old buildings have been expressed as needs in Downtown Helena either directly or indirectly. Perhaps best formalized in the recent Downtown Helena Master Plan, preservation for these reasons helps to meet the goals and standards set forth for creating an active and convenient downtown that takes advantage of existing resources and infrastructure, emphasizes a unique 'brand' for the downtown based on a powerful sense of place, builds the local economy in a strategic and efficient manner, develops a heritage tourism industry, and trades directly on the rich and evident historic character of Downtown Helena. There are also needs in Downtown Helena to address blighted and empty buildings, stabilize or improve property values, repopulate portions of the downtown with businesses and activity, and to make more efficient use of existing physical and public infrastructure. Investing in existing buildings can help address these issues. Preserving old buildings is beneficial and needed for the health of our community's culture, our future, and local economy.

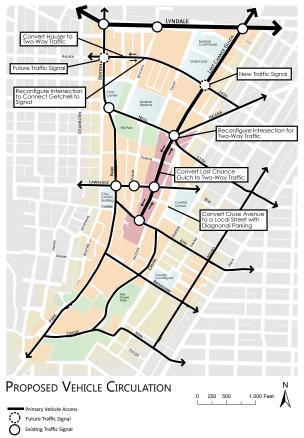
### Emphasis On '7th Avenue Gym' Type Properties in Downtown Helena Master Plan

The City of Helena adopted the Downtown Helena Master Plan in October of 2016. In this plan, key issues were identified, the goals and vision for downtown were established (including guiding principles and a downtown framework), and implementation actions were prioritized. While the 7th Avenue Gym sits on the Central School site, which sits on the border of the downtown master plan area, the proposed reuse of the building fits within the downtown framework and this project should address it as part of the downtown district. <sup>1</sup>

The 'guiding principles' for downtown Helena include creating a place where: "downtown is walkable, downtown is connected to the community, downtown is a desirable place, downtown is alive, and downtown is convenient." The 'downtown framework' then identifies three physical areas as 'districts' and identifies the area of the Gym as a secondary district to "support and sustain." The adopted implementation actions identify key areas for connectivity, development, etc. and identifies five planks for downtown redevelopment: "downtown as a brand, create a dynamic downtown environment, capitalize on downtown's historic assets, update and manage downtown's infrastructure assets, [and] connect downtown."

The five planks for implementation are further broken down into specific areas of focus and even specific projects to prioritize. Developing downtown as a brand includes creating one strategy for all of downtown, prioritizing aesthetics and maintenance to create a high-quality shopping district, and creating a high-quality downtown experience. Creating a dynamic downtown environment is broken down into revising the downtown development code to facilitate good urban design and stimulating development, promoting redevelopment of underperforming properties, creating a public market that brings unique options for food into downtown, and encouraging downtown housing. Capitalizing on downtown's historic assets includes updating historic inventories and promoting historic preservation and context-sensitive design. Updating and managing downtown's infrastructure involves managing parking to add convenience and encouraging desired land uses, and proactively investing in downtown infrastructure that supports new development. And connecting downtown means increasing transit options, inviting visitors to explore downtown by improving access and circulation, optimizing pedestrian connectivity, developing a comprehensive bike network, and improving vehicle circulation and access to increase retail viability. These planks, and the recommended implementation recommendations are inherently intertwined and build off of each other. <sup>1</sup>



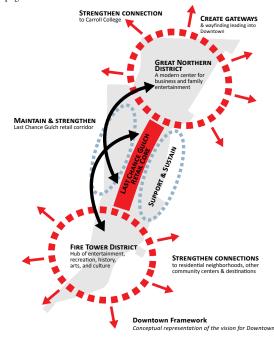


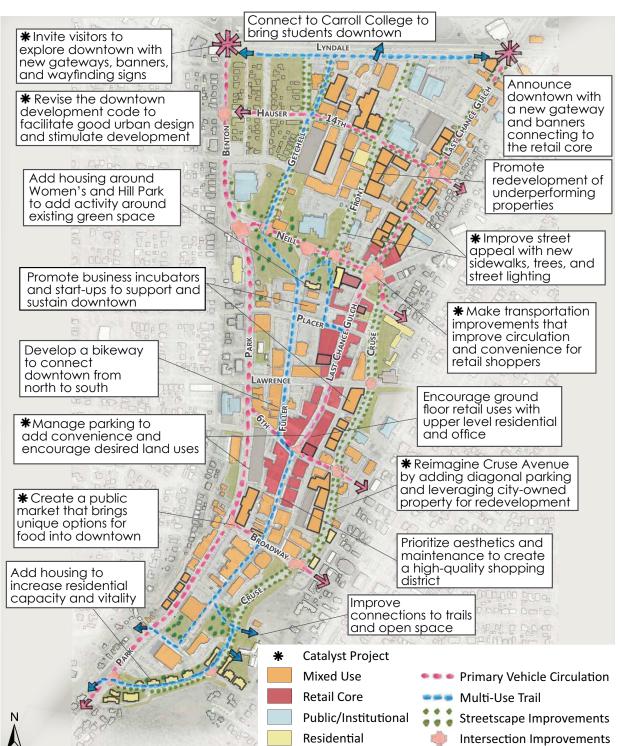


Parks/Open Snace

Redevelopment of the 7th Avenue Gym has the ability to be a project that addresses many of the overarching goals of the Downtown Helena Master Plan, be a project that furthers all five planks for implementation, and execute many of the specific recommendations. Revitalizing this distinct building in a prominent downtown location will directly implement the plan through further developing the downtown brand, adding activity and a unique facility to create a dynamic downtown environment, capitalize on an important historic asset, make efficient use of existing infrastructure, and provide an opportunity to connect downtown with the new amenities on this site. In terms of specific recommendations, redevelopment of the Gym holds the potential to address many of the prioritized improvements and could reasonably include: reimagining a portion of Cruse Avenue; improve street appeal with new sidewalks, trees, and street lighting; promoting a business incubator and startups to support and sustain downtown; promote redevelopment of an underperforming property; create a pedestrian and bicycle connection to downtown; foster the aesthetic character of downtown Helena; and activate an important corridor from Last Chance Gulch to the new Central School and the Historic Cathedral. 1

<sup>&</sup>lt;sup>1</sup> These two pages are a summary of the 2016 *Downtown Helena Master Plan*. Portions of the text are directly from that document, and all graphics on these two pages are from the Master Plan.





### The Need For Redevelopment of Historic Schools

The need for redevelopment of historic schools is pervasive across the United States as the needs of educators and perceptions of the public have changed, much of that building stock is now 100-125-years old, and most suffer from significant deferred maintenance. With this comes building management, real-estate, and community impact issues that are not typical business for most school districts. While the 7th Avenue Gym is not a full school building, there is much relevant research on school redevelopment and the challenges faced by HPS are the same.

On a national level, this need is evidenced by *Historic Neighborhood Schools* were placed on the National Trust for Historic Preservation's "11 Most Endangered Historic Places" list in 2000, and the Historic Rural Schoolhouses of Montana were put on the same list in 2013, recognizing them as important buildings worth saving and preserving. On a local level, the impact of new schools and the loss of historic schools was noted in the December 2017 AIA Montana newsletter which celebrates the passage of bonds and construction of new schools across the State as an important and historic moment for Montana as an investment in our future. Much like the hope in our communities embodied in these buildings when they were built at the turn of the last century. The AIA Montana message also emphasizes the importance of preserving historic schools and the equally momentous opportunity presented by maintaining and continuing to use these buildings that are iconic and central to so many communities. Most of the major communities in Montana have seen historic schools demolished, shuttered, or adapted in recent years, including Helena's historic Central School (on the same site as 7th Avenue Gym) that was demolished by HPS in 2018 to make way for a new school building.

In terms of the challenge presented to School Districts, the 2013 report by the Pew Charitable Trusts "Shuttered Public Schools: The Struggle to Bring Old Buildings To Life" captures the universal considerations and sheds some light on how projects were addressed in several communities. Selections from that report effectively synopsize concerns about the 7th Avenue Gym as it pertains both to HPS and redevelopment of historic buildings in general:

"The attempt to put closed schools to new uses—to repurpose them—tends to attract less attention and less passion than closing down schools in the first place. But the process takes considerable effort on the part of districts, and the outcomes can have broad impacts on urban neighborhoods. Districts must pay for maintenance, security and insurance while they search for typically less than \$1 million. Finding new uses entails dealing with market challenges, working within state and local policy constraints, and balancing sometimes conflicting goals about a property's best use. And school districts are not ideally set up to handle the challenges.

In general, the easiest buildings to repurpose are those that have not been closed for long, still have their roofs and mechanical systems intact, are located in neighborhoods with healthy real estate markets, and are not too large.

In determining a property's marketability, though, location can be the most important factor. Some larger structures tucked into residential neighborhoods would be better candidates for commercial or institutional conversion if they were on busy roads or commercial corridors.

Given all of these factors, it is no surprise that some buildings sit empty for decades. And the structures, which are costly to maintain, can deteriorate rapidly; the longer they sit vacant, the more expensive they can be to reactivate. A broker in Philadelphia warned that "demolition by neglect can happen quickly if buildings are not properly closed and secured." The buildings can become eyesores, magnets for illicit activities, and symbols of neighborhood decline. Sometimes districts have demolished buildings that were hard to sell, structurally unsound, attractive to drug use and scavengers, or all of the above."

Each community and each building present their own challenges and opportunities, a right fit must be found for both. And while many school buildings sit vacant, many communities across the country and in Montana have faced the same challenges and found solutions with broad-reaching and long-term benefits. Drawing from the variety of options that have been successfully implemented to create safe, high-performing renovated buildings that meet modern needs, will help determine a sustainable future for the 7th Avenue Gym.

### Timeliness & Urgency

The urgency to redevelop the 7th Avenue Gym does not come because the structure itself is dangerous or unstable, but from the collective desire of HPS and stakeholders to minimize the amount of time the building sits vacant. Likewise, there is a collective desire to capitalize on the goodwill and momentum within the community to support HPS and the downtown through revitalization of this historic building.

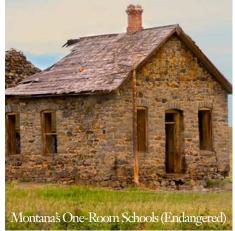
For HPS, finding a responsible and compatible use/user is balanced by the urgency to minimize maintenance and operations costs of a building they don't use, along with decreasing the potential liability of owning a vacant building. For stakeholder organizations like MBAC, Montana Preservation Alliance (MPA), and the Helena Business Improvement District (BID), there is urgency to see a completed catalyst project in downtown Helena. This stems from the need to capitalize on the community support and expert analysis embodied in recent planning efforts (Downtown Helena Master Plan, Marlow Market, etc.), and the need to show the community a successful redevelopment project that will spark further development.

The community has also spoken through previous planning efforts and other public events to express an immediate need downtown for the types of spaces this building can offer, and to express the 7th Avenue Gym as a priority property in downtown Helena. Likewise, support and interest from a wide variety of potential partner organizations has steadily grown from the inception of this project.

### Endangered, Recently Demolished, Recently Renovated Montana School Buildings (limited selection)



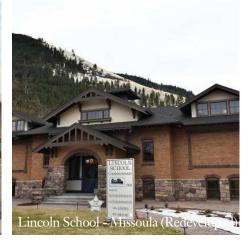






















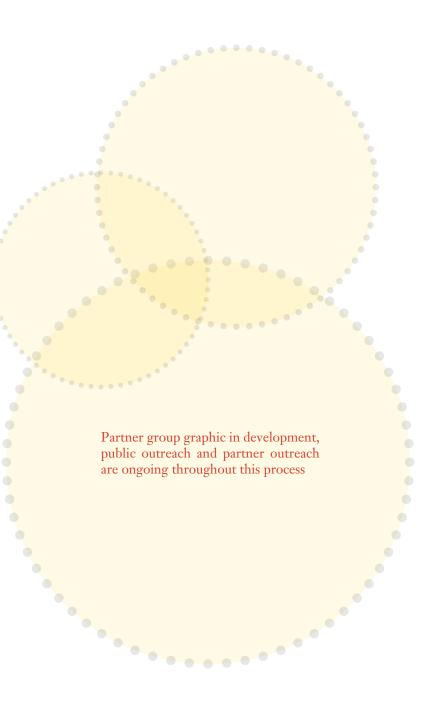
#### Stakeholder Needs

The need for redevelopment of the 7th Avenue Gym (the Gym) is a community need expressed by a broad range of partners representing many sectors of the community ranging from HPS to our local economic development corporation, from the local government to downtown organizations, from preservationists to local arts groups, and many more. Each of these stakeholders represents the voice of community members speaking up for the need to have this building in use, as well as representing components of the project that will make it possible to redevelop and operate in a realistic and sustainable manner. Some of the direct stakeholders have clear and tangible desires for the project, while others are more philosophical. Consideration of the needs of the neighborhood, the downtown community, and community at large are also considered heavily in the analysis and recommendations of this report. Likewise, the goals of the funders of this grant are integrated throughout the thinking and execution of this project.

Together, these voices speak to the need for redevelopment of the Gym itself and the need for redevelopment in our downtown. These voices also tell you what this building is to them: an opportunity to create an exciting identity for our town, an opportunity to benefit our community in a variety of ways, an opportunity to create jobs, a current maintenance and liability burden, a safety concern, an empty building, a beautiful building that shouts that it is from Helena, a way to connect our future to our past, an opportunity to heal divisions in our community, an opportunity to inspire, and an opportunity to solve a problem that effects many downtowns across our State.

The need for this project is complex as it comes from both very localized and 'big-picture' places at the same time. On the local level, the need for redeveloping the Gym has been expressed as important by neighbors, the neighborhood, the downtown business community, regional economic development interests, the arts community, and the preservation community. On a macro level, redevelopment of historic downtowns is prioritized by the planning efforts of the City of Helena, the funding provided by the MT Department of Commerce through BSTF and Montana Main Street, our regional economic development corporation (MBAC), the preservation community (including Federal and State Tax Credits), State level tourism and heritage tourism efforts, and many others. It is a group of needs that dovetails nicely at small and large scales and addresses needs related to this building ultimately being a good neighbor, helping disadvantaged people in our community, growing our community while maintaining our past, growing our economy in a smart and creative way, bringing people together, and catalyzing more positive activity.

And, with these broad stakeholder needs in mind, the consulting team also set out to achieve the main challenge established at the inception of this project: Find a path to reusing this building that is technically feasible, financially feasible, financially viable in the long-term, compatible on the school site, and compatible with the bigger goals of downtown revitalization... Then find and recruit the people who can make it happen.



### A synopsis of the major needs expressed by stakeholders is as follows:

- •Verify that the building is structurally sound enough to be reused.
- •Find a use for the building that is compatible on the same site as a school.
- •Put the building to use for the benefit of the community.
- •Remove the Gym from HSD's maintenance and liability burden.
- Verify that the building can be redeveloped in a financially feasible manner.
- •Identify financial incentives that can make both construction and operation possible.
- •Preserve an historic downtown building.
- Transform a vacant downtown building.
- •Honor the intent of the Downtown Helena Master Plan, which emphasizes "downtown as a brand, creating a dynamic downtown environment, capitalizing on downtown's historic assets, downtown's infrastructure assets, and connecting downtown." The plan also describes reimagining Cruse Avenue, promoting business incubators, improving street appeal, promote redevelopment of underperforming properties, and other factors that make this a prioritized site and influences the outcome of the project.
- •Design the redevelopment to get Historic Preservation Tax Credits.
- •Make this the "best PAR ever!"

- •Become a catalyst project by developing the project in a manner that is inspirational, exciting, and replicable for other people and buildings in downtown Helena.
- •Show that redeveloping existing and historic buildings should be our first option for developing our downtown, developing our local economy, and growing the 'brand' of our community.
- •Connect the building more directly with downtown.
- •Find a use (or group of uses) that does not trigger an unnecessarily large scope of construction.
- •Listen to the building.
- •Make it a fun and active place to be.
- •Make use of planning efforts, community participation, and analysis that have recently happened.
- •Make efficient and practical use of the existing spaces.
- •Make the building accessible and inviting.
- •Engage partners to create the maximum positive benefit for the community.
- •Engage partners that can develop the building.
- •Engage partners that can program activities and earn income within the redeveloped building.
- •Engage partners that can diversify the pool of funding resources available.
- •Engage partners interested in the long-term sustainability of downtown Helena



## **Precedent Studies & Best Practices**



### "Main Street" Development Best Practices

While this feasibility study is not (currently) funded by the MT Department of Commerce's Montana Main Street program (MMS), MMS is tied into similar planning efforts across the State. Their goals are perfectly in-line with the goals of this project, and they also advocate for the "Four Point Approach" as a foundation for thoughtful and comprehensive redevelopment. A comprehensive set of resources, including the Four Points, were developed by Main Street America and the National Main Street Center to help communities address redevelopment and downtown revitalization challenges. Their approach is defined by three fundamental facets:

- The Main Street Approach is centered around Transformation Strategies. A Transformation Strategy articulates a focused, deliberate path to revitalizing or strengthening a downtown or commercial district's economy.
- A program's work on Transformation Strategies should be organized around the Four Points: Economic Vitality, Design, Promotion, and Organization.
- A revitalization program's work and its Transformation Strategies need to be informed by a solid understanding of local and regional market data, and sustained and inclusive community engagement.

Main Street America goes on to describe Transformative Strategies in Detail: "Transformation Strategies – generated through meaningful community engagement and informed by an analysis of the district's market position — help to guide a revitalization program's work. An effective Transformation Strategy serves a particular customer segment, responds to an underserved market demand, or creates a differentiated destination.

Some "ready-to-use" strategies — called Catalyst Strategies — fall into two broad categories: those that are focused on a specific customer segment and those that are focused on an industry, product, or service segment.

#### Examples include:

- Workers and Residents
- Elder Friendly and Aging-in-Place
- Family-Friendly
- Agriculture Center
- Arts (performing and visual)
- College Town
- Convenience Goods and Services
- Entertainment and Nightlife
- Knowledge Economy"

They go on to explain that "Transformational Strategies are implemented through comprehensive work in four broad areas, known as the Four Points":

- ECONOMIC VITALITY focuses on capital, incentives, and other economic and financial tools to assist new and existing businesses, catalyze property development, and create a supportive environment for entrepreneurs and innovators that drive local economies.
- DESIGN supports a community's transformation by enhancing the physical and visual assets that set the commercial district apart.
- PROMOTION positions the downtown or commercial district as the center of the community and hub of economic activity, while creating a positive image that showcases a community's unique characteristics.
- ORGANIZATION involves creating a strong foundation for a sustainable revitalization effort, including cultivating partnerships, community involvement, and resources for the district.

MMS describes the Four Points and their importance to Montana as "a preservation-based economic development tool that provides a foundational method for local efforts to revitalize downtown historic and commercial districts. As an essential component of the method, Montana communities utilize their local assets — historic architecture, cultural and natural resources and heritage, local enterprise and community pride. The four points of the Main Street approach allow Montana communities to harness local ideas and goals in a unified and organized community revitalization effort."

MMS recognizes the need for downtown revitalization through providing funding and technical assistance for "restoring healthy community districts, and preserving the historic structures that contribute to Montana's unique sense of place." And they recognize the Main Street America approach as essential to meeting this mission:

"Adopting the Main Street Four-Point Approach to revitalization developed by the National Trust for historic Preservation, Montana Main Street envisions a broader community and state effort dedicated to improving our downtown economies and historic districts. MMS aims to encourage and promote local efforts through a statewide network of educational outreach, coordination, and organization, to effectively lead Main Street communities throughout Montana toward fulfilling our mission as well as their own."

#### Montana Main Street Program Goals:

- Preserve and promote Montana historic and cultural resources
- Promote long-term planning for revitalization success
- Organize efforts and coordinate conversations between and within Montana communities
- Support economic, community, and tourism development to facilitate a comprehensive sense of place
- Enable small business owners to succeed by creating vibrant and healthy downtown districts

### **Montana Main Street's Four Point Approach**

#### **ORGANIZATION**

Organization establishes consensus and cooperation by building partnerships among the various groups that have a stake in the community. By getting everyone working toward the same goal, a Main Street program can provide effective, ongoing management and support for the downtown or neighborhood business district. Through volunteer recruitment and collaboration with partners representing a broad cross section of the community, a program can incorporate a wide range of perspectives into its efforts. A governing board of directors and standing committees make up the fundamental organizational structure of volunteer-driven revitalization programs. Volunteers are often coordinated and supported by a paid program director; for Affiliate communities that may not have paid staff, coordination efforts may be led by a mayor or council member, planning director or a leader within the local Chamber or economic development organization. Active participation of, and coordination with local elected officials and municipal staff is a must. This structure not only divides the workload and clearly delineates responsibilities, but also builds consensus and cooperation among the various community members.

#### **PROMOTION**

Promotion takes many forms, but the goal is to create a positive image that will rekindle community pride and improve consumer and investor confidence in the commercial district and beyond. Advertising, retail promotions, special events, and marketing campaigns help sell the image and promise of Main Street to the community and surrounding region. Promotions communicate the unique characteristics, amenities, business establishments and activities your community has to shoppers, investors, potential business and property owners, and visitors.

#### **DESIGN**

Design means getting Main Street into top physical shape and creating an inviting environment for residents and visitors alike. It takes advantage of the visual opportunities inherent in a community by directing attention to all of its physical elements: architectural form and function of both public and private buildings, storefronts, signage, public spaces, parking, street furniture, public art, landscaping, merchandising and promotional materials. An appealing atmosphere, created through attention to all of these visual elements, conveys a positive message about the community and what it has to offer. Design activities also include instilling good maintenance practices, enhancing a community's physical appearance through the rehabilitation of historic buildings, encouraging appropriate new construction, developing sensitive design management systems, educating business and property owners about design quality, and long-term planning.

#### **ECONOMIC VITALITY**

Economic restructuring strengthens a community's existing economic assets while diversifying its economic base. This is accomplished by retaining and expanding successful businesses to provide a balanced commercial mix, sharpening the competitiveness and merchandising skills of business owners, and attracting new businesses that the market can support. Converting unused or underused commercial space into economically productive property also helps boost the profitability of the district. The goal is to build a sustainable commercial district that responds to the needs of today's consumers.

### **Redevelopment Best Practices**

This is not the first historic building to be rehabilitated and revitalized. Nor is it a particularly challenging building in terms of its condition and configuration, as compared to the spectrum of rehabilitation projects successfully addressed across the US and MT on a daily basis. The same types of challenges faced in this project have been overcome and studied in depth, and organizations like the National Trust for Historic Preservation (NTHP), the 1772 Foundation (1772), and the Urban Land Institute (ULI) support redevelopment efforts, conduct research, and make it available to the public. More locally, MPA consults directly with communities and building owners across the Montana to help them navigate the process of redevelopment and the unique challenges/opportunities their building and their community provide. Looking at recurrent issues and themes helps provide a baseline for understanding redevelopment projects, and a general level of process and literacy.

Featured on these two pages are three lists of redevelopment best practices. The "Top Strategies to Promote Building Reuse", from the October 2017 document "Untapped Potential" by NTHP and ULI. These strategies focus on community wide efforts to encourage people to take on redevelopment projects. Many of these strategies are in place in Helena currently, are in progress, or are suggested in the Downtown Helena Master Plan.

NTHP's Fall 2014 Forum Journal "Get Real About Real Estate" gives similar macro-level bullet point considerations for thinking about real estate development of historic properties. This document was supported heavily and features The 1772 Foundation. 1772's focus is on the financial component of redevelopment and they have been instrumental in providing grant funding and establishing redevelopment Revolving Funds across the country, including MPA's Redevelopment Program, the first project they funded west of the Mississippi River. This report looks at precedent studies of how small organizations can take on redevelopment, the impact of revolving funds, considering a wide variety of partners and potential uses in order to make a project possible, and the importance of involving economic development corporations.

"How Small Towns and Cities Can Use Local Assets to Rebuild Their Economies" (a 2015 case study document by the SmartGrowth program from the EPA) looks at seven communities across the country that have had successful downtown redevelopment efforts. Six key themes emerge as common threads among the disparate communities. Emphasizing a sense of place through historic buildings, local food, incubating local small businesses, and outdoor recreation are economic development strategies successfully employed in these case studies and have direct relevance to current planning and economic development efforts in Helena, as well as direct relevance to the redevelopment of the 7th Avenue Gym. The full reports are included in the appendices of this document.

In Montana, MPA's process for communities and building owners is always community and building specific, but a procedure and universal recommendations have become apparent. First, start from a basis of understanding the best practices for community planning/development, as this will help an individual project meet higher-level goals. This also offers insight into potential opportunities and incentives, and many of the principles are applicable even at the level of developing a single property. Next, due diligence is emphasized at every possible opportunity and should always include: bringing in the right professional expertise for your

### **SMARTGROWTH - Successful Tactics for Competitive Advantage**

- Identify and build on existing assets. Identify the assets that offer the best opportunities for growth and develop strategies to support them. Assets might include natural beauty and outdoor recreation, historic downtowns, or arts and cultural institutions.
- Engage all members of the community to plan for the future. Engage residents, business owners, and other stakeholders to develop a vision for the community's future. Stakeholder engagement helps ensure plans reflect the community's desires, needs, and goals and generates public support that can maintain momentum for implementing changes through election cycles and city staff turnover.
- Take advantage of outside funding. Even a small amount of outside funding applied strategically to support a community's vision and plans can help increase local interest and commitment in the area and spur private investment.
- Create incentives for redevelopment, and encourage investment in the community. Make it easier for interested businesses and developers to invest in the community in ways that support the community's long-term priorities.
- Encourage cooperation within the community and across the region. Cooperation to achieve jointly established priorities helps leverage the assets that each party can bring to the table to make the most of the region's resources.
- **Support a clean and healthy environment.** Invest in natural assets by protecting natural resources and cleaning up and redeveloping polluted properties, which makes productive use of existing transportation, water, and utility infrastructure; increases the tax base and employment opportunities; removes environmental contamination; and helps spur investment in surrounding properties.

situation; conducting hazardous materials testing prior to purchasing the building; have a structural engineer look at the building before purchase; begin partner and community outreach as soon as possible, the initial core group of partners should include the local government, the local economic development corporation, and the MT Department of Commerce; and seek funding for deeper analysis and due diligence in the form of a Preliminary Architectural Report and Economic Feasibility Study in order to fully comprehend the undertaking, cost, and steps required.

#### **Top Tips For Heritage Real Estate Development**

- Question all assumptions. Small changes in projected rents, rehab costs, or a myriad of other cost projections can have a substantial impact on the bottom line.
- **Know all the players** and the extent of their negotiating power.
- **There is no "right" answer to structuring a deal** be creative and stay flexible.
- **Get second (or third) opinions** on cost estimates and projections whenever possible to ensure that the need for gap funding is accurately projected.
- State and local government can help to make a historic redevelopment project happen in other ways besides grant funding. Look into long-term leases for the project, tax abatement programs, below-market-rate loans.
- It is important to pay attention to details since one hiccup can potentially derail a project.
- There are many moving parts in large real estate deals, or even smaller ones, so it is really important to understand how each piece fits and also how each piece can impact all the others.
- Successful redevelopment isn't strictly about number crunching until you show net income; it's about understanding how different players benefit in the development process.
- **Quick thinking and creativity are needed** when project wrinkles crop up.
- **Don't give up,** because there's almost always a solution to be found if you invest the time and effort to search it out.

#### **Top Strategies for Cities to Promote Reuse**

- Leverage data and mapping tools to understand reuse opportunities. Knowing a city's built assets is the first step to being able to target incentives, programs, and infill development. Spatial analysis can help identify needs and develop programs that are targeted for the greatest impact.
- Eliminate, reduce, or recalibrate parking requirements. Reducing or eliminating parking requirements in pedestrian-friendly areas and areas near transit can incentivize investment in older buildings. Shared parking in nearby locations can also fill this need.
- Remove key barriers that prevent change of use in existing vacant and underutilized buildings. Establishing provisions within the zoning code for appropriate and compatible "sister uses" can ease the transition to a new use by creating more certainty and reducing red tape.
- Develop a "Solutions Database" to track and promote ways to overcome building code challenges. Daylighting creative solutions, successful projects, and paths to navigate complex redevelopment problems can be invaluable to small scale infill and adaptive reuse projects.
- Update zoning codes to meet the needs of the 21st century. Promote new uses, greater diversity of uses, accessory dwelling units and other tools that heighten residential density, and other context-sensitive zoning changes to provide more opportunities for reuse and infill development.
- Retain and strengthen existing incentive programs for building reuse. Support ongoing advocacy for the federal Historic Tax Credit and new and strengthened state historic tax credits. Revitalization tax credits, transfer of development rights, and incentives for vacant properties are also important.
- Develop new sources of public and private capital for smaller projects, or projects in weaker markets. Leverage new and existing funds to cover gap financing, predevelopment costs, and other expenses that may keep small scale developers out of business, hinder investment in weaker markets, or discourage reuse of underutilized buildings.
- Adopt a comprehensive adaptive reuse program. Adaptive reuse ordinances, whether applied citywide or adopted as an overlay, bring together incentives along with flexibility in building and zoning codes, removing unneccessary barriers to reuse projects.

### Historic Building Best Practices - Secretary of the Interior's Standards

Determining a building or district as historic is a complex technical process that is not arbitrary or emotional, and there are actual guidelines for approaching historic properties correctly. These standards arose out of the need to protect culturally valuable properties and the need for a standardized system to qualify, document, and manage/improve them. The technical framework for addressing historic buildings is called the Secretary of the Interior's Standards for the Treatment of Historic Properties (the Secretary's Standards). The Secretary's Standards first establish four criteria for determining if a property is indeed historic, these criteria determine "the quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects..." Evaluation requires proof of properties: "A - that are associated with events that have made a significant contribuition to the broad patterns of our history; or that are associated with the lives of persons significant in our past; or B - that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or C- that possess high artistic values, or D - that represent a significant and distinguishable entity whose components may lack individual distinction; or that have yielded or may be likely to yield, information important in prehistory or history." Once a property is determined to qualify as historic it is evaluated on its "integrity," or the amount of historic fabric, character, and association it maintains. The criteria for integrity are "location, design setting, materials, workmanship, feeling, and association." Should a property prove to have integrity, it qualifies to be listed on the National Register of Historic Places. A property on the National Register also qualifies to apply for Historic Preservation Tax Credits at a State and Federal level. To achieve the tax credits the property must be designed and built to meet the technical guidelines laid out in the Secretary's Standards. These guidelines allow for a variety of solutions and visions to keep historic buildings around. Determining a building or district as historic is a complex technical process that is not arbitrary or emotional, and there are actual guidelines for approaching historic properties correctly.

The Standards define four approaches (called "treatments") for addressing historic buildings in design and construction are described as follows:

- •Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- •Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- •**Restoration** depicts a property at a particular period of time in its history, while removing evidence of other periods.
- •Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.

The National Park Service (who administers the Standards) further clarifies the treatment approaches and how to choose a path for your building:

"The choice of treatment depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation. Historic buildings are used as an example below. The decisionmaking process would be similar for other property types.

Relative importance in history. Is the building nationally significant? Is it a rare survivor or the work of a master architect or craftsman? Did an important event take place in it? National Historic Landmarks, designated for their "exceptional significance in American history," or many buildings individually listed in the National Register often warrant Preservation or Restoration. Buildings that contribute to the significance of a historic district but are not individually listed in the National Register more frequently undergo Rehabilitation for a compatible new use.

Physical condition. What is the existing condition, or degree of material integrity, of the building prior to work? Has the original form survived largely intact or has it been altered over time? Are the alterations an important part of the building's history? Preservation may be appropriate if distinctive materials, features, and spaces are essentially intact and convey the building's historical significance. If the building requires more extensive repair and replacement, or if alterations or additions are necessary for a new use, then Rehabilitation is probably the most appropriate treatment.

**Proposed use.** An essential, practical question to ask is: Will the building be used as it was historically or will it be given a new use? Many historic buildings can be adapted for new uses without seriously damaging their historic character. However, special-use properties such as grain silos, forts, ice houses, or windmills may be extremely difficult to adapt to new uses without major intervention and a resulting loss of historic character and even integrity.

Mandated code requirements. Regardless of the treatment, code requirements will need to be taken into consideration. But if hastily or poorly designed, code-required work may jeopardize a building's materials as well as its historic character. Thus, if a building needs to be seismically upgraded, modifications to the historic appearance should be minimal. Abatement of lead paint and asbestos within historic buildings requires particular care if important historic finishes are not to be adversely affected. Finally, alterations and new construction needed to meet accessibility requirements under the Americans with Disabilities Act of 1990 should be designed to minimize material loss and visual change to a historic building.

### The Secretary of the Interior's Standards for Rehabilitation

- 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.
- 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.
- Each property will be recognized as a physical record of its time, place, and use. Change that create a false sense of historical development, such as adding conjectural features of 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.
- 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.
- Archeological resources will be protected and preserved in place. If such resources must disturbed, mitigation measures will be undertaken.
- 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 its environment.
- 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.

#### Rehabilitation as a treatment

When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment.

#### ENVIRONMENTAL IMPACTS OF RENOVATION AS A PERCENTAGE OF NEW CONSTRUCTION Legend New Construction (represents 100%) Rehabilitation + Retrofit in: Chicago Atlanta Phoenix Portland Commercial Office Warehouse to Office Mixed-Use **Elementary School** Single-Family -9% -5% -7% -10% Base Case -16% Chicago Climate Change -10% -5% -17% -7% -11% Atlanta -12% -6% -11% -19% -8% Phoenix -13% Portland -7% -21% -10% -12% Advanced Case -7% -20% -15% Chicago -12% -9% -13% -7% -20% -16% Atlanta -9% Phoenix -14% -8% -23% -10% -16% Portland -16% -9% -25% -12% -17% Base Case -4% Chicago -8% -15% -7% -10% Resource Depletion -9% -4% -15% -7% -10% Atlanta Phoenix -10% -5% -18% -8% -11% -12% -9% -11% Portland -6% -20% Advanced Case Chicago -11% -5% -18% -9% -15% -11% -19% -9% -16% Atlanta -6% Phoenix -13% -7% -22% -10% -17% -12% Portland -15% -8% -24% -17% Base Case Chicago -15% -7% -33% -9% -21% -14% -6% -29% -7% -18% Atlanta Human Health -12% -5% -26% -6% Phoenix -14% Portland -15% -7% -30% -8% -19% Chicago Advanced Case -15% -9% -38% -11% -26% Atlanta -14% -8% -34% -9% -23% Phoenix -12% -7% -31% -7% -19% Portland -14% -8% -35% -10% -24% Base Case Chicago -20% -7% -34% -11% -29% **Ecosystem Qualty** Atlanta -20% -7% -34% -10% -28% -11% Phoenix -24% -8% -41% -30% Portland -27% -9% -44% -13% -33% Advanced Case Chicago -14% -8% -39% -12% -32% Atlanta -14% -8% -38% -11% -31% -9% -13% Phoenix -16% -44% -33% -17% -10% -14% -35% Portland -46%



### **Sustainability Best Practices**

It is worth understanding sustainability best practices in order to identify practical and achievable solutions. And indeed, factors like water quality, resource consumption, where materials are sourced, indoor air quality, and energy consumption are concerns that effect our quality of life, health, and the amount of money and resources required to operate and maintain a building. The effects of development and design decisions are both local and global, immediate and long-term, and philosophical and pocket-book-driven at the same time.

An existing building is inherently the greenest building possible in terms of material use. That is, less materials will need to be harvested, processed, shipped and used in order to capture the same amount of square footage. The gap widens further if demolition is considered, as reuse diverts many hundreds of tons of materials from being hauled to landfills. Embodied energy required for rehabilitation a fraction of that of new construction.

Energy efficiency will likely be a big concern of the design team and building users, as it has a significant effect on user comfort and costs associated with heating and cooling (up front with system size and long-term with monthly costs). An understanding of energy performance in old buildings, and where the biggest impacts can be made is a matter of developing an understanding of energy performance in old buildings and the unique conditions presented by the project itself. This means understanding that new buildings are more efficient, but the payback period for that efficiency over a retrofitted existing building is measured in a number of decades that typically exceeds the cycle for deferred maintenance and another large investment (30-40yrs for all buildings). That is, better energy performance per dollar is possible with rehabilitation. In general, finding solutions with the biggest impact on energy and the lowest visual/structural impacts on the building are the best solutions. All new building components must meet the International Energy Conservation Code.

Conflicting requirements are also a concern when addressing sustainability in an historic building. That is, certain improvements based on a new use or sustainability may conflict with the requirements of the historic preservation. The Secretary of the Interior's Standards for Sustainability for Rehabilitation of Historic Buildings directly addresses most of the common considerations and conflicts, and is a valuable decision-making tool. Regardless of priorities, any decision that could jeopardize the significant financial incentives of the Historic Tax Credits and potential for preservation grant funding should be identified and considered seriously, as these incentives are frequently the factor that makes projects financially feasible to undertake.

The NTHP Center for Policy and Research's 2011 report The Greenest Building: Quantifying the Environmental Value of Building Reuse is a comprehensive comparative study of the environmental performance of existing buildings. Their key findings are: "building reuse almost always yields fewer environmental impacts than new construction when comparing buildings of similar size and functionality; reuse of buildings with an average level of energy performance; consistently offers immediate climate change impact reductions compared to more energy efficient new construction; materials matter- the quantity and type of materials used in a building renovation can reduce, or even negate, the benefits of reuse." Their detailed recommendations align fairly well with the Secretary's Standards for Sustainability and the categories scored in the LEED system. LEED for Operations and Maintenance scores projects on includes: Transportation performance, rainwater management, heat island reduction, light pollution reduction, site management, water performance, energy efficiency best management practices, fundamental refrigerant management, energy performance, grid harmonization, materials purchasing policy, facility maintenance and renovations policy, waste performance, purchasing, minimum indoor air quality, environmental tobacco smoke control, green cleaning policy, indoor environmental quality performance, green cleaning, integrated pest management, and innovation. Designing and specifying a project to meet LEED Silver standards (for O/M and all new products) is generally considered to be best practice regardless of pursuing certification.

### Precedent 1 | Transformative Project | Climb So Ill | St. Louis, MO

The power plant for the historic City Hospital in downtown St. Louis, MO was built in 1937 and shuttered in 1985. Multiple plans for reuse and demolition failed to take shape and the power plant was returned to City ownership. The building was recognized on the National Register of Historic Places in 2001, then the City began redevelopment with hazardous material remediation work funded by an EPA Assessment grant, a HUD Redevelopment Initiative Grant, Brownfields State Remediation Tax Credits, and State Historic Tax credits.

In 2010, a private developer who had successfully redeveloped other historic buildings in the hospital complex purchased the building and partnered with the unique end user, the climbing gear company Climb So Ill, who was operating in the building by 2012. Planning of the building and its uses was coordinated with the redevelopment of the hospital complex, along with the Community Improvement and Transportation Development Districts. Climb So Ill says on its website: "Our facility is part of the historic City Hospital complex and occupies the former Power Plant building. Our neighbors at The Georgian Condominiums, Butler's Pantry, and The Palladium St. Louis have helped revive this beautiful and historic district making it a truly unique, urban destination. Look for the smokestack." The upper floor features two restaurants with unparalleled views of the Gateway Arch and downtown skyline, and rooftop terraces.

The 25,000sf+ (10,000sf footprint) building was renovated for \$22million, including over \$4million in preservation tax credits and a series of grants.

This project is of similar size, construction, and vintage as the 7th Avenue Gym, including the signature smoke stack. It is exemplary of many of the same conditions and issues involved with the Gym: public desire to reuse a viable historic building, complex relationships between public/private/nonprofit organizations, sitting vacant, complex site and surroundings, appropriately pairing a unique use with a unique building, and the use of a variety of financial incentives to make the project profitable.

The inscription above the entrance reads "Grounded in Experience, Dedicated to Community."













Source: City of St. Louis, MO, "https://www.stlouis-mo.gov/government/departments/sldc/

### Precedent 2 | Visionary Project | The Shane Lelani Center For The Arts | Livingston, MT

"The historic East Side School building sits on 16 lots donated by the Northern Pacific Railroad in 1885. The school was designed by architect C.E. Bell, who also designed the state capitol building in Helena. It was completed in 1902 and updated in 1946 to include a gymnasium, a library, and extra classroom space added to the east end of the building.

East Side graduated generation after generation of Livingston residents for nearly a century. When the new East Side School was built in 1994, the City of Livingston purchased the old school from the Livingston School District. After a brief tenure as a 911 Dispatch Center and home to Montana Highway Patrol the building lay vacant for 16 years.

Early in 2009, Crazy Mountain Productions approached the city of Livingston with the idea of a multi-use community arts center in the historic building. In June of 2009 the city agreed to donate the property. A capital campaign was launched, and renovations began immediately. Crazy Mountain Productions moved from the Firehouse 5 into its new home in June of 2010.

A generous lead gift by Sal & Carol Glenn Lalani, in memory of their son Shane, gave the new arts center its name. The Dulcie Theatre officially opened its doors in October of 2010 with a gala production of Cats. Renovation work continued alongside a full production schedule for the next three years. The final renovations were completed in the fall of 2013 when the fully functional community art center opened to the public."

#### (((detailed construction and cost information forthcoming)))

This community driven project has many programmatic similarities to the options for the 7th Avenue Gym and includes a mix of spaces for performances, events, education, and small local businesses (a yoga studio, a flyrod maker, a photographer, etc.) in the classrooms.











Source: The Shane Lelani Center For the Arts, "www.theshanecenter.org/history/" 2018

### Precedent 3 | Grassroots Project | Lincoln Elementary | Livingston, MT

The Lincoln School Foundation's mission to provide the local community with affordable office, gallery and performance space in the historic Lincoln School in downtown Livingston, Montana. Built in 1914 and used until 1974, the school had historically been used by the community for various purposes. For instance, in 1918, the school was used as a temporary hospital during the Spanish influenza epidemic. The building was used as an artist and community event space since it was gifted by the City to the Lincoln School Foundation in 1997. Initially, the Fly Fishing Federation was a primary tenant who ran their museum out of the school - a collection which boasted historic fishing artifacts. When they vacated the building in 2012, it was nearly shuttered. A few remaining tenants hosted an open house which gathered enough interest to fill vacancies and keep the building open.

The foundation has been making incremental improvements to the building to meet the identified community need for an affordable, mid-size facility that could accommodate artisans, non-profits, athletic clubs and other community-based events. Through a combination of rent-generated revenue, local donations, volunteer effort, and small grants, modest but important improvements to the building have been made. These include a new roof, new flooring and heat in the gym, restroom remodels, and life-safety improvements. The successful work has made the building more of the building usable, and made it more appealing and has attracted more tenants, ongoing activities, and events. In addition, the Livingston Community Garden (a long-term tenant), has developed the grounds into a vibrant garden that sustains our community. And the garden continues to develop in its sophistication, aesthetics, and how it serves the community.

#### (((detailed construction and cost information forthcoming)))

The community-driven organic nature of this project is directly relevant to the 7th Avenue Gym redevelopment, as is their focus on affordable 'incubator' spaces for local businesses and nonprofits. Likewise, their approach of 'listening to the building' to minimize the scope of work required to use the building offers many lessons.











Source of most text and all images on this sheet: Lincoln School Foundation, 2013

### Precedent 4 | Community/Economic Development Driven Project | Roosevelt School | Red Lodge, MT

Led by the Red Lodge Area Community Foundation, 'Revitalize Old Roosevelt' is transforming the Old Roosevelt School to a community space for classes, conferences, receptions, studios, and performances to catalyze the local economy. Their goal is to restore, reuse, and revitalize the Old Roosevelt School Building into an arts, culture, performance, reception, conference, education and community gathering spaces, in order to provide both indoor and outdoor venues, for people to interact, converse, celebrate and express themselves.

Re-adapting Old Roosevelt is a multi-faceted project that will provide for: Improving economic benefits to Main Street by engaging tourists and locals by becoming an event destination, building capacity of arts organizations, and incubating new endeavors; Protecting and Preserving the Beartooth Mountain Range Eco System by increasing personal opportunities for people to explore, experience, and deepen their experience of our unique sense of place; Supporting and strengthening democracy by fostering and facilitating community leadership, continuing to break down barriers and boundaries, enhancing and increasing community planning, design, and asset management sessions; executing a Cultural plan and continuing to facilitate and increase the number of public convening's of topics of interest; and by creating a sustainable community for the immediate and the long term future through utilizing existing resources and the revitalization of a valuable historic building,

Construction costs are anticipated to range from \$7.4million to \$13.2million for the 35,000sf building, depending on the construction scope and building program still to be determined through the community process.

Their comprehensive planning effort is an example of thorough, thoughtful, and community-driven development. Efforts to date include an Adaptive Reuse Strategy and Action Plan, a PAR, in-depth case studies. They have also convened community focus groups to develop the requirements and vision for conference/event space, visual/media arts space, theatre production space, musician/performance space, kitchen design, and educational/rental spaces. Their next steps are to establish a management entity, apply for the National Register of Historic Places, survey potential tenants/users, gather additional support and partners, establish an endowment and begin a capital campaign, and develop a final building program through focus meetings.











Source of most text and all images on this sheet: Red Lodge Area Community Foundation, "www.rlacf.org/revitalizeoldroosevelt/" 2018

(((Comparative chart of recent redevelopment projects under development. Information includes: year of project, community, size of community, size of project, total cost, financial incentives used, development team structure, ownership structure, uses, jobs created, economic impact, brief story of the project, etc.)))

(((Continued))



History, Conditions Assessment, & Engineering Analysis

# 7TH AVE. GYM - HELENA, MT

# **Summary of Assessment & Observations**

 $(((summary\ to\ be\ developed\ upon\ completion\ of\ chapter)))$ 

# TH AVE. GVM - HELENA. MT

# **General Information**

# **Building Name**

7<sup>th</sup> Avenue Gymnasium

# **Building Address**

357 Čruse Avenue Helena, MT 59601 Listed on MT Cadastral as part of Central School Property 402 N Warren St Helena, MT 59601

# **Building Owner**

Helena Public Schools (School District #1) 55 S Rodney St Helena, MT 59601

# **Legal Description**

HELENA TOWNSITE 1869, S30, T10 N, R03 W, CENTRAL SCHOOL BLOCK 1 PER COS #3173575

### Geocode

05-1888-30-3-31-01-000

### Site Area

Central School Site Area = 3.5 acres (approx.) 7th Avenue Gym Potential Site Area = 13,000sf (approx.)

Note: final site to be determined through design and negotiation with Helena Public Schools. Site is intended/recommended to be the minimum size to address the new use/expansion of the building, meet Building Code requirements, and meet City Ordinances.

# **Building Height & Area**

Building Footprint Area = 6,500sf (approx.) Total Building Area = 15,000sf (approx.)

Building Height = 2-stories + walkout level on Cruse Ave.

### Year Built

1907-1908

# **Building Systems**

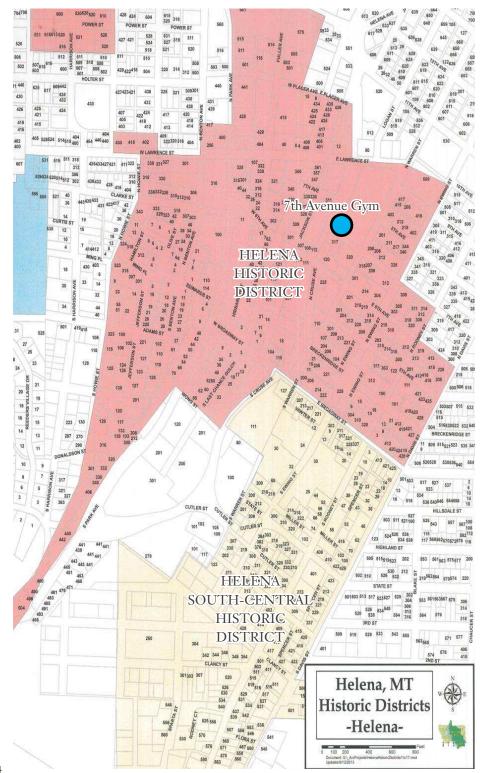
Foundation unreinforced uncoursed stone masonry Exterior Walls unreinforced multi-wythe brick masonry

Floor Framing wood joists and beams with mixed column supports below

Mezzanine wood joists and beams suspended by steel rods Roof Framing steel trusses with wood purlins and rafters

Mechanical boiler





# **Historic Districts**

The National Park Service administers the National Register of Historic Places, which includes districts, sites, buildings, structures and objects significant in American history, architecture, archeology, engineering and culture. Buildings must be at least 50 years old at the time of their nomination to be eligible for listing on the National Register. Being on the Register entitles property owners to consideration for Federal assistance, State and Federal tax credits, and grant funding sources. The 2012 International Building Code describes 'historic buildings' as "buildings that are listed or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate state or local law. Listing on the National Register does not put any restrictions on the structure, it is an honorary title that is also a prerequisite for benefits.

A structure that is listed as 'contributing' to a historic district has the same significance and is entitled to the same benefits as an individually listed structure. Districts and 'contributing structures' are the bureaucratic mechanism for listing multiple structures together. Should enough listed structures in a District be altered or demolished, the District and all contributing structures stand to lose their listing and associated benefits. This occurred in Helena with the Historic District survey in the 1990's, in which several whole blocks lost their listing due to the loss of structures to urban development and the course of time.

# The Helena Historic District

The Helena Historic District was listed on the National Register of Historical Places in 1972 and amended in 1986 to reflect changes that had occurred and was divided into two separate districts.

The District contains small scale vernacular buildings from the territorial mining camp days of the 1860's, as well as many strong examples of Western Commercial style buildings, and a few good examples of the flambouyant architecture of the 1880's and 1890's. These multi-story business blocks along the steep slopes of Last Chance Gulch give the District a unique character.

Other structures in the District range from modest homes, homes of City founders, schools, churches, and some from the early and mid-1900's. Several older buildings in the District are excellent examples of the work of noteworthy local architects, builders, and craftsmen. Several eras important to the development and growth of Helena are represented and include buildings from the frontier days and its civic expansion through the 1880's, residences from the period of slow growth around the turn of the 20th Century, and from the reconstruction period following the 1935 earthquakes. The District is also of note for representing the significant social and ethnic diversity of the Helena community.

<sup>\*</sup>Information sourced from the National Register of Historic Places Nomination form 6/2/72 by Jacobson and Shope Architects. And the National Park Service National Register website www.nps.gov/nr

# Relevant History of The 7th Avenue Gymnasium

"Bounded by North Warren Street to the east, Seventh Avenue to the south, Cruse Street (originally Allen Street) to the west, and East Lawrence Street to the north, Central School and the Seventh Avenue Gymnasium occupy an oversized block historically used for educational purposes. In addition to the Central School and the Seventh Avenue Gymnasium, the lots originally hosted the Helena High School immediately north of Central School, an auditorium and public library just south of the school and east of the gymnasium, and a domestic science/administration building located north of the gymnasium. The Cathedral of St. Helena sits across North Warren Street, northeast of the school and gymnasium. The residential area east of the school and gymnasium is heavily treed while the edge of the commercial business area of Helena lies immediately to the west and displays significantly less vegetation."

• • •

"...Seventh Avenue Gymnasium [is] eligible for listing in the National Register at a local level as contributing resources of the Helena Historic District under criteria A and C. The period of significance, 1908 to 1948, encapsulates the time from the opening of the Seventh Avenue Gymnasium in 1908... and terminates in 1948, as defined in the earlier National Register nominations for the district... Seventh Avenue Gymnasium serve[s] as a lasting symbol of the growth of city of Helena. Under Criterion A, the construction of the gymnasium and school continued the community's educational commitment to its citizens and underscore the generous community spending on educational facilities in the still young and affluent town...."

..

"Exhibiting an Italian Renaissance Revival style, the Seventh Avenue Gymnasium faces south fronting Seventh Avenue with the west elevation paralleling Cruse Avenue. Supported by a mortared, random-coursed stone foundation, the Seventh Avenue Gymnasium features a rectangular footprint. As the building is built into the side of a hill, the western half displays more of the mortared stone foundation than the eastern portion, where the foundation virtually disappears from view. The building is protected by a gable-on-hip roof topped with asphalt shingles. It features open eaves with exposed rafters and decorative brackets supporting a wooden beam that encircles the building. A full-height centered entrance bay topped with a gable roof projects off the south elevation. Originally, an elaborate arched parapet topped the entry, but fell victim to the 1935 Helena earthquakes.

The predominantly red brick building displays a running bond pattern with dark red and decorative near-black brick quoining detailing. The darker brick quoining also occurs on slightly projecting pilasters that extend from the basement/first floor interface to the eaves. The projecting pilasters provide the illusion of individual bays providing visual depth to the elevations. Parallel belt courses, comprised of the same color brick as the quoining, wrap around the building between the basement and first floor levels. A higher belt course, interrupted only by windows, occurs just below the roof line and roof brackets."

"A review of the few historic photos available and architectural drawings of the Seventh Avenue Gymnasium indicate changes to the building are limited to those associated with damage from the 1935 earthquake. After the quakes, officials removed the original arched parapet of the entry bay exposing the original gabled roof that's visible today. The Seventh Avenue Gymnasium retains excellent integrity of design, workmanship, and materials..."

...

"On December 10, 1906, a committee assembled to investigate the possibility of constructing a new building near Central School to provide a gymnasium as well as a central heating plant that would serve the high school, the elementary school and the auditorium/public library. Cost of such a building, sans actual heating machinery, was estimated at \$20,000. A June 1907 levy passed for the appropriation of \$26,000 in bonds for the building, which was to be constructed on the corner of Seventh Avenue and Allen Street. Prominent Montana architects John Gustave Link and Charles Haire designed the Italian Renaissance Revival style building. F. Jacoby and Son submitted the winning bid to construct the heating plant and gymnasium, and construction began that year and finished around May 1908.

This building, the Seventh Avenue Gymnasium, was used consistently by Central School students and staff after the 1893 high school ceased operation in its educational capacity in 1935. The Helena High School Nugget provided a glimpse of what awaited the students at Helena High in the new gymnasium: "Most people probably do not realize how large a structure it will be and how much it will mean to the High School of Helena." The paper trumpeted the ordering of the gymnastic equipment for installation in the building to coincide with the completion of the structure.

When completed, the Seventh Avenue Gymnasium proved to be a gem of an athleticoriented building. It housed a regulation size basketball court, banked running track, manual training room, showers with hot and cold water, and lockers made of perforated steel allowing for a high degree of sanitation. As stated at the time, the facility was "the best equipped gymnasium in the state, not even excepting the State University at Missoula".

Helena High School students and faculty sought to reach the highest possible standards in athletics, and that desire served as an impetus for the building's construction. The writers of the November 1907 edition of the Helena High School Nugget explained: "Particular stress will be laid this year on the training of the basket-ball teams and track teams. Basket-ball practice will begin as soon as arrangements can be made to have the High School use the auditorium."

As designed, the Seventh Avenue Gymnasium consists of two stories, the main level houses the gymnasium floor and mezzanine track/gallery. The basement houses the training room, boilers, lockers and showers. The mezzanine oval track and gallery, constructed around the edges of the main story, measures ten feet wide with the track comprising four and one-half feet of the width. The track displays banked curves with the interior sitting a foot lower than the outer edge. Eighteen laps comprise one mile. Iron rods attached to iron girders suspend the track and gallery. Steel girders anchored gymnastic equipment for use on the floor below.

...

# 7TH AVE. GYM - HELENA, MT

# **Historic Imagery**

(((Currently being researched))

(((Continued))

# **Existing Conditions Assessment - General Site Conditions**

# **Site Location & Surroundings**

The project site is within an historic district with the downtown commercial district to its west, and a residential area to the east. It is bordered to the north and east by the site/building of Central School, which is currently under construction and slated to open in 2019. Directly to the north, along Cruse Avenue below the school/playground, is a narrow and steeply sloped strip of untended land. To the south is a currently vacant commercial building and an apartment building.

# **Immediate Surroundings**

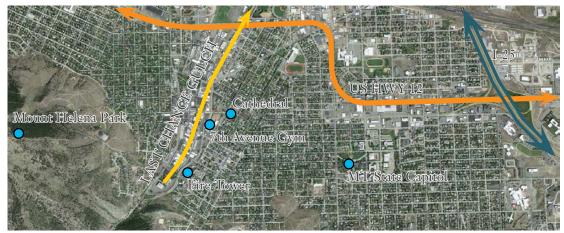
7th Avenue Gym sits essentially on its own at the corner of 7th Avenue and Cruse Avenue. The proximity of the new school improvements, and the related requirement to maximize the use of the site will effect the amount of land available for the Gym, and what can be done with that ground. The school parking lot is situated adjacent to the Gym, uphill on 7th Ave. No immediately adjacent buildings pose issues in terms of solar access. No trees or existing landscaping pose significant considerations.

# Site Considerations (infrastructure, topography, etc.)

Access to existing utilities in Cruse Ave. and 7th Ave. pose no problems to development. Landscaping and site paving are likely to be minimal and uncomplicated due to limited area of site. The site slopes steeply from east to west, as the Main Level sits at grade on the uphill side and the Lower Level daylights and steps down to the walk on Cruse at the downhill side. This significant slope must be considered in terms of site drainage, building access, and accessibility. Free access and function for the new school's access drive, parking lot, and playground should also be considered, along with coordination with the school's plans.

### **Site Access**

Site access is provided along Cruse Avenue (an arterial street planned to be changed to a neighborhood street) and 7th Avenue (a neighborhood street). Cruse has parallel parking on both sides of the street (starting around the middle of the building on the Gym side), and has a 20'+ deep concrete sidewalk on the Gym side. 7th is narrower with unmarked parallel parking and a 10' wide concrete sidewalk. No on-site parking is existing and opportunities for on-site parking are limited if extant. Pedestrian and bicycle access is easy from the neighborhood side, but limited from the downtown side as east/west routes exist 1+ blocks away to the north on Lawrence St, and 1 block to the south on 6th Avenue. A tall retaining wall separates Cruse (across from the Gym) from a downhill/downtown parking lot, with the first point of access being just north of the Kain Building.



Vicinity Map



Immediate Site Surroundings



Project Site

# **Existing Conditions Assessment - Surroundings**

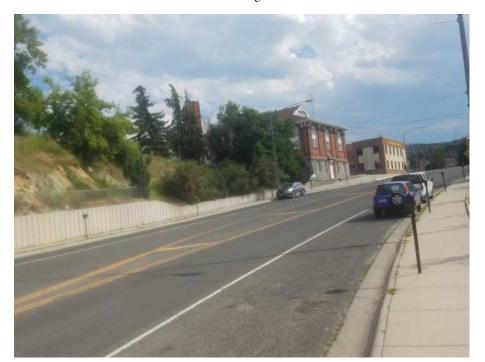




Elevated View of 7th Avenue Gym from Last Chance Gulch (Goodkind Building) 49



View Down 7th Avenue from Historic Neighborhood



View to South Along Cruse Avenue

# **Existing Conditions Assessment - Site**



Steep slope and minimal landscaping along 7th Ave.





Slight negative drainage along north side of building



Deteriorated site concrete and construction debris along east side





Drainage pan with potential issues along 7th Ave. side (downhill side of stairs)



Drainage pan with potential issues along 7th Ave. side (uphill side of stairs)



Deteriorated landscape wall w/ 2 eras of stone (north of Gym on Cruse)



Stone steps at lower entry and low stone wall requiring some repointing

# **Existing Conditions Assessment - Building Exterior**

# **Stone Masonry**

The uncoursed local stone masonry water table/foundation was observed to be in good condition, with approximately 10% to 20% of the area requiring repointing (mostly within 24" of the ground). The mortar was observed to be of a softer limerich mix typical of the age, with full joints. Small areas are observed to have beaded joints, although it is too limited to determine if the technique was used throughout the building. Several areas of repointing were observed, indicating regular maintenance. Isolated areas, particularly on the west wall, require more significant repointing work to repair minor cracks and areas of missing or deteriorated mortar. See Structural Letter for further information on the masonry foundation.

Stone lintels above the two entries were observed to be in fair condition with some signs of water damage on their bottom face. Landscape walls are in fair/poor condition and require significant repointing. Entry stair walls and steps are in good condition with some repairs and repointing required.

# **Brick Masonry**

Exterior walls are assumed to be multi-wythe unreinforced brick masonry. Brick masonry was observed to be in good condition throughout the building with approximately 10% requiring repointing. Brick joints are finished full with a soft historic mortar that appears to be colored red to match the bricks. The field bricks are a smooth orange-ish red with a rhythmic detailed pattern out of dark klinker bricks, and simple decorative corbel detailing at the water table and around the main entry. See Structural Letter for further information on brick masonry.

# **Architectural Appurtenances**

Several features were observed to bump out from the rectangular mass of the Gym. Most notably is the brick smokestack that served the boilers that at one time heated the full school campus. The smokestack appears to be in fair condition with observed steel retrofitted members around the stack. While only observed from the ground, some deterioration of the concrete cap was noted, and it is reasonable to assume some meaningful deterioration on the top and interior of the stack due to exhaust, moisture, and exposure to the elements.

A small bump-out shed sits next to the smokestack and matches the mass of the building in materials and detailing. This mass has a small wood access door in poor condition and mechanical ventilation louvers. The bottom of the corner of this structure has sustained damage that requires repair. A similar shed structure sits at the uphill side of the entry mass along 7th Ave, and it includes two small openings that have been infilled with painted wood. A more contemporary shed structure with wood siding and asphalt shingles on the north side covers steps down to the Lower Level.

A metal fire escape on the north side provides egress from the center of the upper level to the ground at the northeast corner of the building below. The fire escape appears and feels sound and in good condition, however several areas of rust were observed.



Typical brick detailing



Typical wood detailing





South Elevation



North Elevation



West Elevation



East Elevation

# **Existing Conditions Assessment - Building Exterior**

# **Building Entries & Exterior Doors**

All three exterior doors were observed to have been replaced with modern metal doors and hardware in the historic wood frames. The doors and hardware are functional, although well into their usable life and visually incompatible with the historic character of the building. The wood frames (including transom windows) appear to be in good condition and well maintained.

The 7th Street double-door entrance is approached up a half-flight of stone steps with stone walls approximately 30" high and a deep landing. The Cruse Avenue double-door entrance is accessed by three stone steps with no walls and no landing. The back exit at the northeast corner is accessed from a walk at grade and is of similar configuration and condition. The egress exit to the fire escape from the second level likewise is a modern metal door in a historic wood frame, both in good condition.

The utility entrance/exit in the lean-to on the north side is a similar metal door in a modern metal frame. A small wooden door in a wooden frame provide utility access in the lean-to on the east side. This door and frame are in poor condition due to their location and a small landing that is about 6" below the adjacent grade/walk.

### Wood Trim & Details

While limited in terms of area, the white-painted wood accent elements are essential to the character of the Gym. These elements include decorative wood trim around and between wood window units, decorative wood brackets and beams below the eaves, and exposed wood rafter tails and soffit material at the eaves.

Intricately detailed woodwork was observed in the Dutch-gables at the east and west elevations. These details/materials appear to be covered at the dormer above the main entry. All wood components above the water-table throughout the building appear to be well maintained and in good condition. While the wood windows and trim located on the Lower Level are well maintained, significant deterioration was observed due to their proximity to grade.

### Windows

Original painted wood windows appear to be in place throughout the building and were observed to be in good condition. The Lower and Main Level windows are primarily 1/1 double-hungs, with a decorative window at the center of the north elevation and a transom above the main entries. The Upper Level windows have a similar configuration but the top sash is fixed with an arched head. The windows on the Main and Upper level are aligned and have detailed decorative wood trim to appear as a single feature. Deterioration of glazing and historic glass were observed throughout. Upper Level windows have an added metal screen for fall protection.

As noted above, the windows near grade show signs of moisture damage and require repair. The Lower Level windows along the streets also have an expanded metal screen to protect against intrusion.



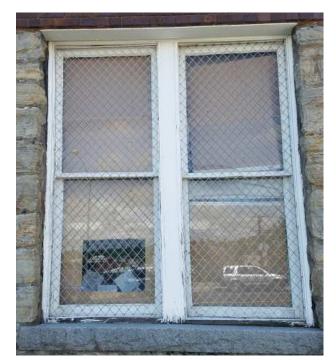
Main Entry to Main Level on 7th Ave.



Main Entry to Lower Level on Cruse St.



Typical window configuration and detail



Typical Lower Level window (damage @ bottom)



Window on north side w/ fire escape



Utility door and louvers at east side



Service door and concrete window well at north side



Typical condition of windows from interior

# Existing Conditions Assessment - Roof, Eaves, & Attic

# **Roofing**

Roofing over the main body of the building was observed to be relatively new asphalt shingles that appear to be in poor condition. The shingles were observed to be failing by peeling up in a manner typical of overheating in a poorly vented attic.

Metal roofing was observed on the low lean-to elements on the south and east sides. This roofing appeared to be in fair condition. Asphalt shingles on the service entrance lean-to on the north side appeared newer and in good condition.

It is likely (and to be confirmed through historic photographs) that the original roofing on the body of the building was comprised of wood shingles.

### **Eaves**

The eaves of this building on all four sides are a significant architectural element and are comprised of built-up decorative wood brackets, a wood beam supporting decorative exposed rafter tails that all appear to be original, in good condition, and well maintained. The drip edge flashing and fascia appear to be of newer vintage and exhibit signs of failing paint and a less than satisfactory level of craftsmanship. All soffits are painted wood slats in fair condition, showing some signs of historic water damage but with significant usable life left.

### Attic

The attic is one single space over the entire footprint of the building, accessible by one small hatch in the ceiling at the center of the east side.. It was observed to be in good condition with no areas of significant or problematic water damage noted. The primary structure is steel trusses with wood purlins and wood rafters, with additional wood ceiling members on the trusses. Modern blown-in insulation was observed to the depth of the ceiling framing members.

A mechanical unit with insulated ducting serving the gymnasium sits at the east side of the attic.

No attic ventilation was observed in the eaves, gables, or along the ridge.



Infilled dormer above entry on 7th Ave.



Deteriorated woodwork at Dutch-gables, note failing asphalt shingles





Typical eave condition (and bird netting)



Typical eave detail and condition



Typical condition of roof (shingles failing)



Typical condition of metal roof on historic lean-tos



Attic: metal trusses, wood rafters, modern insulation



Insulated mechanical ducting in attic

# Existing Conditions Assessment - Stair/Entry Volume & Egress

# Stairs from Main Level to Upper Level

Upon entering the Main Entry to the Main Level, the large landing leads to the Gymnasium and a staircase at each side. These wooden stairs are worn but in good and sound condition, and appear to be historic wood work in its original configuration. Each staircase appears to be of adequate width. No handrails were observed. The historic wood guardrails at the center of each stair are in good condition. However, their height should be verified and compliance with the IEBC provisions shall be coordinated with the requirements for handrails.

The west stairwell has new mechanical equipment, exposed ducts, exposed wiring, and exposed piping added within the stairwell. The east stairwell contains an interior re-lite to the bathroom below the stairs. The landings at the Main Level and Upper Level are connected to the Gymnasium via large historic wood double-doors, which swing inward. The downward egress from the Upper Level is located on the same wall that holds the doors, and the bottom step is approximately 18" from the door. Both stairs come to a shared landing above the Main Entry, that steps up two risers to a large landing that contains the doors to the Upper Level.

Wood finishes throughout both stairs are in fair condition, with significant wear on the inside side of the treads. Plaster finishes and painted wood appear to be in good condition throughout the space.

### Stairs from Lower Level to Main Level

The stairs to the Lower Level appear to be in their original configuration. The lower run of both stairs cuts in front of a window. Both stairs have been modified with diamond-plate steel treads and wooden handrails added. The west stair arrives to a small landing (about 36"x36") and a door at the bottom. The east stair arrives at a large landing that serves a modified bathroom, a hall to the storage area, and the locker rooms.

# Egress (general)

On the Lower Level, the primary egress from the storage and classroom areas is through a small vestibule to the Cruse St. exit. The classroom area has access to the west stairwell to the Main Exit, and the storage area has access to the east stairwell to the Main Exit. Neither egress route to the Main Exit appears to meet current code standards in a number of ways. The mechanical room is exited by the service exit on the north side.

The Main Level provides egress through two pairs of double-doors, one at the Main Entry/Exit, and the other at the northeast corner. The Upper Level is served by a pair of double-doors to the Main stairwell, and a single exit door on the North side onto the fire escape.

The Main stairwell connects all three floors and is separated from the Gymnasium and Lower Level spaces by historic solid wood doors.



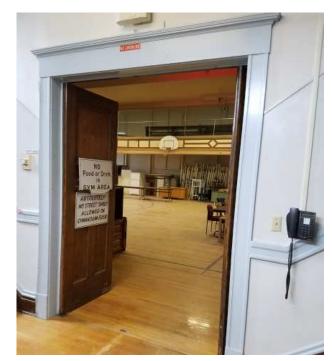
Stair from Main Level to landing above



Landings at Upper Level



Newell post detail at bottom of stairs



Main Entry to Gymnasium



Typical stairs to Lower Level



Mechanical unit, piping, and stair at window



Trim detail at door from stair to Lower Level spaces



Interior steps from bathroom/locker room to storage

# **Existing Conditions Assessment - Lower Level**

### Classroom Area

The classroom area consists of two rooms occupying the southwest quadrant of the Lower Level. The smaller classroom is entered from the landing to of the west stair and a door adjoins it to the larger classroom. The large classroom in the southwest corner exits through a small vestibule to the Cruse St. exit. Both classrooms have exterior windows, modern carpet for flooring, historic wood trim and wall plaster, and a dropped ACT ceiling. Finishes appear to be in good to fair condition throughout.

Signs of rodent activity were apparent in both classrooms, especially near the exit. And moisture damage through the masonry of the exterior wall was evident in a small area at the base of the wall between the vestibule and adjacent window.

# Office/Storage Area

The office/storage area occupies the northwest quadrant of the Lower Level. It is essentially one big space with a small office carved out of its northwest corner, and a large meeting room carved out of its northeast corner. The remaining space was used as storage. The small office has modern carpet and a dropped ACT ceiling, a modern hollow metal interior door/frame, and historic wood trim at the base and window. The meeting room and storage area maintain their historic exposed concrete floor (painted), wall plaster, wood trim, and pressed-tin ceiling. The meeting room is a unique feature built of wood with a continuous band of re-lites along the top of its two interior walls. This space is served by an interior double-door to the east stair, and the vestibule to the Cruse exit. All finishes are in good to fair condition throughout the space.

### **Locker Room Area**

Occupying the southwest quadrant of the building, the locker room and bathroom areas appear to have been modified several times over the years, in terms of both configuration and finishes. The few areas of remaining exposed terrazzo flooring appear to be in poor condition with much cracking, the modified areas contain a newer slip-resistant tile. The larger rooms maintained the pressed-tin ceiling tiles, and the small bathrooms had a dropped ACT ceiling. Plaster walls and ceilings were observed to be in fair condition throughout, and most wood trim remained intact in good condition. The locker rooms appeared to be heavily used and in fair/poor condition with severe damage noted in the actual shower room where a recent arson event occurred (no structural damage).

The locker room area appears to be at a different floor elevation than the rest of the Lower Level, as there are stairs in the hallway to the storage space and a service stair in the mechanical room (about 36" high).

### Mechanical Area

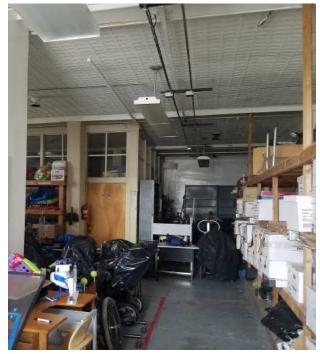
The mechanical area occupies the northeast quadrant of the Lower Level and consists of an unfinished space that holds the boilers and water heating equipment. The interior masonry in this room has been painted and shows signs of minor damage from moisture throughout the room. A small area of severe damage at the bottom of the rear wall was noted, as was deteriorated stone masonry near the smokestack.



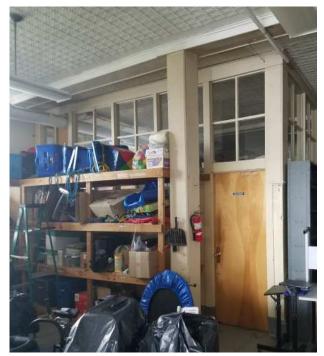
Classroom space at bottom of west stair



Classroom space at southwest corner



Office/storage area at northwest corner



Re-lites to meeting room



Bathroom area with terrazzo floor and ACT ceiling



Mechanical room



Isolated area of recent brick damage at base of wall

7TH AVE. GYM - HELENA, MT

Small office at northwest corner

# **Existing Conditions Assessment - Main Level**

# **Gymnasium**

The Main Level is essentially one big, open space containing the Gymnasium. The Upper Level (a running track) hangs around the perimeter of this space. And a series of small rooms have been added under the track along the south wall. Minor modifications like bleachers and wall padding have been added on the perimeter walls.

The wood gym floor appears in good condition, as do the plaster finishes and wood trim throughout the floor. Paint damage was observed throughout the floor.

# **Accessory Spaces**

These spaces consist of a small bathroom and two small storage rooms at the southeast corner (below the track), and a small office at the southwest corner. The gym flooring is continuous into these rooms and (with the exception of the bathroom) the existing historic plaster and wood work is continuous on the exterior walls. The bathroom has a modern dropped ACT ceiling and FRP wall panels, and a modern wood door, along with some accessible toilet accessories. The added partition walls are in fair condition, but appear to be most of the way through their serviceable life.



View of Gymnasium looking east



View of Gymnasium to northwest from Entry Doors



Typical space below Upper Level track



Upper Level track around perimeter



Typical condition of interior finishes at Main Level



Small storage space below track



Small office below track at southwest corner



Small bathroom at southeast corner

# **Existing Conditions Assessment - Upper Level**

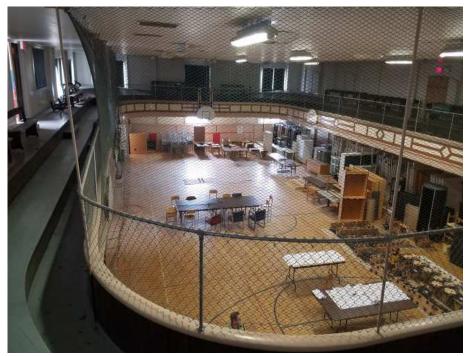
# **Running Track & Seating**

The Upper Level consists of a narrow space around the perimeter of the building that contains a 1-lane running track and bench seating along a railing. The entire space is open to the gymnasium below. All flooring appears to be historic wood in good condition, and the historic plaster and trim work appear intact and in good condition. The entire ceiling appears to be acoustic tiles of an older vintage. Some further exploration is required, but they appear to be a wood-fiber material directly applied over the historic finish. Several modern ventilation grates occupy the ceiling along with modern florescent lighting.

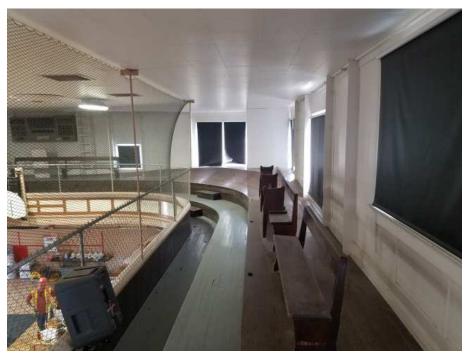
The historic wood balcony rail has a secondary metal rail added, along with netting around the entire perimeter of the Upper Level.

This level is served by double egress doors to the Main stairwell and a single egress door to the fire escape.

The windows throughout the Upper Level are very near the floor and have expanded metal screens as fall protection. Some of the windows have latching covers. The attic is accessed via a crude wooden ladder and small access hatch at the east side of the building, directly from the running track.



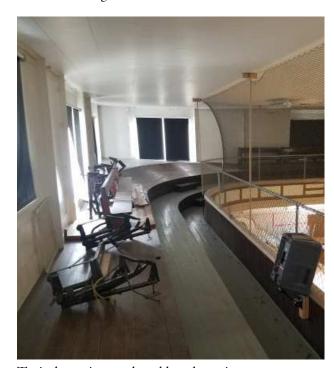
Upper Level from southeast corner



Upper Level looking west from entry doors



Banked running track at corners



Typical running track and bench seating



Typical running track and bench seating



Stepped window at landing above Main Entry



Historic wood benches



Fall protection at windows

# **Existing Conditions Assessment - Character Defining Features (Exterior)**

# What is a 'Character Defining Feature"

"Character defining features" is a technical term in historic preservation that refers to components of the building that can be observed and quantified as the signature elements of a historic property that are worthy of preservation. The related term "integrity" refers to the amount of this historic fabric that remains from the building's period of significance. Documenting these features and determining how they will be treated is an important part of the Tax Credit process.

# **Defining Exterior Characteristics**

The exterior of 7th Avenue Gym maintains a high degree of its historic integrity. It is distinguished by its perch on a steep slope, high-quality masonry work, and its overall massing including its Dutch-gabled roofline.

A clear hierarchy of elements is first established by the pronounced Main Entry with its stone staircase, accent roof, intricate brick detailing, and stone accents pronouncing "19" and "08." The Cruse St. entry is less detailed, and the rear exit is integrated into a window element. Next is the rhythmic facade established by clinker-brick pilasters accented by painted wood brackets at the eaves, and the window elements which have windows on two floors mulled together with wood accent trim to create larger elements.

The detailed masonry work in both stone and brick is notable on this building. The stone appears to match much of the historic stone around Helena from the Mount Helena quarry, although this has not been verified. There is some evidence of carefully beaded joints on portions of the stonework on the west facade. The intricate brickwork makes use of locally manufactured bricks (bricks are visibly stamped by Western Clay Manufacturing, "W.C. MFG. CO. HELENA, MONT"). And the detailing of this building is a truly unique example in that it not only makes use of the typically discarded clinker bricks, but integrates them as a primary feature.

The original wood windows are largely intact and in good condition, with some that have deteriorated but are in easily repairable condition. All exterior doors are non-original metal doors in historic wood frames.

The detailed wood eaves also have a significant visual impact from the street. And from further away, the wood details in the gable ends show the detailed design. The gable above the main entry has been covered up with a paneled material.

And of course, everyone knows the 7th Avenue Gym by its iconic brick smokestack that exhibits its other historic function as the heat plant for the educational campus.

Extensive information on the history and character defining features is included in the National Register of Historic Places nomination included in the Appendices of this document.



Overall massing, tripartite relationship, and roofline

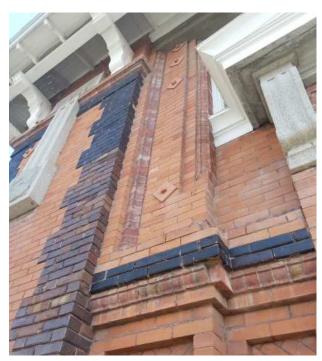


Rhythmic facade of brick pilasters, wood brackets, and window apertures





High quality stone and brick masonry, use of clinkers



Intricate brick work and stone details at entry



Typical running track and bench seating



Pronounced entry with stairs, roof, and stone details



Detailed painted woodwork as accents



Intricate eave detailing of brackets, beams, rafter tails

# **Existing Conditions Assessment - Character Defining Features (Interior)**

# **Defining Interior Characteristics**

On the Main and Upper Levels the Gym maintains much of its historic integrity in terms of layout, materiality, and historic fabric. The open layout of the gym remains with the only major modifications being the applied ceiling tiles in the gym, and the addition of the small ancillary rooms and wall treatments in the gym. Original floors, wood trim, wall plaster, and wood flooring remain intact and in good condition throughout these floors.

Likewise, the entry feature that contains the primary stairwell remains largely intact and in good condition. The lower runs of stairs have been covered with metal treads and mechanical units have been added. All doors from this area appear to be original solid wood doors.

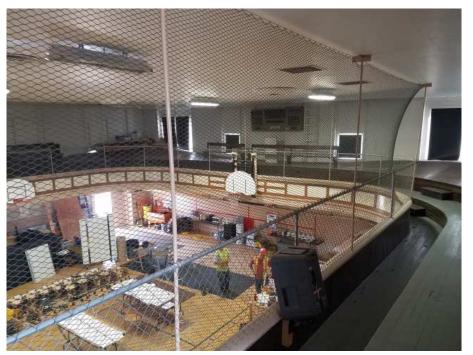
All windows (even those that have been covered) appear to be in good, or easily repairable, condition and are excellent examples of the high-quality wood sash windows of the period.

In the Lower Level, it appears as if significant modifications have been made over time to adapt to changing needs and conditions, and little of the original layout (according to the historic drawings) remains except the mechanical room. The meeting room should be researched further to determine if it is historic despite not being original. Historic wood trim, wall plaster, and pressed-tin ceilings are evident throughout the Lower Level. As are portions of original exposed concrete floors and limited areas of historic terrazzo flooring (in fair to poor condition).

Extensive information on the history and character defining features is included in the National Register of Historic Places nomination included in the Appendices of this document.



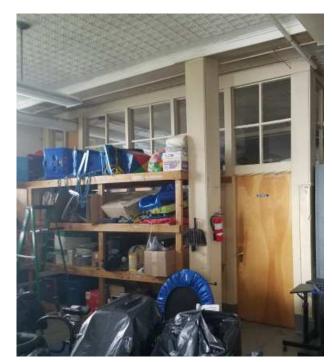
Open gymnasium area with running track above



Suspended Upper Level track and bench



Detailed woodwork at Main stairwell



Re-lites at Lower Level meeting room



Covered interior re-lites in Main stairwell



Pressed-tin ceiling throughout Lower Level



Intact wood trim and doors



Intact wood windows, frames and trim

# Structural Analysis - Smokestack Analysis



Washington www.dci-engineers.com Oregon California Texas

Alaska Colorado Montana

May 16, 2018

Tim Meldrum **SMA Architects** 1200 Sanders Street Helena, MT 59601

RE: 7<sup>th</sup> Ave Gym Smokestack Stabilization

Tim,

On May 2, 2018 Jami Lorenz, PE, Tom Beaudette, PE and Lindsey Bosworth, EIT of DCI Engineers visited the Central School gymnasium and smokestack. The purpose of the visit was to determine the feasibility of safely preserving the smokestack with the introduction of structural upgrades. Previous recommendations have included demolition of the chimney. This report is to present an alternative, non-destructive option for cost comparative and historic preservation purposes. No destructive investigations or material testing were performed. This report was based on visual observations made by DCI Engineers and aerial photos provided by SMA architects, as well as a limited finite element structural analysis. The 2012 International Existing Building Code (IEBC) was used a standard. These recommendations are preliminary in nature and will require further analysis before construction documents and details can be produced.

# **Background and Observations**

The chimney is approximately 50 ft tall and of a hexagonal shape approximately 9 feet in diameter. It is constructed of multi-wythe brick masonry and assumed to be unreinforced. This was typical of masonry construction at the time the chimney was built (1908). The chimney was constructed integrally with the main gym structure; one wall of the chimney is shared with the gym wall. The chimney is no longer directly used for any part of the building function, other than to house a secondary exhaust. In a 2013 BCE Engineers report, it was recommended that the chimney be immediately demolished and removed. Left without retrofit, the smoke stack is unstable and a potential life safety threat in a seismic event. Damaged bricks could fall onto surrounding areas near exits, sidewalks, and parking lots around the building. The initial recommendation cited the cost of stabilization efforts as potentially cost prohibitive. However, the removal of the chimney is also not without cost. It would include a considerable effort and require the main building envelope at the location of the chimney to be repaired or reconstructed after the demolition.

# Structural Upgrade as an Alternative to Demolition

The following recommendations are preliminary in nature and will require further analysis before construction documents and details can be produced. A summary of the design assumptions has been provided below. Should these conditions change or be determined to be significantly different than assumed, another analysis will need to be conducted to determine the retrofit viability.

### Summary of Stabilization Retrofit

To stabilize the chimney in-place to and provide for increased life-safety during a seismic event, the following actions are recommended:

- 1) Diagonal Bracing Add diagonal between the existing vertical channels at every other bay for the full height of the chimney. Two braces would be required at every other bay. The braces would be steel channels welded to the existing vertical channels and require anchorage to the existing chimney at approximately 12" on center. These braces would increase the overall rigidity of the structure.
- 2) **Anchorage** Add additional anchorage, such as epoxy anchor bolts or Titen HD screw anchors, from the existing vertical channels to the existing masonry at approximately 24" on center.
- 3) Foundation Work –Add new helical piers and concrete grade beams at the foundation to resist the uplifting, downward, and shear forces caused by a seismic event. A maximum of twelve (12) 50 kip capacity helical piers are anticipated. Connections from the existing smokestack to the new foundation system would need to occur at all new piers.

# Design Assumptions

- The existing chimney is assumed to be unreinforced masonry, typical of the time in which it was built.
- 2) The existing chimney is assumed to be connected to the existing gym roof structure in such a manner that some of the forces at the chimney, caused by a seismic event, can be transferred into the gym's main lateral force resisting system (wood roof diaphragm and masonry shear walls). It is worth noting that DCI Engineers previously performed brick testing on the walls at the gymnasium, and further analysis can be performed to assess the existing brick's capacity to carry seismic loads with the smokestack remaining attached to the building. To date, this more in-depth analysis of the existing building has not been performed, but the brick capacity has been documented with our brick testing effort.
- 3) The thickness of the walls in the existing smokestack chimney are shown as approximately 1'-9 1/4" in the aerial photos provided by SMA Architects. This amounts to 6 wythes of 3 5/8" brick. A brick weight of 45 psf/wythe was used in the design.
- 4) The current vertical channels, based on the initial site visit measurements, were determined to be C12x20.7 channels. The channels are assumed to be made of A36 steel.
- 5) The current horizontal rods, based on the initial site visit measurements, were determined to be 1" Ø rods and assumed to be made of A36 steel.

# Diagonal Bracing

New diagonal bracing members are required to stabilize the existing smokestack. If two diagonal bracing members are provided at every other bay for the entire height of the channel, a 6-inch channel can be used. These channels would need to be anchored into the existing masonry at approximately 12" on center and welded to the existing vertical channels. Figure 1 shows the location of the braces on one side of the chimney. The bracing would need to occur on each side (6 sides total) of the chimney.

# Anchorage of Existing Vertical Channels

Anchorage to brace the existing vertical channels is required to further stabilize the smokestack. Screen anchors would be required at approximately 24" on center.

### Foundation Work

A seismic event on such a heavy, tall and narrow structure would create large lateral and overturning forces at the base. New, battered helical piers and concrete grade beams would be required under the smokestack to resist the horizontal, downward, and uplifting force caused by a seismic event. These piers would be arranged, at a minimum, at each corner (6 corners total) of the chimney.

Additional piers may be required between the corners. The adjacent gym structure may be able to help reduce the number of helical piers required, but further investigation into the connection from the smokestack to the building would be required to explore this possibility. Connections from the existing smokestack to the foundation system would be required at each helical pier.

It should be noted that this report is qualitative in nature and is written to address the feasibility of a stabilization effort for the smokestack at the location described above. It is not meant to be a comprehensive structural assessment of the structure as a whole. Please reference the initial site assessment report from 2013 for overall structural conditions.

Please let us know of any questions or require further assistance. We thank you for choosing DCI Engineers for you structural engineering service needs.

Regards,



DCI+BCE Engineers



Figure 1. Bracing at Every Other Bay - Conceptual

# Structural Analysis - Comprehensive Analysis for HPS 2013

16 April 2013

John Carter Helena Public Schools—Maintenance Department 1200 Sanders Street Helena, MT 59601

Re: Seismic and General Structural Condition Report Seventh Avenue Gym Helena, MT

Mr. Carter,

As requested, we have completed a general structural conditions assessment for the Seventh Avenue Gym building in Helena, MT. Jami Lorenz, PE, Tracy Thomas, EIT, and Samantha Lidstrom, EIT, completed the assessment and this report. The site was visited on Thursday, March 28, 2013. As per the scope of our initial assessment, no destructive investigations or material tests were performed at this time. The findings and recommendations in this report are based solely on our visual observations made during the site visit. To our knowledge there are no original construction drawings available on file.

The intent of the investigation and this report is to determine the general structural status of the building considering basic life-safety occupancy, and to assess the level of conformance of the existing structure to the International Building Code (IBC) and International Existing Building Code (IEBC). The IEBC allows the design for existing and historic buildings to be established for minimum life-safety parameters and general construction standards. Existing structures need not meet every specific code requirement for new construction as outlined in the IBC.





Figure 1: Seventh Avenue Gym as viewed from Seventh Avenue, left, and Central School, right.

# **Observed Structural System**

Seventh Avenue Gym was constructed circa 1908. It served as both a gymnasium and a central heating facility that provided heat to several buildings on the block. Because there are no original building drawings available, the structural systems described are based solely on our visual observations during the site visit. No finishes were removed, and therefore not all details of the structural system could be observed.

### Exterior

The exterior walls consisted mainly of unreinforced multi-wythe brick masonry. These walls were supported on rubble-stone foundation walls as can be seen in the base of the structure on Figure 1. A short section of concrete wall sits on top of the unreinforced brick to support the roof structure. At the east corner of the building is an approximately 60-ft-tall smokestack. The smokestack is laterally unsupported above the top of the building roofline, but some structural retrofits have been added, presumably following the 1935 earthquakes. See Figure 2 at right.



Figure 2: Exterior construction is composed of multi-wythe brick walls with a concrete section on top supporting the roof framing. The smokestack is free-standing above the roof line.

### **Basement**

The foundation walls were found to be constructed of rubble-stone, which is typical for buildings constructed during this time period. It is assumed that these walls are supported by existing concrete strip footings similar to those in the Central School, but the foundation was not visible and could not be verified at this time. The basement floors consisted of a concrete slab on grade. The boiler and old heating equipment found in the basement were braced and supported by a variety of steel and heavy timber beams and columns.

# First (Gym) Floor Level

The first (gymnasium level) floor system consists of wood joists and beams supported by wood columns, steel columns, brick pilasters and the brick bearing walls. It is unknown at this time whether the columns are supported by concrete footings or if they are supported by the cast-in-place concrete slab in the basement only. Although we were able to observe the general layout of the floor framing members, the architectural finishes prevented us from viewing member sizes, joist spacings and connections directly.

#### **Roof Structure**

The main roof structure consisted of steel trusses spanning in the East-West direction with wood purlins and rafters as seen in Figure 3, below. The steel trusses consisted of angle members forming the top and bottom chords and the angle members. The connections consisted of steel plates and rivets. There were a total of six trusses spaced anywhere from 11-feet to 15-feet on-center. Timber purlins span between the steel trusses at approximately 10 ft on-center. 2x8 rafters span between the brick wall and purlins and from the uppermost purlin to a 1x ridge board at approximately 16-inches on-center. The hips on either end of the building and the gable facing Seventh Avenue are all wood framed.



Figure 3: Roof framing as seen from the attic.

#### **Running Track Mezzanine**

Above the first floor, a mezzanine is hung around the circumference of the gymnasium to serve as the old running track as seen in Figure 4, below. The mezzanine is connected on the outer edge to the exterior brick wall. This connection was covered with architectural finishes and could not be seen at this time. The inner edge of the mezzanine is supported by a series of steel rods that are hung from the steel trusses in the attic above. The rods are connected to the web plate of the trusses as shown in Figure 5, right, below. The rod is connected to the track as shown in Figure 5, left, below.



Figure 4: Running track mezzanine.





Figure 5: Running track mezzanine connection to truss above, right and to track below left.

#### **Structural Retrofits**

Some retrofits were observed in select areas of the structure that were presumably added after the earthquakes of 1935. In the entry stair, lateral bracing in the form of steel angles had been added some time after construction, as seen in Figure 6. Throughout the building, full-height steel angles have been added to the inside face of the exterior bearing walls at an average spacing of 8 feet on-center. These angles were bolted to the wall with 7/8-inch diameter bolts and square washer plates. (Figure 7) Their connection to the floor is unknown



Figure 6: Cross-bracing at entry stair.

at this time. Some steel-framing members have been added sometime in the past to the exterior of the smokestack. The smoke stack is six-sided, and at each corner, steel channels have been added to the full height of the stack. These channels are supported by a pseudo tension rod around the circumference of the stack at regular intervals long the entire height. See Figure 8 below.





Figure 7: Wall retrofits-steel angle at interior of the wall (left) and connection to wall exterior (right).





Figure 8: Steel framing retrofits at exterior smokestack.

#### Inspection

The inspection of Seventh Avenue Gym was based solely on the non-destructive visual observations made while on-site.

#### **Exterior Observations**

The rubble stone walls appeared to be in good condition from the exterior of the building. They have been regularly maintained and the mortar shows little sign of deterioration. However, at the northeast corner of the building, the rubble stone shows some sign of vertical settlement as shown in Figure 9, below. The exterior brick masonry also appeared to be in generally good condition; however the mortar a select few areas showed sign of deterioration. Diagonal cracks were seen at the northeast corner where the vertical settlement is thought to have occurred.





Figure 9: Evidence of settlement at the northeast corner of the building includes cracking in the rubble-stone foundation (left) and the exterior brick (right).

#### **Basement**

At the basement level, there were some signs of minor degradation of the rubble-stone walls where exposed. The majority of walls were hidden behind architectural finishes, and their condition could not be assessed. Water damage would be observed in the architectural finishes, and none were observed – therefore, it is assumed that the rubble walls are in good condition. There was a myriad of bracing for old boiler equipment in portions of the basement. Most of these bracing systems appeared to be in good condition, but there was an instance where heavy timber bracing was used. These timbers are not carrying a substantial amount of load, but their connections were poor and should be updated. The exposed framing for the first floor that could be observed from the basement level is discussed below.

#### First (Gym) Floor Level

Because of the architectural ceiling finishes in the basement, most of the structural elements could not be inspected at this time. However, there were some elements that could be seen that showed signs of deterioration. There was a corbel supporting a floor beam above the boiler area that was composed of unreinforced brick. It showed signs of deterioration and can be seen in Figure 10, below. A few timber columns in the basement that supported floor framing above showed signs of rot and deterioration at their base, as seen in Figure 10. This is likely due to contact with water and the concrete slab on grade over time. It was also not clear whether these columns were supported by concrete footings in each location.





Figure 10: Deterioration at timber column base (left) and deterioration brick corbel (right).

#### Roof Structure

The main framing system in the roof appeared to be in generally good condition. The steel trusses showed no visible signs of distress or overloading. The double rafter in the hip portion of the roof that supports the hanging track connection is severely cracked at the connection to the steel rod and visually distressed (Figure 11). The framing members seemed to generally be supported by the concrete wall at the building exterior. The ends of these members appeared to have been simply cast into the concrete wall at the time of construction. This type of connection serves as a



Figure 11: Cracked rafter at hanging track mezzanine connection.

bearing connection only and does not provide any support for uplift or forces perpendicular to the wall in the event of an earthquake. Direct contact of the wood framing members to the concrete is not ideal because it can introduce moisture to the wood members and cause rot and deterioration as seen in the column bases in the basement. Because the portion of the wood members in the wall cannot be seen, the condition of these members in the concrete wall is unknown. However, there were a few select locations were the concrete around this connection has cracked and showed signs of deterioration, indicating that there could have been water introduced at some point in time. See Figure 12, below.



Figure 12: Deteriorated concrete at wood member-to-concrete wall connections.

#### **Analysis**

A preliminary analysis was conducted to determine the adequacy of both the gravity framing system as well as the lateral force resisting system for general life-safety parameters. Because no original drawings were available at the time of our investigation, we are only able to verify the structure that could be observed while onsite.

A very limited gravity load analysis was performed to verify that the member sizes were sufficient for current life safety loading. The structure that BCE was able to observe was mostly found to be adequate for the state minimum roof snow load of 30 psf and codemandated floor live loads. Some upgrades to the hip rafters in the attic and the members supporting the running track will be required. The steel trusses are adequate to support the roof snow loads on the building.

For the lateral load resisting system, the existing unreinforced masonry was assumed to be the main lateral force resisting system. BCE has performed a lateral analysis on the existing structure according to the IEBC provisions and has determined that the brick walls would most likely be able to provide the required strength to resist a seismic event. The shear load in the brick is within the range that BCE typically observes when performing brick tests on similar buildings of a similar vintage. Brick testing should be employed to verify the strength of the existing brick walls to match the required strength. The other parts of the system, the roof diaphragm, floor diaphragm, and connections to the existing brick walls will require upgrades to provide for a complete lateral system.

#### Recommendations

Based on the structural observations made while on-site and our preliminary analysis, we recommend the following upgrades at this time.

#### **Exterior Upgrades**

At the exterior of the building, we recommend the following structural upgrades.

- 1. Immediately and Prior to Occupancy: The smokestack chimney should be removed to the ground prior to further occupancy of the gym to provide for life safety in a seismic event. Salvaging the structure would be extremely cost prohibitive for the school district, and the chimney no longer provides a useful function. The instability of the stack is hard to determine in a seismic event, and could fall on the building or onto surrounding area near exits, sidewalks, and parking lots around the building. Without major structural retrofit, such as shotcrete on the interior surface, or a new steel frame on the exterior surface, it does continue to pose a threat to life safety and should be removed.
- 2. Immediately: The exterior brick should be tested to verify that it has adequate shear capacity to resist lateral loads in the event of an earthquake. The exterior brick that has deteriorated should be patched and/or repointed at this time.

3. Every 5 years: Continual maintenance of the mortar pointing in the brick and the stone rubble foundation walls should be maintained on a cyclic basis. Protection of the bolts connecting the interior vertical channels to the exterior of the building should be provided with exterior grade paint applied to the exposed bolt heads and plate washers.

#### **Interior Upgrades**

At the roof level, we recommend the following upgrades to the roof structure.

- Within the next 2 years: Install a positive connection from roof framing to the
  exterior walls in the form of a metal angle at every other rafter, or a continuous
  angle below the rafters, and epoxy bolted to the brick walls. This work could be
  accomplished from within the attic and would not necessarily require the
  demolition of the ceilings below.
- Within the next 2 years: Install a collar tie at each rafter-ridge connection to resolve horizontal forces in this area. The specific size and connection of the collar ties would be determined through additional analysis and design following this report.
- 3. Within the next 2 years: Provide additional support for the hip rafters in the form of additional beams below the hips and attached to the steel trusses or supported from below by upgraded attic rafters in strategic locations. The specific repair would be determined through additional analysis and design following this report.
- 4. Within the next 2 years: Provide additional support for the running track in the attic similar to #3 above. Alternative would be to remove the running track structure, which would require architectural work to repair finishes after its removal.
- 5. Within the next 10 years: Install new ½" plywood sheathing on the roof over the 1x decking at the next major re-roof project, or within the next 10 years.

At the Main floor level, we recommend the following upgrades to the floor structure.

- Immediately: Install new columns or temporary columns adjacent to the
  deteriorated wood columns and deteriorated brick corbel in the basement to
  supplement existing columns or remove/replace existing columns. A repair detail
  would be provided with additional work following this report for a permanent
  column repair or replacement.
- 2. Immediately: Further exploration to determine floor framing member size and spacing to verify that they are adequate to support life-safety gravity loading.

- 3. Within the next 2 years: Supplement any members found to be insufficient for life-safety gravity loading. Install new connections from below the floor between the floor joists and beams to the brick walls. Remove finishes as necessary around the perimeter of the building at the basement ceiling to allow for further investigation and connection details to be developed. A continuous angle around the perimeter of the building with epoxy bolts into the brick and screws/bolts into the floor structure would be provided.
- 4. Within the next 2 years: Add additional interior angles and supplement the existing interior angles to attach to the floor and roof structure to provide required out-of-plane support for the brick walls. This would consist of adding a connection at the angles to the floors and roof, and adding additional angles to the existing angles at mid-span along the height of the brick walls. If the running track is removed, the angles may need to be spliced where they may stop and start at the track this would need to be verified in the field with removal of additional finishes.
- 5. Within the next 10 years: Install a new ½" plywood sheathing to the floor at the next re-flooring project. This could be applied from above or below the floor depending on whether or not the wood flooring would be replaced above the floor.
- 6. Within the next 10 years: Provide a shotcrete reinforced 4" concrete layer to the interior surface of the stone rubble foundation walls. This would provide for a legitimate lateral and gravity load supporting foundation wall for the future use of the building.

#### Summary

The 7<sup>th</sup> Avenue Gym is in good structural condition considering its age and structural system. With the removal of the smokestack chimney and the structural upgrades as outlined above, the gym can continue to serve the community for decades to come. At a minimum, the removal of the chimney and temporary support of the deteriorated wood columns in the basement should occur as soon as possible prior to further use of the building.

We understand that this report is very general in nature, so please call us with any specific questions you may have at this time.

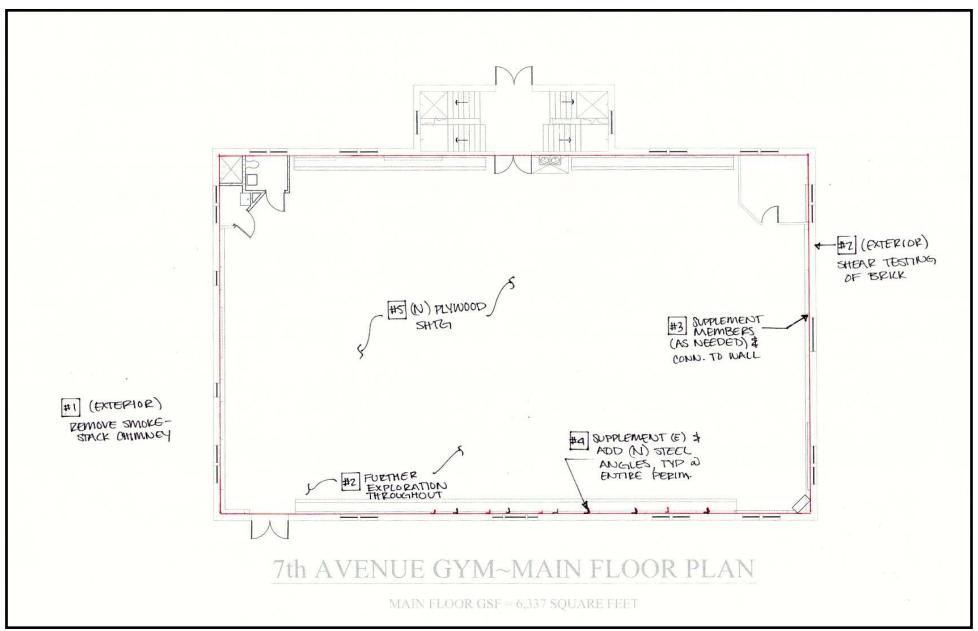
Sincerely,

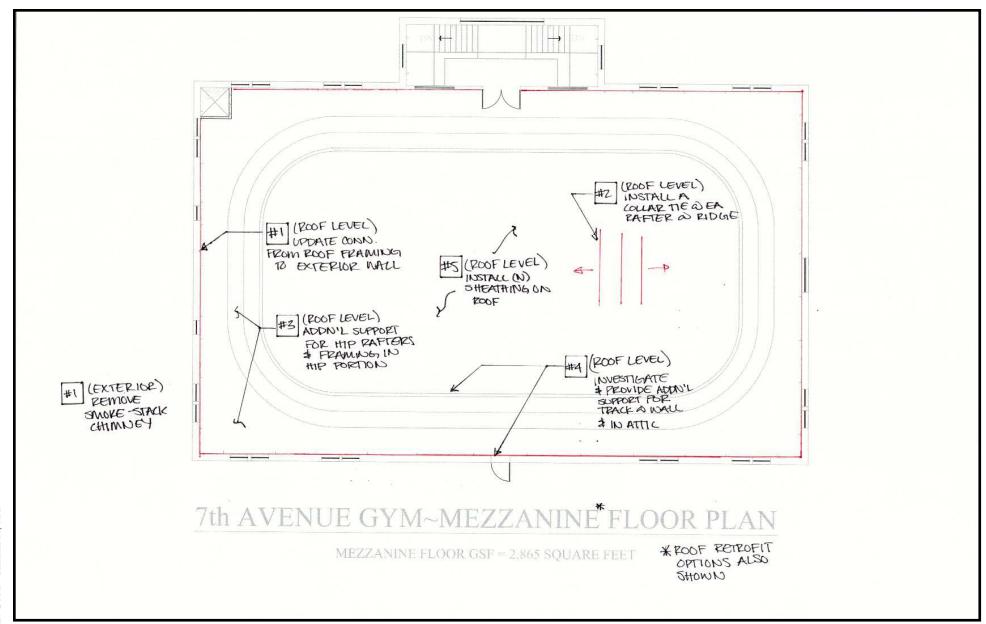
Beaudette Consulting Engineers, Inc.

Jami Lorenz, PE

Samantha Lidstrom, EIT







	VE GYM	RETROFIT C		
Retrofit Item	Unit	Quantity	\$/Unit	Total Item Cost
Exterior Retrofits				
Repointing of Brick	sf	640	\$6.05	\$3,872.00
Patching Brick	sf	320	\$20.97	\$6,710.40
Remove Smokestack	cf	1680	\$20.00	\$33,600.00
Floor Retrofits				
Floor Sheathing (3/4 inch)	sf	6710	\$1.42	\$9,528.20
Update Connections				
Continuous Angle	lf	320	\$27.06	\$8,659.20
Epoxy Bolts	ea	80	\$20.00	\$1,600.00
Sistered Joists	lf	1500	\$2.56	\$3,840.00
Repair/Replace Columns			•	, -, -
4' SQ Conc Ftg	ea	2	\$250.00	\$500.00
HSS 4x4x1/4	ea	2	\$220.00	\$440.00
	Ju	_	Ψ220.00	<b>VIII.00</b>
Roof Retrofits				
Roof Sheathing (5/8 inch)	sf	7000	\$1.30	\$9,100.00
Sistered Rafters (2x10)	lf	1500	\$2.56	\$3,840.00
Collar Tie	lf	500	\$1.39	\$695.00
LVL Ceiling Beams	lf	80	\$8.56	\$684.80
4x4 Columns to Ceiling Beams	lf	100	\$3.80	\$380.00
6x6 Columns to Ceiling Beams	lf	100	\$7.67	\$767.00
Cripple Walls (2x6)	lf	200	\$1.45	\$290.00
Connect Steel Truss To Walls	ea	20	\$50.00	\$1,000.00
Connect Rafters to Walls				
Continuous Angle	lf	320	\$27.06	\$8,659.20
Epoxy Bolts	ea	80	\$20.00	\$1,600.00
Miscellaneous				
Running Track				
Explore Conn to Wall	sf	20	\$22.00	\$440.00
Update Conn to Wall	lf	320	\$50.00	\$16,000.00
Update Conn to Rafters	ea	20	\$100.00	\$2,000.00
Shotcrete (4" reinforced)	sf	3200	\$20.00	\$64,000.00
Rubble Stone to Brick Conn	lf	320	\$70.00	\$22,400.00
Update Timber Brace Conn	ea	20	\$20.00	\$400.00
Bracing Angles	If	800	\$80.00	\$64,000.00
Conn of (E) Angles to Floors	ea	80	\$50.00	\$4,000.00
Exterior Paint @ Bolts	ea	400	\$2.00	\$800.00
G	Ju	.00	Ψ2.00	+230100
Grand Total				\$269,805.80

V200,000.00

7TH AVE. GYM - HELENA, MT

<sup>\*</sup>Includes structural upgrades only, no architectural elements included. (ie: ceilings, flooring, etc.)

## **Mechanical Systems**

(((Letter from Mechanical Engineer forthcoming. It is assumed that a significant retrofit, if not full replacement of the mechanical systems will be required.))

## 7TH AVE. GYM - HELENA, MT

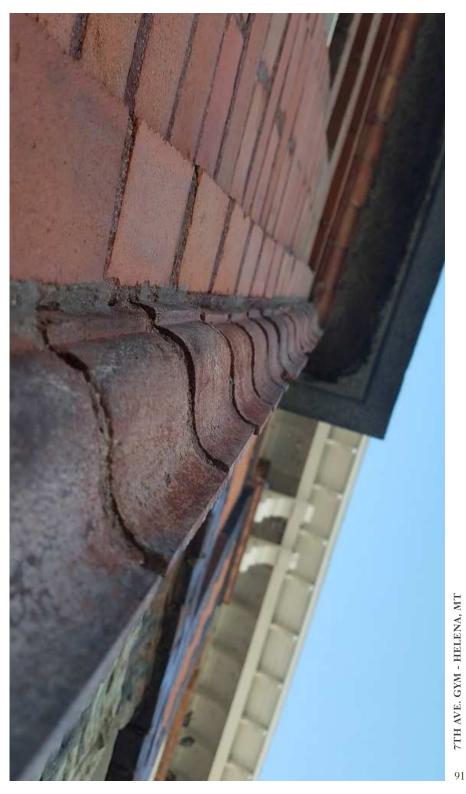
## **Electrical Systems**

(((Letter from Electrical Engineer forthcoming. It is assumed at this point that electrical service is adequate, and limited upgrades will be required throughout the building))



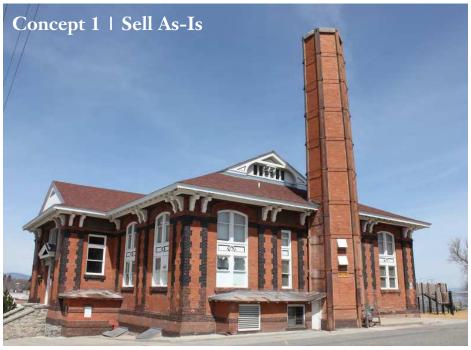
## Partner Development & Building Program

 $(((Synopsis\ and\ process\ explanation\ under\ development)))$ 



## 7TH AVE. GYM - HELENA, MT

#### **Potential Development Concepts**

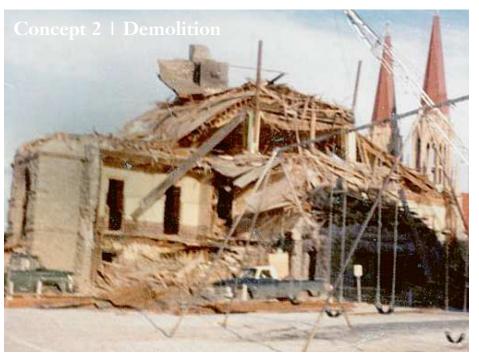


The Concept

Put the building on the market to sell as quickly as possible to the highest bidder.

#### The Considerations

- •Least amount of financial investment required by HPS
- •Least amount of control over compatibility of use
- •No guarantee that the building will be made safe or renovated
- •Potentially fast transfer of property away from HPS
- •Likely the best potential for a financial return
- •No guarantee of any positive benefit to the community
- •Does not guarantee the building will contribute towards the goals established for community and economic development



The Concept HPS to demolish the building.

- •It is still a sound building with decades of usable life remaining
- •High cost and no financial return
- •Certain scopes of work (like hazardous materials abatement) still required
- •Would free up additional square footage on Central School site
- •High likelihood of significant public backlash against demolition
- •Significant negative environmental impact
- •No positive benefits to the community
- •Further degradation of the historic district and historic downtown
- •Does not meet best practices for community and economic development



The Concept Adapt and renovate the building for HPS use

#### The Considerations

- •Rehabilitation for educational use would likely be cost prohibitive and difficult to achieve life-safety and programmatic requirements
- •Not conducive to rehabilitation solely for District administrative and office use
- •Reuse as gym unlikely given cost of building upkeep and new gym in new school
- •Guarantee of compatible use and highest degree of control for HPS
- Questionable if new use would have meaningful impact on community or economy
- Significant financial investment required
- •Building would remain HPS's responsibility (an asset or a liability, depending on perspective)



#### The Concept

Transfer property to community organization for them to redevelop building as a child-focused program

- •Likely costly and difficult to achieve life-safety and programmatic requirements for educational use
- •Highly compatible use in-line with long-term HPS goals and programs
- •Meets a real need in the community and would provide many benefits
- •Many child/youth focused organizations in the community would use the facility •Many child/youth focused organizations in the community would use the facility or be a limited partner, however, there appears to be a lack of capacity for any one organization to be the lead as the developer and long term steward/operator of the facility

  •Likely a slow development process based largely on a capital campaign and grants

  \*\*WY

  \*\*ANY

  \*\*WY

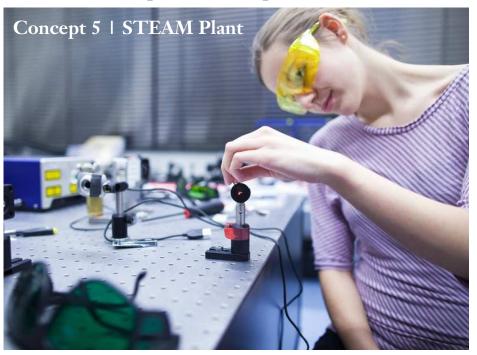
  \*\*ANY

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#### **Potential Development Concepts**



#### The Concept

Transfer property to community organization for them to redevelop building as a youth STEAM program

#### The Considerations

- •Highly compatible use for HPS
- •Exciting idea that meets a community need and would benefit the community
- •Use compatible with the building and conducive to practical rehabilitation
- •Lack of overall demand in the community to create a new organization that could support a construction project of this size and ongoing facility operation
- •Lack of capacity (or need) to create a new organization that would compete directly with successful organizations like Exploration Works
- •Likely a slow development process based largely on a capital campaign and grants



#### The Concept

Transfer property to community organization for them to redevelop building as a arts center and venue

- •Highly compatible use for HPS
- •Exciting idea that meets a community need and would benefit the community
- •Would support prioritized ideas of branding Helena as an arts community and increase activity downtown
- •Building is reasonably compatible to rehabilitation as this use and the gym space is large enough to house a stage and large audience, however it would require a major overhaul (potentially prohibitive) to become a properly sophisticated venue
- Has been done successfully in other Montana communities
- •While there are community organizations with the capacity to take on and operate a project of this size, the primary candidates (Myrna Loy Center, Grand Street Theatre, Archie Bray Foundation) are all currently pursuing their own facilities plans and visions independently
- •Potentially slow development process based largely on a capital campaign and grants



#### The Concept

Transfer property to community organization for them to redevelop building as a local food based hub (farm to table, farm to school, public market, etc.)

#### The Considerations

- •Moderately to highly compatible use for HPS (depending on final partners, visions, and activities housed)
- •Exciting idea that meets a community need and would benefit the community
- •Use compatible with the building and conducive to practical rehabilitation
- •Use explored in the "Marlow Market" feasibility study, recommended as potentially viable but violated most of the consultant's 'rules' for choosing a public market site public market concept dependent upon courting outside developer through an RFP resulting in little control over ultimate results/compatibility
- •Would support prioritized ideas of branding Helena while supporting the community and increasing activity downtown
- •Potentially organizations in the community with the capacity for the project, or at least be meaningful partners, significant potential for a broad range of funding
- •Other considerations with food-related amenities/requirements: potential that alcohol is served/sold, potential for truck traffic (conflict with school, site challenges), potential audience for the venue, hours of heavy activity are likely opposite that of the school, etc.



#### The Concept

Transfer property to community organization for them to redevelop building for downtown-focused organizations and programming

- •Compatible use for HPS and school site (dependent upon final partners/vision)
- •Most compatible use for the building, i.e. least required scope of work therefore highly efficient and practical scope of renovations
- •Organizations within community with interest and capacity to redevelop building, occupy the building with appropriate partner organizations, and program appropriate activities in the gym
- $\bullet \mbox{Likely}$  would require an addition to the building to meet programmatic needs
- •Potential for a broad range of partners, including representatives of other concepts presented here
- •Potential for a broad range of funding resources associated with primary and partner organizations (economic development, preservation, tourism, etc.)
- •Improvements required on building to provide appropriate public access and accessibility

(((Courting a partner that could develop this building was initially the ultimate goal of this project. The design team is currently discussing the possibility of development with a coalition of local organizations committed to redevelopment in Downtown Helena. As things are preliminary in nature, we cannot disclose the organizations and their roles at this time.

This group likely has the potential to tackle the redevelopment effort and sustain activity in the building. Their involvement would mean a low-intensity office use on the Lower Level and use of the gymnasium space as a gym and public event space. Both uses and the groups themselves appear to be fully compatible with the adjacent school and its schedule.

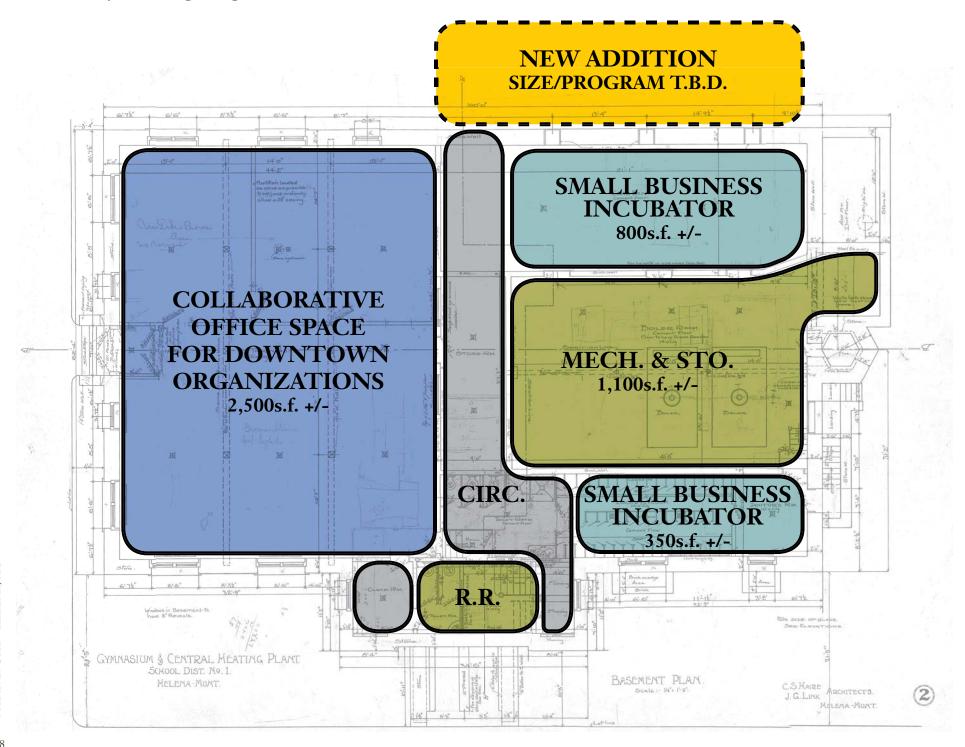
Likely an addition would be required to make the building meet current code and the needs of the new user group. It is also likely this addition would be located on the north side of the building. The size, configuration, and program of the addition will result from a combination of the user groups needs, capacity, code requirements, compliance with Historic Preservation Tax Credit standards, and approval/coordination with HPS. The scope of an addition will be the primary factor in defining alternates.

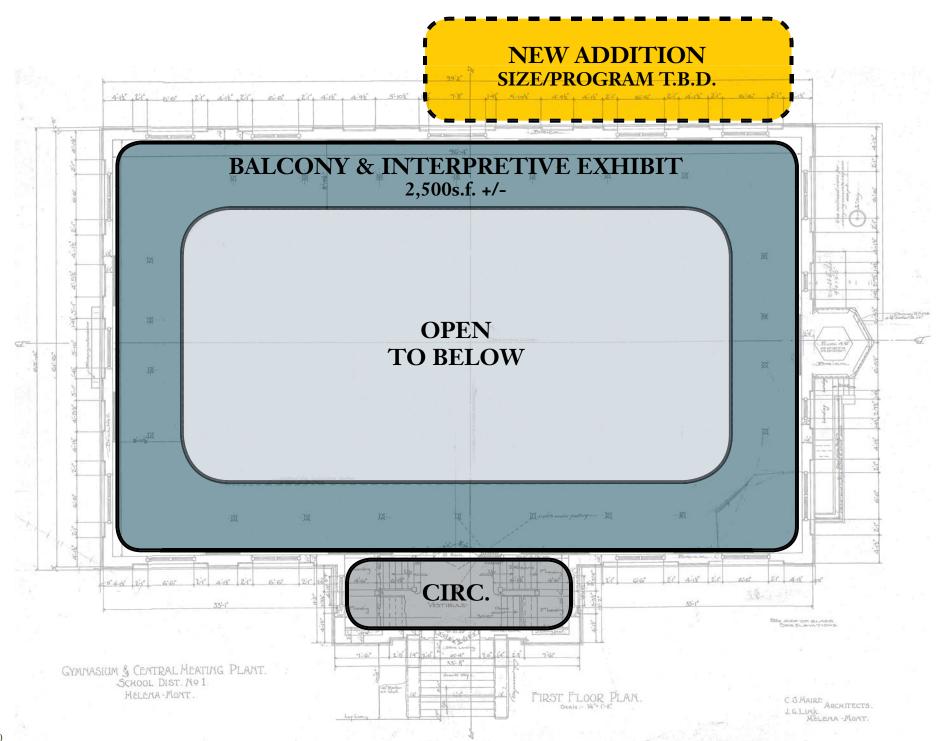
The integration of the end user early in this process means that this planning effort will go much further than anticipated, and be less speculative/generic in terms of proposed program, code analysis, cost estimates and scope of work.

For the purposes of this draft, assumptions are made that this will be the group developing the building in order to set parameters for the building program and code analysis

Further documentation of the process, partners, their requirements, etc. forthcoming.)))

(((Continued))





# 7TH AVE. GYM - HELENA, MT

### **Preliminary Building Program**

#### **Lower Level**

Office Tenant #1	1,000sf
Office Tenant #2	700sf
Shared Office Amenities	800sf
Incubator Tenant #1	800sf
Incubator Tenant #2	350sf
Mechanical/Storage	1,100sf

#### Main Level

Event/Performance/Gym 5,000sf

#### **Upper Level**

Balcony & Interpretive Exhibit 2,500sf

#### **New Addition Concept #1**

Egress Stair	S
Rest Rooms	S
Storage	S

#### **New Addition Concept #2**

Lobby	sf
Egress Stair	sf
Elevator	sf
Rest Rooms	sf
Storage	sf
Preparation Area	sf
Preparation Kitchen	sf

#### **New Addition Concept #3**

New Addition Concept #3	
Lobby	sf
Egress Stair	sf
Elevator	sf
Rest Rooms	sf
Storage	sf
Preparation Area	sf
Commercial Kitchen	sf
Locker Rooms	sf



Compliance (Building Code & Municipal Code Analysis)

#### **Summary of Code & Zoning Analysis**

#### **Synopsis**

(((text to be completed upon completion of preferred alternate selection)))

#### Assumptions

This code study is based on the assumptions that the building will be used primarily as Group B Occupancy on the lower level and a Group A-3 Occupancy on the main level. It also assumes the general intention of limiting the scope of work/alteration to the historic building as much as is reasonable. And while design is not complete, the study assumes that the project will pursue Historic Tax Credits and that an addition will be required to house some amenities. The Code Analysis in this report is based on the "Work Area" compliance method, however, it is worth exploring/researching the "Prescriptive" compliance method and the associated Chapter 4 requirements during the Design Phase as rulings and negotiations with the Code Official may prove beneficial to the project. As the Work Area Compliance Method is the most intensive in terms of scope and impact on the building, it is appropriate at the Report level of development as the most conservative interpretation of the Code, and therefore conservative as related to overall costs.

#### Effects On Construction Scope and/or Design

- •Change of use on Lower Level triggers multiple requirements for fire protection and egress
- •Sprinklers required
- •No area separations required
- •Fire alarms and emergency voice/alarm required
- •No manual alarm boxes required, potential to use existing alarm system
- •Minor modifications to existing stair enclosure to provide tight-fitting doors
- •Provide egress to meet new code (add 2 new exits on Main Level)
- •Potential conflict between preservation and code with egress door swing configuration
- •Potential conflict between preservation and code regarding addition of handrails at exit stairs
- •Potential design issue where stairs from Lower Level meet landing at Main Level exit
- •All new or altered components to meet current IECC requirements
- •No requirements to improve energy performance of walls, windows, roof unless altered, all new components to meet IBC and IECC requirements
- •Upper Level does not need to be made accessible
- •No requirement to add elevator
- •Additions to meet current IBC and IECC requirements
- •Site design ramifications per new City code???

#### 2012 International Existing Building Code Analysis

#### **CHAPTER 2 – DEFINITIONS**

202 GENERAL DEFINITIONS

Select definitions included:

ADDITION. An extension or increase in floor area, number of stories, or height of a building or structure.

ALTERATION. Any construction or renovation to an existing structure other than a repair or addition. Alterations are classified as Level 1. Level 2 and Level 3. CHANGE OF OCCUPANCY. A change in the purpose or level of activity within a building that involves a change in application of the requirements of this code. [B] EXISTING BUILDING. A building erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

[B] HISTORIC BUILDING. Any building or structure that is listed in the State or National Register of Historic Places; designated as a historic property under local or state designation

law or survey; certified as a contributing resource within a National Register listed or locally designated historic district; or with an opinion or certification that the property is eligible to be listed on the National or State Register of Historic Places either individually or as a contributing building

to a historic district by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places.

[B] PRIMARY FUNCTION. A primary function is a major activity for which the facility is intended. Areas that contain a primary function include, but are not limited to, the customer services lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and

other work areas in which the activities of the public accommodation or other private entity using the facility are carried out. Mechanical rooms, boiler rooms, supply storage rooms,

employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a primary function.

REHABILITATION. Any work, as described by the categories of work defined herein, undertaken in an existing building.

REHABILITATION, SEISMIC. Work conducted to improve the seismic lateral force resistance of an existing

building.

WORK AREA. That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where

work not initially intended by the owner is specifically required by this code.

#### **CHAPTER 3 – COMPLIANCE METHODS**

**301.1.2** Work area compliance method. Repairs, alterations, additions, changes in occupancy and relocated buildings complying with the applicable requirements of Chapters 5 through 13 of this code shall be considered in compliance with the provisions of this code.

This analysis is based on the Work Area Compliance method. It is recommended that the Architect of Record for the Construction Documents research the applicability of the Prescriptive Compliance Method early in the design process.

#### CHAPTER 5 – CLASSIFICATION OF WORK

**505.1 ALTERATION LEVEL 3** Scope. Level 3 alterations apply where the work area exceeds 50 percent of the aggregate area of the building.

The proposed work is appropriately classified as a Level 3 Alteration

**506.1 CHANGE OF OCCUPANCY** Scope. Change of occupancy provisions apply where the activity is classified as a change of occupancy as defined in Chapter 2.

The proposed work includes a change of use on the lower level, but no change in use on the main level. This interpretation effects the reading of Chapters 5-12 and should be approved formally by the Building Official during design. For purposes of this code analysis, a partial Change of Occupancy is assumed and the ramifications of a full Change of Occupancy are explored and noted. As the existing lower level of the building is currently used informally as storage, but was clearly recently used as a mixture of locker rooms/classrooms/offices/storage, the most conservative interpretation of changes in hazard categories are assumed throughout this code analysis. These interpretations should be verified by the Architect with the Code Official early in the design phase.

#### **CHAPTER 7 – ALTERATIONS LEVEL 1**

**705.1 General (accessibility).** A facility that is altered shall comply with the applicable provisions in Sections 705.1.1 through 705.1.14, and Chapter 11 of the International Building Code unless it is technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent that is technically feasible.

All new or altered components need to meet current IBC requirements. Conditions that cannot be fully compliant shall be made as compliant as possible.

**705.1.1 Entrances.** Where an alteration includes alterations to an entrance, and the facility has an accessible entrance on an accessible route, the altered entrance is not required to be accessible unless required by Section 705.2. Signs complying with Section 1110 of the International Building Code shall be provided.

The existing primary entries at each floor do not need to be made accessible provided that other accessible entries/exits on accessible routes are provided.

**705.2** Alterations affecting an area containing a primary function. Where an alteration affects the accessibility to a, or contains an area of primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

The design shall provide accessibility to all areas of primary function. With this interpretation, the Upper Level is not required to be accessible as access to the same primary function is provided on the Main Level

#### **CHAPTER 8 – ALTERATIONS LEVEL 2**

**803.2.1 Existing vertical openings.** All existing interior vertical openings connecting two or more floors shall be enclosed with approved assemblies having a fire-resistance rating of not less than 1 hour with approved opening protectives...

This Section appears to be overruled by IEBC Section 1203.6 and 1205.10 and firerated assemblies are not required, but some improvements to prevent passage of smoke are required. Similar solutions may address the requirements of the exceptions in this Section if a different interpretation is required. Final design and Code interpretation to be approved by the Building Official.

**804.4.1 Fire Alarm System Occupancy Requirements.** A fire alarm system shall be installed... Existing alarm-notification appliances shall be automatically activated throughout the building...

Fire alarm systems are required. The viability of using the existing alarm system should be explored by the Engineering team during the design phase.

**805.3.1 Minimum number (of exits).** Every story utilized for human occupancy on which there is a work area that includes exits or corridors shared by more than one tenant within the work area shall be provided with the minimum number of exits or corridors shared by more than one tenant within the work area shall be provided with the minimum number of exits based on the occupancy and the occupant load in accordance with the International Building Code...

2 exits required on Lower Level, 4 exits required from Main Level, 2 exits required on Upper Level

Lower and Upper Levels currently have 2 exits, Main Level has 2 existing exits, new exits to meet code to be provided

**805.3.3 Main Entrance – Group A.** All buildings of Group A with an occupant load of 300 or more shall be provided with a main entrance capable of serving as the main exit with an egress capacity of at least one-half of the total occupant load. The remaining exits shall be capable of providing one-half of the total required exit capacity.

Size exit doors to meet occupant load at main exit

**805.4.2 Door Swing.** In the work area and in the egress path from any work area to the exit discharge, all egress doors serving an occupant load greater than 50 shall swing in the direction of travel.

All exit doors to swing outward. This requirement must be coordinated in the design phase with SHPO and the NPS, as the existing doors from the gymnasium area swing inward. This swing will likely cause a conflict with egress from the existing stairs. The existing metal exterior doors swing outward, but this is likely not the original door configuration.

**805.4.4 Panic Hardware.** In any work area, and in the egress path from any work area to the exit discharge, in buildings or portions thereof of Group A assembly occupancies with an occupant load greater than 100, all required exit doors equipped with latching devices shall be equipped with approved panic hardware. *Panic hardware required on all exit doors.* 

**805.6 Dead-end corridors.** Dead-end corridors in any work area shall not exceed 35 feet.

35' maximum dead-end corridor distance

**805.8.1 Exit Signs.** Means of egress in all work areas shall be provided with exit signs in accordance with the requirements of the International Building Code.

Signage to be provided as required.

**805.9.1 Handrails.** Every required exit stairway that is part of the means of egress for any work area and that has three or more risers and is not provided with handrails for the full length o fithe run of the steps on at least one side. All exit stairways with a required egress width of more than 66" shall have handrails on both sides.

The existing exit from the Lower Level and the main exit from the Main Level will require new handrails. The design of the handrails shall meet code requirements and be approved by SHPO and the NPS to resolve the potential conflict of requirements.

**806.2 Stairs and escalators in existing buildings.** In alterations where an escalator or stair is added where none existed previously, an accessible route shall be provided in accordance with Sections 1104.4 and 1104.5 of the International Building Code.

All new stairs to meet current codes.

#### **CHAPTER 9 – ALTERATIONS LEVEL 3**

903.1 Existing shafts and vertical openings

See Section 803.2.1 and Section 1205.10

904.1 Automatic sprinkler systems.

Required. See Sections 804.2 and 1203.2 analysis

904.2 Fire alarm and detection systems

Required. See Sections 804.4.1 and IBC Chapter 9 analysis

**905.2 Means of egress lighting.** Means of egress lighting from the highest work area floor to the floor of exit discharge shall be provided with artificial lighting within the exit enclosure in accordance with requirements of the International Building Code.

Egress lighting required.

**908.1 Energy Conservation Minimum requirements.** Level alterations to existing buildings or structures are permitted without requiring the entire comply with the energy code requirements of the International Energy Conservation Code... The alterations shall conform to the energy requirements of the International Energy Conservation Code or International Residential Code as they relate to new construction only.

All new or altered components to meet current IECC requirements.

#### CHAPTER 10 - CHANGE IN OCCUPANCY

1007 Structural

See Structural Engineer's portion of this report

1008 Electrical

See Mechanical, Electrical and Plumbing portion of this report

1009 Mechanical

See Mechanical, Electrical and Plumbing portion of this report

1010 Plumbing

See Mechanical and Electrical portion of this report

7TH AVE GVM - HELENA MT

**1012.1.1.1 Change of occupancy without separation.** Where a portion of the existing building is changed to a new occupancy classification and that portion is not separated from the remainder of the building with fire barriers having a fire-resistance rating as required in the International Building Code for the separate occupancy, the entire building shall comply with all of the requirements of Chapter 9 applied throughout the building for the most restrictive occupancy classification in the building with the requirements of this chapter.

The building is appropriately interpreted as a non-separated A-3 occupancy for fire protection purposes. See IBC Chapter 9 analysis included in this study. \*\*\*Note, if separated occupancies are required, all proposed occupancies require a 1-br separation and these separations are omitted by IEBC Section 1205.4.

**1012.3 Interior Finish.** In areas of the building undergoing the change of occupancy classification, the interior finish of walls and ceilings shall comply with the requirements of the International Building Code for the new occupancy classification.

Interior finishes, where altered are to meet the current code.

#### T1012.4 1012.4 Means of egress Hazard Categories:

Lower Level Relative Hazard	Existing = 3,4	New = 4
Main Level Relative Hazard	Existing = 3	New = 3
Upper Level Relative Hazard	Existing = $3$	New = 3

1012.4.2 Means of egress for change of use to equal or lower hazard category. When a change of occupancy classification is made to an equal or lesser hazard category (higher number) as shown in Table 1012.4, existing elements of the means of egress shall comply with the requirements of Section 905 for the new occupancy classification. Newly constructed or configured means of egress shall comply with the requirements of Chapter 10 of the International Building Code. 1012.4.3 Egress capacity. Egress capacity shall meet or exceed the occupant load as specified in the International Building Code for the new occupancy.

#### T1012.5 Height and Areas Hazard Categories

Relative Hazard for Group A Existing = 2 New =

1012.5.2 Height and area for change to equal or lesser hazard category. When a change of occupancy classification is made to an equal or lesser hazard category as shown in Table 1012.5, the height and area of the existing building shall be deemed acceptable.

The existing building area and height are acceptable.

#### T1012.5 Exposure of Exterior Walls Hazard Categories

Relative Hazard for Group A and B Existing = 3 New = 3

**1012.6.2** Exterior wall rating for change of occupancy classification to an equal or lesser hazard category. When a lesser hazard category as shown in Table 1012.6, existing exterior walls, including openings shall be accepted.

No rated walls required per IBC

**1012.7.2 Stairways.** When a change of occupancy classification is made to a higher hazard category as shown in Table 1012.4, interior stairways shall be enclosed as required by the International Building Code.

No modifications to the existing stairway are required.

**1012.8.1** (Accessibility) Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification, any alteration shall comply with Sections 705, 806, and 906 as applicable.

New components to meet current accessibility standards

#### **CHAPTER 12 – HISTORIC BUILDINGS**

**1203.2 General.** Every historic building that does not con-form to the construction requirements specified in this code for the occupancy or use and that constitutes a distinct fire hazard as defined herein shall be provided with an approved automatic fire-extinguishing system as determined appropriate by the code official. However, an automatic fire-extinguishing system shall not be used to substitute for, or act as an alternative to, the required number of exits from any facility.

Fire sprinklers are required

**1203.3 Means of egress.** Existing door openings and corridor and stairway widths less than those specified elsewhere in this code may be approved, provided that, in the opinion of the code official, there is sufficient width and height for a person to pass through the opening or traverse the means of

egress. When approved by the code official, the front or main exit doors need not swing in the direction of the path of exit travel, provided that other approved means of egress having sufficient capacity to serve the total occupant load are provided.

This condition exists at the historic doors from the gym to the stair landing at the Main Level main entrance/exit. The historic doors are in place, in good condition, and swing inward. The coordination of these doors needs to be coordinated with the Building Official, as changing the swing to outward may make the egress from the upper floor less safe as it will obstruct the existing stairway. Any change to the historic swing will require approval from SHPO and NPS.

**1203.5 Interior Finishes.** The existing finishes of walls and ceiling shall be accepted when it is demonstrated that they are historic finishes.

Finish documentation to be included in reports and Construction Documents.

**1203.6 Stairway enclosure.** In buildings three stories or less, exit enclosure construction shall limit the spread of smoke by the use of tight-fitting doors and solid elements. Such elements are not required to have a fire-resistance rating.

Improvements are limited to sealing doors and openings. Verify with Code Official.

**1203.7 One-hour fire-resistance-rated assemblies.** Where 1-hour fire-resistance-rated construction is required by these provisions, it need not be provided, regardless of construction or occupancy, where the existing wall and ceiling finish is wood or metal lath and plaster.

1-br occupancy separations may be omitted per IEBC Section 1205.4

**1203.9 Stairway railings.** Grand stairways shall be accepted without complying with the handrail and guard requirements. Existing handrails and guards at all stairs shall be permitted to remain, provided they are not structurally dangerous.

Railing at main stairway to remain, documentation from Structural Engineer to be provided.

7TH AVE. GYM - HELENA, MT

**1203.11 Exit signs.** Where exit sign or egress path marking location would damage the historic character of the building, alternative exit signs shall identify the exits and egress path.

This provision may need to be exercised for aesthetic reasons or for Tax Credit compliance **1204.1.1 Site arrival points.** At least one main entrance shall be accessible.

Accessible entrance to be provided

**1204.1.2 Multilevel buildings and facilities.** An accessible route from an accessible entrance to public spaces on the level of the accessible entrance shall be provided.

Accessible routes to be provided from accessible parking, accessible entrance/exit, to primary functions

**1203.1.3 Entrances.** At least one main entrance shall be accessible. Exception: 1. If a main entrance cannot be made accessible, an accessible nonpublic entrance that is unlocked while building is occupied shall be provided or 2. If a main entrance cannot be made accessible, a locked accessible entrance with a notification system or remote monitoring shall be provided.

A second accessible entrance will need to be provided and it is not technically feasibly nor compliant with the Secretary's Standards to make the current main entrances accessible.

**1204.1.4 Toilet and bathing facilities.** Where toilet rooms are provided, at least one accessible family or assisted-use toilet room complying with Section 1109.2.1 of the International Building Code shall be provided.

Design will need to provide facilities to meet IBC and MT ARM

**1205.2 Building area.** The allowable floor area for historic buildings undergoing a change of occupancy shall be permitted to exceed by 20 percent the allowable areas specified in Chapter 5 of the International Building Code

This area increase is required to make the building area compliant. See IBC Chapter 5 analysis.

**1205.4 Occupancy separation.** Required occupancy separations of 1 hour may be omitted when the building is provided with an approved automatic sprinkler system throughout.

Occupancy separations are not required because building will be sprinkled.

**1205.6 Means of egress.** Existing door openings and corridor and stairway widths less than those that would be acceptable for nonhistoric buildings under these provisions shall be approved, provided that, in the opinion of the code official, there is sufficient width and height for a person to pass through the opening or traverse the exit and that the capacity of the exit system is adequate for the occupant load, or where other operation controls to limit occupancy are approved by the code official.

This exception is not required in this preliminary design. However, should non-compliant conditions be discovered in design, this exception can be exercised with approval from the code official.

**1205.7 Door Swing.** When approved by the code official, existing front doors need not swing in the direction of exit travel, provided that other approved exits having sufficient capacity to serve the total occupant load are provided.

This exception will likely be required to address the inward swinging doors from the stair landing at the main entrance into the gymnasium. Final design of Main Level exiting to be approved by Building Official, SHPO, and NPS.

**1205.10 One-hour fire-resistant assemblies.** Where 1-hour fire-resistance rated construction is required by these provisions, it need not be provided, regardless of construction or occupancy, where the existing wall and ceiling finis is wood lath and plaster.

No 1-hr assemblies required throughout this building.

**1205.12 Exit signs.** The code official may accept alternative exit sign locations where such signs would damage the historic character of the building or structure. Such signs shall identify the exits and exit path.

This provision may need to be exercised to comply with the Secretary's Standards. The final design shall be coordinated with the Building Official, SHPO, and NPS.

**1205.15** Accessibility requirements. The provisions of Section 1012.8 shall apply to facilities designated as historic structures that undergo a change of occupancy, unless technically infeasible. Where compliance with the requirements for accessible routes, ramps, entrances, or toilet rooms would threaten or destroy the historic significance of the building or facility, as determined by the authority having jurisdiction, the alternative requirements of Sections 1204.1.1 through 1204.1.4 for those elements shall be permitted.

This provision may need to be exercised to comply with the Secretary's Standards. The final design shall be coordinated with the Building Official, SHPO, and NPS.

#### 2012 International Building Code Analysis

#### AS REFERENCED/REQUIRED BY 2012 IEBC

#### T503 Allowable building heights and areas

Group A-3 Occupancy, Type V-B construction

Basic allowable height = 1 story

Basic allowable area = 6,000sf

Actual height = \*2 stories

Actual area = \*6,300sf +/
Increased allowable height = \*\*2 stories

\*\*2 stories

\*\*7,200sf

\*\*Height increase per IBC Section 504.2 required to justify existing building height. 20% area increase per IEBC Section 1205.2 required to justify building area (6,000sf x. 2 = 1,200sf = 7,200sf allowable). Additional area increases due to frontage and sprinkler system are allowable under the IBC but are not reflected in these calculations.

**504.2** Automatic sprinkler system increase (building height). Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the value specified in Table 503 for maximum building height in increased by 20 feet and the maximum number of stories in increased by one. These increases are permitted in addition to the building area increase...

Building height increase required to justify building height of 2 stories.

#### **CHAPTER 6 – TYPES OF CONSTRUCTION**

**602.5 Type V.** Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this Code.

This existing masonry building is appropriately classified as Type V-B construction T601 Fire-resistance rating requirements for building elements

## Primary Structure Obrs Exterior Bearing Walls Obrs Interior Bearing Walls Obrs Non-bearing Walls Obrs

Floor Construction Obrs
Roof Construction Obrs

## T602 Fire resistance rating requirements for exterior walls based on Fire Separation Distance

Fire Separation Distance is greater than or equal to 30' on all sides, no ratings required.

#### **CHAPTER 8 – INTERIOR FINISHES**

**T803.9** Interior wall and ceiling finish requirements by occupancy. (for new components only)

Occupancy Group	Exit Components	Corridors	Room
A3	B	B	C
B	B	B	C
S	C	C	C

#### **CHAPTER 9 – FIRE PROTECTION SYSTEMS**

**[F]903.2.1.3 Group A-3 (automatic sprinkler systems).** An automatic sprinkler system shall be provided for Group A-3 occupancies where one of the following conditions exists: ...2. The fire area has an occupant load of 300 or more.

The gymnasium space will have a maximum occupant load of over 300, fire sprinklers required.

**[F] 907.2.1 Group A (fire alarm and detection systems).** A manual fire alarm system activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more... Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.2.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler waterflow.

Manual fire alarm system not required. \*\*\* IEBC 804.4.1 allows existing/previously-approved alarm system to be used.

**[F] 907.2.1.1 System initiation in Group A occupancies with a load of 1,000 or more.** Activation of the fire alarm ina Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with Section 907.5.2.2.

Emergency voice/alarm communications system required. \*\*\* IEBC 804.4.1 allows existing/previouslyapproved alarm system to be used.

#### **CHAPTER 10 - MEANS OF EGRESS**

#### T1004.1.2 Maximum Floor Area Allowances Per Occupant

1 100 1:1:2 Maximum 1 1001 / H ca / H10	wantees I of Occupant	
Accessory/Storage/Mechanical	1/300sf (gross)	
Assembly w/o fixed seats (unconcentrated)	1/15sf (net)	
Business areas	1/100sf (gross)	
Kitchens	1/200sf (gross)	
Occupant Load for Preliminary Design	Lower Level	555
	Main Level	555
	Upper Level	555
	Total Occupant Load	555

#### 1005.3.1 Stairways (minimum width).

Total occupant load X.03" = ???

#### 1005.3.2 Other egress components (minimum width)

Total occupant load X.02" = ???

#### T1014.3 Common path of egress travel

Groups B and  $S = 100^{\circ}$  max. Group  $A = 75^{\circ}$  max.

<sup>\*</sup>Existing building height and area are allowable

#### 1015.2.1 Two exits or exit access doorways.

Using exception 2, exits must be separated by at least 1/3 of the overall diagonal dimension. At Main Level, at least 2 of the exits must be separated by this distance.

#### T1016.2 Exit Access Travel Distance

250' maximum on Main and Upper Levels, 300' maximum on Lower Level

#### T1018.2 Minimum Corridor Width

44" minimum required width

#### T1021.2(2)

More than 1 exit required on all floors

**1021.2.4** Three or more exits. Three exits, or exit access stairways or ramps providing access to exits at other stories, shall be provided from any story or occupied roof with an occupant load from 501 to and including 1,000. Four exits, or exit access stairways or ramps providing access to exits at other stories shall be provided from any story or occupied roof with an occupant load greater than 1,000.

2 exits required on Lower Level, 4 exits required from Main Level, 2 exits required on Upper Level

## 2012 International Energy ConservationCode Analysis AS REQUIRED FOR ALTERED COMPONENTS AND/OR ADDITION

#### Chapter 4 – Commercial Energy Efficiency

Table C402.2 Opaque Thermal Envelope Requirements

Attic R-49
Walls Above Grade (Mass) R-13.3 c.i.
Walls Below Grade R7.5 c.i.

Floors N/A (not included in work)
Slabs on Grade N/A (not included in work)

Opaque Doors (swinging) U-3.7 Opaque Doors (overhead) R4.75

\*\*\*Note: Envelope thermal requirements apply to all existing walls, floors and roofs undergoing significant repair. Those components not undergoing significant repair are not required to meet these standards. It is recommended that the below grade walls and roof be brought up to these standards for basic performance.

Table C402.3 Building Envelope Requirements: Fenestration

Fixed Fenestration U-0.36
Operable Fenestration U-0.43
Entrance Doors U-0.77
SHGC 0.40
Skylight U-Value U-0.50
Skylight SHGC 0.40

\*\*\*Note: Fenestration energy requirements do not apply to existing wood windows undergoing repair and/or restoration. All new or fully replaced windows or storefront must fully comply with current code

#### C402.4.7 Vestibules

Vestibule required on primary entries.

### **City of Helena Ordinance Analysis**

(((No significant conflicts or problems were encountered in the preliminary zoning analysis using current ordinances and regulations. Zoning analysis to be completed upon City of Helena's adoption of their new regulations. Design team understands these regulations to be more conducive to this type of development and zero-lot-line type downtown projects.)))

(((Continued))

### **Historic Preservation Tax Credit Compliance**

(((To be defined after design recommendations and alternative selections are completed. Design recommendations and preservation compliance to be submitted to SHPO for preliminary review)))

(((Continued))



## Appendices

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- B Environmental Checklist (CDBG "Appendix E")
- C Hazardous Materials Reports
- D Historic Documents
- Letters of Support & Community Outreach Documentation
- Meeting Minutes & Public Meeting Compliance Documentation
- G Precedent Study Source Documents
- t.b.d.
- I t.b.d.
- J t.b.d.