REQUEST FOR QUALIFICATIONS

GENERAL CONTRACTOR / CONSTRUCTION MANAGER SERVICES

ROMNEY HALL RENOVATION
MONTANA STATE UNIVERSITY
Bozeman, MT

A/E #2012-02-14; MSU PPA #16-0164

Architecture & Engineering Division
Department of Administration
PO Box 200103
Helena, MT 59620-0103
&
Planning, Design & Construction
Montana State University
Physical Plant – 6th Avenue & Grant Street
PO Box 172760
Bozeman, MT 59717-2760

NOVEMBER 2016

I. INTRODUCTION

The State of Montana (Owner), is seeking qualified General Contractor /Construction Manager (GC/CM) firms to undertake preconstruction and potentially construction services for the renovation of Romney Hall on Montana State University campus.

Owner intends to enter into a GC/CM Contract with the selected GC/CM firm that will include Preconstruction Services and identification of a GC/CM Fee and Fixed Costs for General Conditions Work, with provisions for adding Construction Services through acceptance of a Guaranteed Maximum Price (GMP) by Contract amendment. The GMP would include construction services through completion of the Project. Alternatively, Owner may, at its sole discretion, choose not to continue the GC/CM Contract beyond the completion of preconstruction activities and solicit bids from qualified contractors for the construction of the Project.

Owner will use the RFQ process to evaluate each of the Proposers' qualifications. A subsequent Request for Proposals (RFP) will be issued to all qualified Contractors who will then be required to submit detailed information regarding project-specific capabilities, experience, and costs. GC/CM selection will be determined from the Proposals submitted in response to RFP document, interviews, and discussions with former and present clients of Proposers.

When selected, the GC/CM will function as part of a team composed of the Owner, Architect, and others as determined by the Owner.

This Request for Qualifications shall not commit the Owner to enter into any agreement, to pay any expenses incurred in preparation of any response to this request, or to procure or contract for any supplies, goods or services. The Owner reserves the right to accept or reject any or all responses received as a result of this RFQ.

This Procurement is governed by the laws of the State of Montana and venue for all legal proceedings shall be the First Judicial District, City of Helena, Lewis & Clark County.

By offering to perform services under this Procurement, all Proposers agree to be bound by the laws of the State of Montana, including but not limited to applicable wage rates, payments, gross receipts taxes, building codes, equal opportunity employment practices, safety, etc.

The State of Montana makes reasonable accommodations for any known disability that may interfere with an applicant's ability to compete in the bidding and/or selection process. In order for the state to make such accommodations, applicants must make known any needed accommodation to the individual project managers or agency contacts listed in the contract documents. Persons using TDD may call the Montana Relay Service at 1-800-253-4091.

II. PROJECT BACKGROUND AND DESCRIPTION

Introduction

Romney Hall is a 53,074 GSF, well-constructed but grossly under-utilized, historic masonry building at the heart of the original campus core. In general, the building envelope is in good, serviceable condition but the interior is a prime candidate for repurposing.

- Level 1 is approximately six feet below grade/entry level;
- Level 2 is approximately ten feet above grade. In order to pass from the north entry through the building to the south entry one must navigate at least two sets of stairs;
- The building currently houses the Education Health and Human Development (EHHD), Army Reserve Officers' Training Corps (ROTC), Gallatin College programs (Levels 1 & 2) and intermural programs (held in the main gymnasium and auxiliary gymnasium on Level 3).
- The former balcony of Level 4 is not used.
- Several spaces within the building remain as originally designed for the initial uses, such as the swimming pool and locker rooms, which are not in usable condition.
- The existing heating and electrical systems are beyond their useful lives and do not meet present standards.

Montana State University (MSU) has experienced dramatically increased student enrollment in the past decade, intensifying the need for optimizing the use of its existing facilities. Romney Hall is potentially a premier building on Campus that, upon renovation, will enable MSU to satisfy the classroom, veterans, disability and tutoring services required for MSU students' success.

Part of the overall phasing to accomplish the renovation is the relocation of the EHHD and ROTC programs into other, more suitable facilities. The Owner has contracted with CTA to produce construction documents for both: the EHHD program is move into a 15,538 square foot addition to be constructed on the east side of the Margas Haesas H&PE building (i.e. between the current H&PE and the presently-under-construction Norm Asbjornson Hall); and, the ROTC is to move into newly constructed 5,520 square feet in the "faculty court" area just southeast of Facilities Services.

The Owner intends to let both projects for bid in May 2017 and award contracts on a lowest-responsible bidder basis, contingent upon receipt of funding and authorization in the 65th Legislative session. The selected GC/CM may be requested to provide pre-construction services for cost review and value-engineering. Rhe Owner reserves the opportunity to negotiate construction services and a GMP for the EHHD and/or the ROTC with the selected GC/CM Contractor if it determines it is in its best interest to do so.

In 2012, MSU committed $150,000 for a preliminary investigation of existing conditions of Romney Hall to determine its potential for repurposing and $350,000 for design of the EHHD and $150,000 for design of the ROTC relocation spaces. In September 2016, the University has secured Regents' authority (BOR Item #172-2004-R0916) in the amount of $1.7M to proceed with programming and design for the renovation effort. MSU intends to pursue construction

funding and authority in the amount of $28,000,000 in the 2017 legislative session (i.e. 65th). Construction services may be added to the GC/CM's services upon project approval by the Legislature.

The total project budget (i.e. all project-related costs) at this time is anticipated to be $30,200,000 to be allocated as follows:

- Romney Hall Renovation - $23,500,000
- EHHD Addition - $5,300,000
- ROTC Facility - $1,400,000

Project Location and Site

Romney Hall is located near the heart of the MSU campus and is bounded on the north by a quad, on the west by Gaines Hall, on the south by Grant Street; and on the east by AJM Johnson Hall and a veterans' memorial plaza.

Design Considerations

Romney Hall offers great opportunities to provide classrooms and collaborative learning environments in the highest demand and specific services directly related to the programs served by these classrooms. The proposed renovations would include the following learning spaces:

- 4 – 48 seat – preferred capacity for math classes;
- 4 – 28 seat – preferred capacity for writing classes;
- 2 – 100+ seat classroom;
- 2 – 28 seat Collaboration Labs;
- 1 – 300+ seat classroom in the round;
- 1 – 90 seat TEAL Classroom; and,
- 3 – 20 seat Collaboration Classrooms

New accessible restrooms, family care facilities, and single-use toilet rooms are to be provided on each level. Mechanical and electrical systems will be replaced, and a fire suppression system will be added to the building.

While repurposing of the facility is the main goal, Romney is significant for its architectural design excellence as well as its place within the history of Montana State University. It is one of seven Italian Renaissance Revival buildings constructed on the campus in the 1920's. Constructed in 1922 as MSU's original state-funded health and physical education building, it resides at the apex of the Romney Oval on axis with Montana Hall. Beautifully detailed with tapestry brick and terra cotta façade, large windows, copper detailing, and barrel-vaulted roof, it is an iconic building of significant historic value to the state's and campus' heritage. There are many significant components and character-defining features that are intended for preservation and protection during the renovation effort. Refer to Attachment C for additional information.

The design must adhere to the MSU campus long-range master plan, landscaping master plan, utility maps, campus design standards, State High Performance Building Standards, State Antiquities Act (MSU/SHPO consultation), and all applicable codes. Sustainability, life-cycle costs, maintainability, quality, and energy efficiency will be high priorities in the decision-making process for how this building will be designed and renovated. The building is expected to be submitted for a minimum of USGBC LEED Silver certification.

For the design, the Owner has selected:

CTA Architects Engineers
411 East Main Street; Suite 101
Bozeman, MT 59715
(406) 556-7100
Bob Franzen, bobf@ctagroup.com

The Owner is ready to hire a General Contractor / Construction Manager as the next step to informing and collaborating in the design process. The project is presently in early Schematic Design phase. The early Programming document is Attachment B to this RFQ.

The following is the intended timeline for the project:

GC/CM Selection:

Advertising dates:	November 6, 13, 20, 2016
Last Date for Questions:	November 15, 2016
Receipt of Qualifications:	2:00 p.m. on November 22, 2016
Review & Short-List by Committee:	November 29, 2016
Issue RFP:	November 30, 2016
Potential Site Walk-Through	December 7, 2016
Receive Proposals:	5:00 p.m. on December 12, 2016
Interviews:	Week of December 12, 2016
Selection:	Week of December 19, 2016

Design/Construction of Romney Hall Renovation:

Review and Completion of DD set:	End of January 2017
Completion of CD documents:	October 2017
Early Work Package:	Summer 2017
GMP Established:	December 2017
Commence Construction:	January 2018
Construction Complete:	May 2019
Commissioning & Move-In:	June through August 2019

Design/Construction of the ROTC (pre-construction and construction services not presently part of the RFQ at this time construction services not part of RFQ at this time):

Completion of CD documents:	Complete.
Bidding:	May 2017
Award:	June 2017
Mobilization:	July 2017

Construction Complete:	March 2018 (or sooner)

Design/Construction of the EHHD (pre-construction and construction services not presently part of the RFQ at this time):

Completion of CD documents:	April 2017
Bidding:	May 2017
Award:	June 2017
Mobilization:	July 2017
Construction Complete:	July 2018 (or sooner)

For Information Purposes Only: construction activities of the new Norm Asbjornson Hall will be on-going until January 2019.

III. SCOPE OF PRECONSTRUCTION SERVICES

Subsequent to the RFQ selection and short-listing, each potential firm invited to respond to the RFP shall propose a **maximum** Pre-Construction services fee. Pre-construction services will be provided on a cost reimbursement basis up to a stated maximum. The specific scope of pre-construction services will be negotiated prior to signing the final GC/CM contract, based on the proposer's input as well as the owner's requirements. In general, services are anticipated to include the following:

1. Participation in all design, coordination, and building committee meetings;
2. Review of all designs for constructability;
3. Work with the Owner and design team on phasing, scheduling, and other strategies to complete construction of this scale of project on or before the agreed upon date;
4. Coordination and gathering of input from subcontractors regarding constructability;
5. Review and cost evaluation at each phase of design taking into consideration schedule, phasing and market conditions;
6. Consult with, advise, assist, and provide recommendations to the Owner and design team on all aspects of the planning and design of the work;
7. Provide information, estimates, schemes, and participate in decisions regarding construction materials, methods, systems, phasing, sustainability and costs to assist in determinations which are aimed at providing the highest quality building, constructed using the most sustainable construction materials and practices, within the budget and schedule;
8. Actively participate in a value engineering throughout the design process;
9. Review the Programming/Planning and other applicable documents and provide input and advice regarding scope of the Project;
10. Review in-progress design and construction documents and provide input and advice on construction feasibility, alternative materials, costs and availability;
11. Review completed design and construction documents prior to subcontractor/supplier bidding/selection and suggest modifications to improve completeness and clarity and to eliminate construction change requests due to inconsistencies or omissions in the construction documents;

12. Provide input to the Owner and the design team regarding construction market bidding climate, status of key subcontract markets, and other relevant economic conditions;
13. Recommend and actively source labor and material resources necessary to complete the project construction;
14. Provide input to the Owner and the design team regarding long lead time materials and equipment, impact on the construction schedule and strategies for mitigating the impact;
15. Prepare construction cost estimates for the Project at the schematic, design development and construction document design phases and, if appropriate, at other times throughout of the work;
16. Notify the Owner and design team immediately if construction cost estimates appear to be exceeding the construction budget, and reconcile each cost estimate with the Architect's cost estimate, if required;
17. Furnish a final construction cost estimate for the Owner's review and approval;
18. Develop a preliminary construction schedule;
19. Prepare detailed and well organized bid packages with coordination from Architect and design team.
20. Manage bid package amendments, coordinate and communicate to bidding community any revisions made to packages.
21. Advertise, manage and obtain bids per trade for the Owner's review, unless otherwise approved by Owner in order to meet resourcing requirements, per GC/CM Contract. Self-performed work must be bid by the CM similar to subcontractors unless otherwise approved;
22. Lead and manage bid package opening and tally results for review by the design team and Owner.
23. If necessary and upon execution of any Early Work Amendment prior to a GMP agreement, undertake early material procurement, site preparation, abatement/remediation, demolition, and/or advance construction work.

IV. SCOPE OF CONSTRUCTION SERVICES

The GMP may be requested **DURING** the Construction Documents phase rather than after GC/CM buy-out is completed. No construction activities shall be allowed to commence until additional funding and authorization is received from the 65th Legislative Session. The established GMP will be the maximum amount paid for the construction, unless scope changes are requested and approved by the Owner. Acceptance of the GMP by contract will constitute completion of preconstruction services and that GMP Agreement/Amendment will initiate the construction period services for the Project. At the time of execution of the GMP, the GC/CM will be required to submit a 100% performance and 100% payment bond for the amount of the GMP. The Owner retains the option to cancel the construction phase services, or to start a new selection process for the construction of the Project, or terminate the contract and negotiate a replacement contract with the next highest rated Proposer from this solicitation, or to conclude the GC/CM's services at pre-construction and issue the Project on a lowest, responsible bidder method.

The State of Montana Wage Rates incorporated in this RFQ are provided for informational purposes only. The selected GC/CM will be required to comply (as a minimum allowable rate

schedule) with those Rates adopted and effective at the time of signing the GMP Agreement/Amendment. All reporting, documentation, etc. shall remain as per the State requirements. This project is subject to all State requirements as outlined in the Montana Code Anotated (MCA) and Montana University System Board of Regents Policies.

At this time, the Owner is excluding of the EHHD and ROTC projects from the GC/CM's services and is intending to award these two (2) projects on a lowest, responsible bidder. However, the Owner retains the options to add all or any portion of assistance with occupant moving, provision of temporary space, pre-construction services, and/or construction phase services to the GC/CM contract and scope for either/both of these two (2) projects if it determines it is in its best interest to do so.

V. SELECTION PROCEDURE / STATEMENT OF QUALIFICATIONS REQUIREMENTS

This RFQ is the first of a multi-part selection process. In order to qualify for further consideration, Proposers must comply with the mandatory requirements provided below. Statements of Qualifications that do not contain the required documentation will be deemed nonresponsive to this RFQ requirement and will be rejected on that basis. The Request for Proposals (RFP) will be issued to all qualified Contractors who will then be required to submit detailed information regarding project-specific capabilities, experience, and costs.

The Owner's selection committee will consist of members of the Building Committee and CTA Architects Engineers. The selection committee will evaluate each of the firms based on the overall merit of the written qualifications in accordance with the criteria listed below.

Non-prerequisite criteria will be rated on a scale of 0 through 5 (5 being highest rating) by the selection committee and weighted in accordance with the importance to the Owner of each item. Ratings will be determined by consensus scoing of the selection team as recommended in "Best Practices for Use of Best Value Selections," a joint publication of the National Association of State Facilities Administrators (NASFA) and the Associated General Contractors of America (AGC).

Firms must receive a minimum of a "3" rating in 5. and 6. below to be considered qualified.

Category	Rating:	Weight:	Total Possible Score:
1. Signature of Officer or Principal	----	----	Prerequisite
2. Bonding Capacity	----	----	Prerequisite
3. Safety	----	----	Prerequisite
4. MT Construction Contractor Registration	----	----	Prerequisite
5. GC/CM Firm Information	0-5	10	50
6. Specific Project Experience Information	0-5	10	50
7. Business Entities Other Than Corporations	----	----	Per 1 through 6 above
		TOTAL:	100

CAUTION: Firms shall NOT propose either verbally or in writing any form of donations, contributions, gifts, assistance, or offsets to the project or the University or that could have the appearance of such. Doing so may result in disqualification.

NOTE: If submitting as an entity other than an incorporated firm (e.g. partnership or joint-venture) or other arrangement (e.g. a contractual teaming relationship), provide ALL the below information for the individual members of the entity or arrangement AND for the entity or arrangement.

Proposers must meet certain minimum Qualification Conditions in order to be eligible to submit a Proposal. The Owner has identified the following Qualification Conditions:

1. Statement of Qualifications must be signed by an officer or principal of your firm. **(PREREQUISITE)**

2. Bonding Capacity **(PREREQUISITE)**
   a) It is required that proposing firm have the bonding capacity for this project. Proposer must have a single-project bonding capacity of $15 million at the time of the RFP. Provide single-project and aggregate bonding program amount. Please note that bonding capacity is a requirement and if not met, the proposer will not be selected to move forward in the process.
   b) In addition to bonding capacity of $15 million please provide:
      - Bonding company and agent, with phone and email contact information;
      - Years of relationship;
      - If less than 5 years, or not your exclusive source, name all others used in the last 5 years; and,
      - If less than 5 years, or not your exclusive source, provide additional explanation regarding any transitions or changes.

3. Safety **(PREREQUISITE)**
   a) Provide incidence rate, experience modification rate, AND loss ratio. An incidence rate greater than the latest average for non-residential building construction for Montana as established by the federal Bureau of Labor Statistics (BLS) for the prior year or an experience modification rating (EMR) greater than 1.0 or a loss ratio of more than 100% may result in immediate disqualification on this item.
   b) Provide your firm's number of employees for BLS's most recent reporting period and the firm's applicable NAICS code.
   c) Proposer may submit an explanation for incident rate, EMR, and/or loss ratio greater than those listed here for further consideration by the Owner. The Owner reserves the sole right to waive the pass/fail requirement if, in the Owner's sole judgment, sufficient justification exists for any explanation provided. The Owner also reserves the right to request additional information and/or clarification on this item but is not obligated to do so prior to making its determination on whether or not to waive the requirement.

4. Include evidence of valid Montana Contractor Registration. **(PREREQUISITE)**

5. General Contractor / Construction Manager Firm Information:
   a) Proposer must demonstrate successful experience and capacity to act as a construction manager / general contractor on renovation projects of similar site, size, type and complexity.
   b) Proposer must list experience with the GC/CM process and associated duties including Pre-Construction services, Project estimates, Project schedules, Bid Packages and effective VE practices.
   c) Proposer must list other projects, both private and public, that will be concurrent with the schedule stated in this RFQ for this project.
   d) Along with current backlog in dollars, provide workload in terms of total contract values or annual business volume for the last 3 years. Potential future workload coincident to this project's schedule may be requested in the RFP phase.

6. Specific Project Experience Information:
   a) Proposer should provide evidence of successful experience and capacity to act as a GC/CM on:
      - Historic structures with significant components and character-defining features. It is anticipated the RFP criteria will necessitate the GC/CM designate its assigned project manager and superintendent to have specific historic renovation and/or restoration project experience of at least five years on the National Historic Register (or Register-eligible) projects of a similar nature and size.
      - Multifaceted renovation projects greater than or equal to $15 million construction value.
      - University or College projects with limited site boundary conditions.
      - Experience with early work packages that may include abatement/remediation and demolition prior to execution of a GMP amendment.
      - Similar projects requiring strategies to successfully complete construction within the anticipated timeline.
      - LEED, Green Globes, or other 3rd-party certified building projects and/or projects utilizing sustainable systems/strategies in construction. Must be at least a LEED Silver, Two Green Globes level, or equivalent. Proposer should include a list of all such certified projects giving level of certification achieved, total contract dollar value, total gross square footage, and type of facility.
   b) Firm Background: Describe your firm's history. Include information identifying the firm's stability in the marketplace.
   c) Information identifying the firm's strengths in relation to experience requirements stated above for renovation projects, limited site staging/access, and careful demolition techniques that respect and protect the historic nature of buildings.
   d) In the last ten years, have you (if you answer "yes", provide full explanation):
      - Had an Owner claim against Performance Bond?
      - Been declared in default and/or terminated on a project?
      - Assessed liquidated damages for delay in delivery of project?
      - Taken legal action, filed liens, or dispute resolution proceedings of any kind against an Owner for anything other than non-payment for accepted work?

7. Business Entities Other Than Corporations
   a) Partnerships/Joint-Ventures proposing for the project must individually comply with Article V above and with the following additional requirements to be considered. The Entity shall:
      - Provide a copy of the Partnership or Joint-Venture Agreement signed and notarized by officers or principals of each of the partners or venturers; and,
      - File the business entity name with the Secretary of State's office in accordance with Title 35, MCA, as soon as practicable upon formation (and prior to responding to any Request For Proposals).
   b) The Agreement must contain, at minimum, the following information about the Entity:
      - Purpose of formation and term of the Entity;
      - Management and financing structure;
      - Proportional interest, obligations, and liabilities of the parties forming the Entity;
      - Majority/Managing partner retains all long-term liability and obligations for the Entity and the Project after expiration of the term of the Entity; and,
      - Surety bonds and insurance arrangement.
   c) Article V, Statement of Qualifications requirements:
      - Paragraph 1, Signature – must be signed by the officers or principals of the partners or venturers, or the person designated in the Agreement as the Manager or Director with authorization to sign;
      - Paragraph 2, Bonding Capacity – comply with a) and b) for the Entity. Additionally, provide a letter from the surety indicating the surety's prior bonding history for the Entity;
      - Paragraph 3, Safety – comply with a) through c) for each of the partners or venturers;
      - Paragraph 4, Montana Contractors Registration – per 39-9-205 MCA, the Entity is considered registered if one of the general partners or venturers is registered;
      - Paragraph 5, GC/CM Firm Information – in addition to providing the information for each of the partners or venturers, comply with a) through d) for the Entity; and,
      - Paragraph 6, Specific Project Experience Information - in addition to providing the information for each of the partners or venturers, comply with a) through d) for the Entity.
   d) The Owner reserves the right to evaluate and make a determination regarding short-listing for the RFP phase based solely upon the Entity's qualifications, separate consideration of the individual partners'/venturers' qualifications, and/or the combined qualifications of the Entity and the partners/venturers, whichever it determines is in the best interest of the State and Montana State University.

VI. SUBMITTAL OF INFORMATION

Two (2) paper copies and one electronic PDF of the written response to this RFQ must be **received** at:

Architecture & Engineering Division

(Room 33, Metcalf Building, Capitol Complex)
Department of Administration
PO Box 200103
Helena, MT 59620-0103

By November 22, 2016; 2:00 p.m. MST.

Electronic PDF copy may be emailed prior to the closing time to DOAAEDivision@mt.gov, rkatherman@mt.gov, or sent ftp to rkatherman@mt.gov by use of the State's e-Pass file transfer service, https://app.mt.gov/epass/Authn/selectIDP.html (a free account will need to be created for use of e-Pass)

e-Pass MUST be used for files larger than 10MB

ALL QUESTIONS REGARDING THIS RFQ MUST BE SUBMITTED **IN WRITING (email is acceptable)** BY NOVEMBER 15, 2016, TO:

Russ Katherman, Project Manager
Architecture & Engineering Division
(Room 33, Metcalf Building, Capitol Complex)
Department of Administration
PO Box 200103
Helena, MT 59620-0103
(406) 444-3332; fax (406) 444-3399
rkatherman@mt.gov or DOAAEDivision@mt.gov

VII. INSTRUCTIONS TO PROPOSERS

Statements of Qualification must:

1. Follow the format outlined in the Selection Procedure above.
2. Be ***SIGNED*** by an officer or principal of your firm.
3. Be contained in a document not to exceed 15 sheets total (printed single or double-sided pages) including whatever pictures, charts, graphs, tables, and text the firm deems appropriate to be part of the review of the firm's qualifications. A transmittal letter, section dividers, and cover/backing sheets, are exempted from the page limit. Page size limit is 8-l/2 x 11 inches, with basic text information no smaller than 10-point font.

CLAIMS FOR TRADE SECRET AND/OR CONFIDENTIALITY:
Public agencies in Montana are required by Montana law to permit the public to examine documents that are kept or maintained by public agencies, other than those legitimately meeting the provisions of Montana's Uniform Trade Secrets Act, Mont. Code Ann. §§ 30-14-401, et seq., and that the State is required to review claims of trade secret confidentiality.

Information separated out under this process will be available for review only by the procurement officer, the evaluator/evaluation committee members, and limited other designees. Offerors shall pay all of its legal costs and related fees and expenses associated with

defending a claim for confidentiality should another party submit a "right to know" (open records) request.

For a claim of confidentiality to be considered by a public agency, all trade secret confidentiality information must be segregated and be accompanied by the Trade Secret Confidentiality Affidavit available http://vendorresources.mt.gov/VendorForms. This affidavit must be fully completed and submitted to the State along with the RFQ/RFP, and the following conditions must be met:

a) Confidential information (including any provided in electronic media) to be withheld under a claim of confidentiality must be clearly marked and separated from the rest of the qualifications or proposal;
b) the qualification or proposal may not contain trade secret matter or confidential information related to the cost or price; and,
c) a full explanation of the validity of this trade secret claim attached to the affidavit.

VIII. ATTACHMENTS

The following exhibits are incorporated in this RFQ:

Attachment A: State of Montana Wage Rates, Current Rates for Building Construction 2016
Attachment B: Romney Hall – Programming Study, October 7, 2016
Attachment C: Romney Gym Adaptive Reuse Study and Appendix, 50% Programming Draft, August 2013

END OF RFQ

MONTANA
PREVAILING WAGE RATES FOR BUILDING CONSTRUCTION SERVICES 2016

Effective: January 2, 2016

Steve Bullock, Governor
State of Montana

Pam Bucy, Commissioner
Department of Labor and Industry

To obtain copies of prevailing wage rate schedules, or for information relating to public works projects and payment of prevailing wage rates, visit ERD at **www.mtwagehourbopa.com** or contact:

Employment Relations Division
Montana Department of Labor and Industry
P. O. Box 201503
Helena, MT 59620-1503
Phone 406-444-5600
TDD 406-444-5549

The Labor Standards Bureau welcomes questions, comments and suggestions from the public. In addition, we'll do our best to provide information in an accessible format, upon request, in compliance with the Americans with Disabilities Act.

MONTANA PREVAILING WAGE REQUIREMENTS

The Commissioner of the Department of Labor and Industry, in accordance with Sections 18-2-401 and 18-2-402 of the Montana Code Annotated (MCA), has determined the standard prevailing rate of wages for the occupations listed in this publication.

The wages specified herein control the prevailing rate of wages for the purposes of Section 18-2-401, et seq., MCA. It is required that each employer pay (as a minimum) the rate of wages, including fringe benefits, travel allowance, zone pay and per diem applicable to the district in which the work is being performed as provided in the attached wage determinations.

All Montana Prevailing Wage Rates are available on the internet at **www.mtwagehourbopa.com** or by contacting the Labor Standards Bureau at (406) 444-5600 or TDD (406) 444-5549.

In addition, this publication provides general information concerning compliance with Montana's Prevailing Wage Law and the payment of prevailing wages. For detailed compliance information relating to public works contracts and payment of prevailing wage rates, please consult the regulations on the internet at **www.mtwagehourbopa.com** or contact the Labor Standards Bureau at (406) 444-5600 or TDD (406) 444-5549.

PAM BUCY
Commissioner
Department of Labor and Industry
State of Montana

TABLE OF CONTENTS

MONTANA PREVAILING WAGE REQUIREMENTS:

WAGE RATES:

A. Date of Publication January 2, 2016

B. Definition of Building Construction
For the purposes of Prevailing Wage, the Commissioner of Labor and Industry has determined that building construction occupations are defined to be those performed by a person engaged in a recognized trade or craft, or any skilled, semi-skilled, or unskilled manual labor related to the construction, alteration, or repair of a public building or facility, and does not include engineering, superintendence, management, office or clerical work.

The Administrative Rules of Montana (ARM), 24.17.501(2) – 2(a), states *"Building construction projects generally are the constructions of sheltered enclosures with walk-in access for housing persons, machinery, equipment, or supplies. It includes all construction of such structures, incidental installation of utilities and equipment, both above and below grade level, as well as incidental grading, utilities and paving.*

Examples of building construction include, but are not limited to, alterations and additions to buildings, apartment buildings (5 stories and above), arenas (closed), auditoriums, automobile parking garages, banks and financial buildings, barracks, churches, city halls, civic centers, commercial buildings, court houses, detention facilities, dormitories, farm buildings, fire stations, hospitals, hotels, industrial buildings, institutional buildings, libraries, mausoleums, motels, museums, nursing and convalescent facilities, office buildings, out-patient clinics, passenger and freight terminal buildings, police stations, post offices, power plants, prefabricated buildings, remodeling buildings, renovating buildings, repairing buildings, restaurants, schools, service stations, shopping centers, stores, subway stations, theaters, warehouses, water and sewage treatment plants (buildings only), etc."

C. Definition of Public Works Contract
Section 18-2-401(11)(a), MCA defines "public works contract" as *"…a contract for construction services let by the state, county, municipality, school district, or political subdivision or for nonconstruction services let by the state, county, municipality, or political subdivision in which the total cost of the contract is in excess of $25,000…"*.

D. Prevailing Wage Schedule
This publication covers only Building Construction occupations and rates. These rates will remain in effect until superseded by a more current publication. Current prevailing wage rate schedules for Heavy Construction, Highway Construction, and Nonconstruction Services occupations can be found on the internet at **www.mtwagehourbopa.com** or by contacting the Labor Standards Bureau at (406) 444-5600 or TDD (406) 444-5549.

E. Rates to Use for Projects
ARM, 24.17.127(1)(c), states *"The wage rates applicable to a particular public works project are those in effect at the time the bid specifications are advertised."*

F. Wage Rate Adjustments for Multiyear Contracts
Section 18-2-417, MCA states:

"(1) Any public works contract that by the terms of the original contract calls for more than 30 months to fully perform must include a provision to adjust, as provided in subsection (2), the standard prevailing rate of wages to be paid to the workers performing the contract.

(2) The standard prevailing rate of wages paid to workers under a contract subject to this section must be adjusted 12 months after the date of the award of the public works contract. The amount of the adjustment must be a 3% increase. The adjustment must be made and applied every 12 months for the term of the contract.

(3) Any increase in the standard rate of prevailing wages for workers under this section is the sole responsibility of the contractor and any subcontractors and not the contracting agency."

G. Fringe Benefits
Section 18-2-412, MCA states:

"(1) To fulfill the obligation...a contractor or subcontractor may:

(a) pay the amount of fringe benefits and the basic hourly rate of pay that is part of the standard prevailing rate of wages directly to the worker or employee in cash;

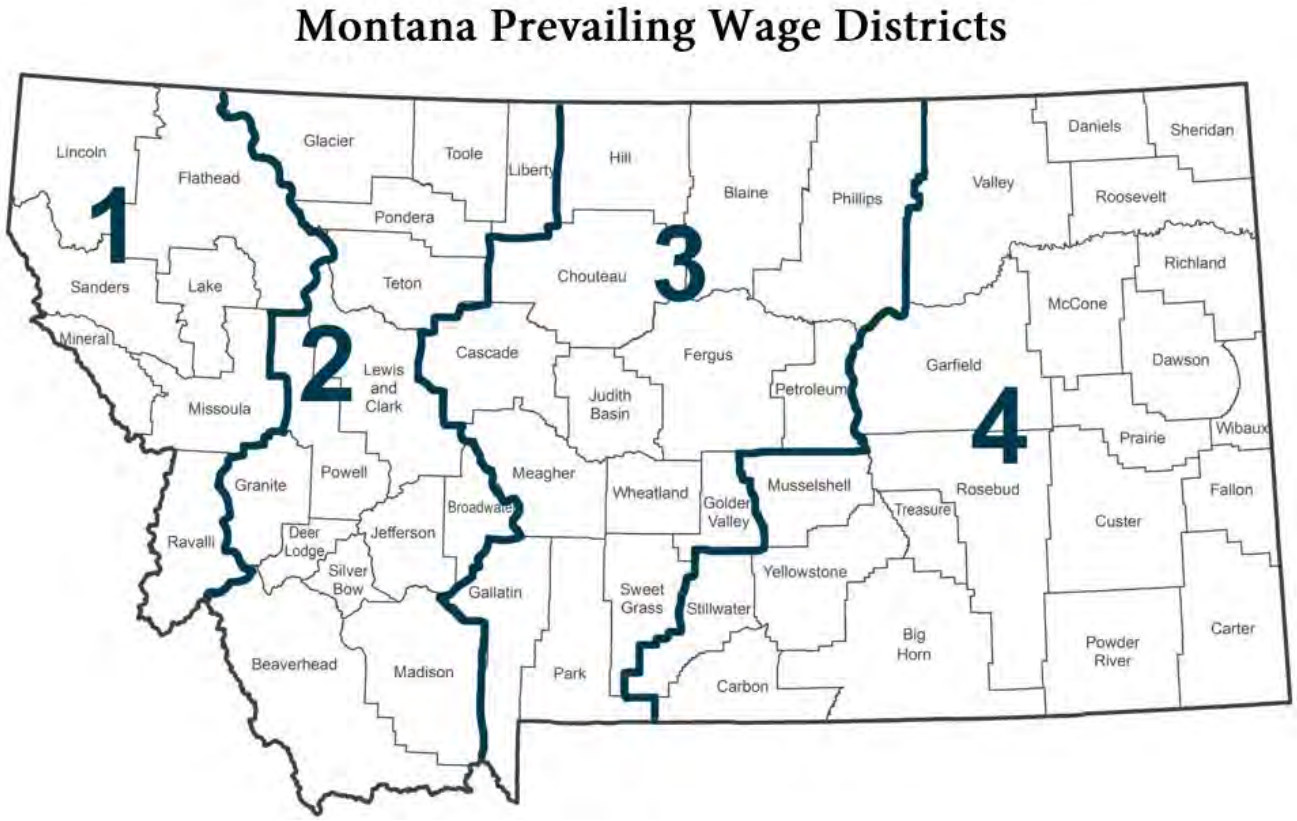
(b) make an irrevocable contribution to a trustee or a third person pursuant to a fringe benefit fund, plan, or program that meets the requirements of the Employee Retirement Income Security Act of 1974 or that is a bona fide program approved by the U. S. department of labor; or

(c) make payments using any combination of methods set forth in subsections (1)(a) and (1)(b) so that the aggregate of payments and contributions is not less than the standard prevailing rate of wages, including fringe benefits and travel allowances, applicable to the district for the particular type of work being performed.

(2) The fringe benefit fund, plan, or program described in subsection (1)(b) must provide benefits to workers or employees for health care, pensions on retirement or death, life insurance, disability and sickness insurance, or bona fide programs that meet the requirements of the Employee Retirement Income Security Act of 1974 or that are approved by the U. S. department of labor."

Fringe benefits are paid for all hours worked (straight time and overtime hours). However, fringe benefits are not to be considered a part of the hourly rate of pay for calculating overtime, unless there is a collectively bargained agreement in effect that specifies otherwise.

H. Prevailing Wage Districts
Montana counties are aggregated into 4 districts for the purpose of prevailing wage. The prevailing wage districts are composed of the following counties:



I. Dispatch City
ARM, 24.17.103(11), defines dispatch city as *"...the courthouse in the city from the following list which is closest to the center of the job: Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula."* A dispatch city shall be considered the point of origin only for jobs within the counties identified in that district (as shown below):

> **District 1 – Kalispell and Missoula:** includes Flathead, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders;
> **District 2 – Butte and Helena:** includes Beaverhead, Broadwater, Deer Lodge, Glacier, Granite, Jefferson, Lewis and Clark, Liberty, Madison, Pondera, Powell, Silver Bow, Teton, and Toole;
> **District 3 – Bozeman and Great Falls:** includes Blaine, Cascade, Chouteau, Fergus, Gallatin, Golden Valley, Hill, Judith Basin, Meagher, Park, Petroleum, Phillips, Sweet Grass, and Wheatland;
> **District 4 – Billings:** includes Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Treasure, Valley, Wibaux, and Yellowstone.

J. Zone Pay
Zone pay is not travel pay. ARM, 24.17.103(24), defines zone pay as *"...an amount added to the base pay; the combined sum then becomes the new base wage rate to be paid for all hours worked on the project. Zone pay must be determined by measuring the road miles one way over the shortest practical maintained route from the dispatch city to the center of the job."* See section I above for a list of dispatch cities.

K. Computing Travel Benefits
ARM, 24.17.103(22), states "*'Travel pay,' also referred to as 'travel allowance,' is and must be paid for travel both to and from the job site, except those with special provisions listed under the classification. The rate is determined by measuring the road miles one direction over the shortest practical maintained route from the dispatch city or the employee's home, whichever is closer, to the center of the job."* See section I above for a list of dispatch cities.

L. Per Diem
ARM, 24.17.103(18), states *"'Per diem' typically covers costs associated with board and lodging expenses. Per diem is paid when an employee is required to work at a location outside the daily commuting distance and is required to stay at that location overnight or longer."*

M. Apprentices
Wage rates for apprentices registered in approved federal or state apprenticeship programs are contained in those programs. Additionally, Section 18-2-416(2), MCA states *"...The full amount of any applicable fringe benefits must be paid to the apprentice while the apprentice is working on the public works contract."* Apprentices not registered in approved federal or state apprenticeship programs will be paid the appropriate journey level prevailing wage rate when working on a public works contract.

N. Posting Notice of Prevailing Wages
Section 18-2-406, MCA provides that contractors, subcontractors and employers who are *"...performing work or providing construction services under public works contracts, as provided in this part, shall post in a prominent and accessible site on the project or staging area, not later than the first day of work and continuing for the entire duration of the project, a legible statement of all wages and fringe benefits to be paid to the employees."*

O. Employment Preference
Sections 18-2-403 and 18-2-409, MCA requires contractors to give preference to the employment of bona fide Montana residents in the performance of work on public works contracts.

P. Building Construction Occupations Website
You can find definitions for these occupations on the following Bureau of Labor Statistics website:
http://www.bls.gov/oes/current/oes_stru.htm

Q. Welder Rates
Welders receive the rate prescribed for the craft performing an operation to which welding is incidental.

R. Foreman Rates
Rates are no longer set for foremen. However, if a foreman performs journey level work, the foreman must be paid at least the journey level rate.

WAGE RATES

BOILERMAKERS

	Wage	Benefit
District 1	$30.00	$30.30
District 2	$30.00	$30.30
District 3	$30.00	$30.30
District 4	$30.00	$30.30

Duties Include:
Construct, assemble, maintain, and repair stationary steam boilers and boiler house auxiliaries.

Travel:
All Districts
0-120 mi. free zone
>120 mi. federal mileage rate/mi. in effect when travel occurs.

Special Provision:
Travel is paid only at the beginning and end of the job.

Per Diem:
All Districts
0-70 mi. free zone
>70-120 mi. $55.00/day
>120 mi. $70.00/day

BRICK, BLOCK, AND STONE MASONS

	Wage	Benefit
District 1	$26.41	$13.19
District 2	$26.41	$13.19
District 3	$26.05	$13.19
District 4	$26.05	$13.19

Travel:
All Districts
0-45 mi. free zone
>45-60 mi. $25.00/day
>60-90 mi. $55.00/day
>90 mi. $65.00/day

CARPENTERS

	Wage	Benefit
District 1	$22.00	$11.57
District 2	$22.00	$11.86
District 3	$22.00	$11.57
District 4	$24.59	$11.57

Duties Include:
Install roll and batt insulation, and hardwood floors.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $4.00/hr.
>60 mi. base pay + $6.00/hr.

CEMENT MASONS AND CONCRETE FINISHERS

	Wage	Benefit
District 1	$21.20	$10.68
District 2	$21.43	$ 9.41
District 3	$23.63	$ 7.19
District 4	$21.44	$ 7.14

Duties Include:
Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, or curbs. Align forms for sidewalks, curbs, or gutters.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $2.95/hr.
>60 mi. base pay + $4.75/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 1

	Wage	Benefit
District 1	$23.47	$11.05
District 2	$23.47	$11.05
District 3	$23.47	$11.05
District 4	$23.47	$11.05

This group includes but is not limited to:
Air Compressor; Auto Fine Grader; Belt Finishing; Boring Machine (Small); Cement Silo; Crane, A-Frame Truck Crane; Crusher Conveyor; DW-10, 15, and 20 Tractor Roller; Farm Tractor; Forklift; Form Grader; Front-End Loader, under 1 cu. yd; Oiler, Heavy Duty Drills; Herman Nelson Heater; Mucking Machine; Oiler, All Except Cranes/Shovels; Pumpman.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 2

	Wage	Benefit
District 1	$23.94	$11.05
District 2	$23.94	$11.05
District 3	$23.94	$11.05
District 4	$23.94	$11.05

This group includes but is not limited to:
Air Doctor; Backhoe\Excavator\Shovel, up to and incl. 3 cu. yds; Bit Grinder; Bitunimous Paving Travel Plant; Boring Machine, Large; Broom, Self-Propelled; Concrete Travel Batcher; Concrete Float & Spreader; Concrete Bucket Dispatcher; Concrete Finish Machine; Concrete Conveyor; Distributor; Dozer, Rubber-Tired, Push, & Side Boom; Elevating Grader\Gradall; Field Equipment Serviceman; Front-End Loader, 1 cu. yd up to and incl. 5 cu. yds; Grade Setter; Heavy Duty Drills, All Types; Hoist\Tugger, All; Hydralift Forklifts & Similar; Industrial Locomotive; Motor Patrol (except finish); Mountain Skidder; Oiler, Cranes\Shovels; Pavement Breaker, EMSCO; Power Saw, Self-Propelled; Pugmill; Pumpcrete\Grout Machine; Punch Truck; Roller, other than Asphalt; Roller, Sheepsfoot (Self-Propelled); Roller, 25 tons and over; Ross Carrier; Rotomill, under 6 ft; Trenching Machine; Washing /Screening Plant.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 3

	Wage	Benefit
District 1	$23.35	$11.05
District 2	$24.34	$11.05
District 3	$23.78	$ 9.41
District 4	$24.34	$11.05

This group includes but is not limited to:
Asphalt Paving Machine; Asphalt Screed; Backhoe\Excavator\Shovel, over 3 cu. yds; Cableway Highline; Concrete Batch Plant; Concrete Curing Machine; Concrete Pump; Cranes, Creter; Cranes, Electric Overhead; Cranes, 24 tons and under; Curb Machine\Slip Form Paver; Finish Dozer; Front-End Loader, over 5 cu. yds; Mechanic\Welder; Pioneer Dozer; Roller Asphalt (Breakdown & Finish); Rotomill, over 6 ft; Scraper, Single, Twin, or Pulling Belly-Dump; YO-YO Cat.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 4

	Wage	Benefit
District 1	$25.00	$11.05
District 2	$25.00	$11.05
District 3	$25.00	$11.05
District 4	$25.00	$11.05

This group includes but is not limited to:
Asphalt\Hot Plant Operator; Cranes, 25 tons up to and incl. 44 tons; Crusher Operator; Finish Motor Patrol; Finish Scraper.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 5

	Wage	Benefit
District 1	$25.50	$11.05
District 2	$25.50	$11.05
District 3	$25.50	$11.05
District 4	$25.50	$11.05

This group includes but is not limited to:
Cranes, 45 tons up to and incl. 74 tons.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 6

	Wage	Benefit
District 1	$26.60	$11.05
District 2	$26.60	$11.05
District 3	$26.60	$11.05
District 4	$26.60	$11.05

This group includes but is not limited to:
Cranes, 75 tons up to and incl. 149 tons; Cranes, Whirley (All).

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION EQUIPMENT OPERATORS GROUP 7

	Wage	Benefit
District 1	$27.10	$11.05
District 2	$27.10	$11.05
District 3	$27.10	$11.05
District 4	$27.10	$11.05

This group includes but is not limited to:
Cranes, 150 tons up to and incl. 250 tons; Cranes, over 250 tons—add $1.00 for every 100 tons over 250 tons; Crane, Tower (All); Crane Stiff-Leg or Derrick; Helicopter Hoist.

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $3.50/hr.
>60 mi. base pay + $5.50/hr.

CONSTRUCTION LABORERS GROUP 1 / FLAG PERSON FOR TRAFFIC CONTROL

	Wage	Benefit
District 1	$17.35	$8.04
District 2	$18.00	$8.70
District 3	$18.00	$7.24
District 4	$18.00	$7.24

Zone Pay:
District 1
0-30 mi. free zone
>30-60 mi. base pay + $1.50/hr.
>60 mi. base pay + $3.90/hr.

Districts 2, 3 & 4
0-15 mi. free zone
>15-30 mi. base pay + $0.65/hr.
>30-50 mi. base pay + $0.85/hr.
>50 mi. base pay + $1.25/hr.

CONSTRUCTION LABORERS GROUP 2

	Wage	Benefit
District 1	$16.27	$6.18
District 2	$17.47	$7.68
District 3	$16.28	$6.25
District 4	$18.00	$6.61

This group includes but is not limited to:
General Labor; Asbestos Removal; Burning Bar; Bucket Man; Carpenter Tender; Caisson Worker; Cement Mason Tender; Cement Handler (dry); Chuck Tender; Choker Setter; Concrete Worker; Curb Machine-lay Down; Crusher and Batch Worker; Heater Tender; Fence Erector; Landscape Laborer; Landscaper; Lawn Sprinkler Installer; Pipe Wrapper; Pot Tender; Powderman Tender; Rail and Truck Loaders and Unloaders; Riprapper; Sign Erection; Guardrail and Jersey Rail; Spike Driver; Stake Jumper; Signalman; Tail Hoseman; Tool Checker and Houseman and Traffic Control Worker.

Zone Pay:
District 1
0-30 mi. free zone
>30-60 mi. base pay + $1.50/hr.
>60 mi. base pay + $3.90/hr.

District 2
0-15 mi. free zone
>15-30 mi. base pay + $1.55/hr.
>30-50 mi. base pay + $3.10/hr.
>50 mi. base pay + $4.65/hr.

Districts 3 & 4
0-15 mi. free zone
>15-30 mi. base pay + $0.65/hr.
>30-50 mi. base pay + $0.85/hr.
>50 mi. base pay + $1.25/hr.

CONSTRUCTION LABORERS GROUP 3

	Wage	Benefit
District 1	$19.50	$8.04
District 2	$19.50	$8.70
District 3	$19.00	$7.24
District 4	$19.00	$7.24

This group includes but is not limited to:
Concrete Vibrator; Dumpman (Grademan); Equipment Handler; Geotextile and Liners; High-Pressure Nozzleman; Jackhammer (Pavement Breaker) Non-Riding Rollers; Pipelayer; Posthole Digger (Power); Power Driven Wheelbarrow; Rigger; Sandblaster; Sod Cutter-Power and Tamper.

Zone Pay:
Districts 1 & 2
0-30 mi. free zone
>30-60 mi. base pay + $1.50/hr.
>60 mi. base pay + $3.90/hr.

Districts 3 & 4
0-15 mi. free zone
>15-30 mi. base pay + $0.65/hr.
>30-50 mi. base pay + $0.85/hr.
>50 mi. base pay + $1.25/hr.

CONSTRUCTION LABORERS GROUP 4

	Wage	Benefit
District 1	$17.14	$6.80
District 2	$23.49	$8.70
District 3	$22.53	$7.64
District 4	$21.02	$8.01

This group includes but is not limited to:
Hod Carrier***; Water Well Laborer; Blaster; Wagon Driller; Asphalt Raker; Cutting Torch; Grade Setter; High-Scaler; Power Saws (Faller & Concrete) Powderman; Rock & Core Drill; Track or Truck Mounted Wagon Drill and Welder incl. Air Arc.

***Hod Carriers will receive the same amount of travel and/or subsistence pay as bricklayers when requested to travel.

Zone Pay:
District 1
0-30 mi. free zone
>30-60 mi. base pay + $1.50/hr.
>60 mi. base pay + $3.90/hr.

District 2
0-15 mi. free zone
>15-30 mi. base pay + $1.55/hr.
>30-50 mi. base pay + $3.10/hr.
>50 mi. base pay + $4.65/hr.

Districts 3 & 4
0-15 mi. free zone
>15-30 mi. base pay + $0.65/hr.
>30-50 mi. base pay + $0.85/hr.
>50 mi. base pay + $1.25/hr.

DRYWALL APPLICATORS

	Wage	Benefit
District 1	$22.00	$11.57
District 2	$22.00	$11.86
District 3	$22.00	$11.57
District 4	$22.00	$11.57

Duties Include:
Drywall and ceiling tile installation.

Zone Pay:
All Districts
0-30 mi. free zone
>30-50 mi. base pay + $4.00/hr.
>50 mi. base pay + $6.00/hr.

ELECTRICIANS: INCLUDING BUILDING AUTOMATION CONTROL

	Wage	Benefit
District 1	$28.17	$11.80
District 2	$29.52	$12.76
District 3	$28.54	$11.61
District 4	$31.39	$12.72

Duties Include:
Electrical wiring; equipment and fixtures; street lights; electrical control systems. Installation and/or adjusting of building automation controls also during testing and balancing, commissioning and retro-commissioning.

Travel:
District 1
No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-10 mi. free zone
>10-45 mi. $0.585/mi. in excess of the free zone.
>45 mi. $75.00/day

District 2
No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-08 mi. free zone
>08-50 mi. federal mileage rate/mi. in excess of the free zone.
>50 mi. $64.00/day

District 3
No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-08 mi. free zone
>08-50 mi. federal mileage rate/mi. in excess of the free zone.
>50 mi. $64.00/day

District 4
No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

0-18 mi. free zone
>18-60 mi. federal mileage rate/mi.
>60 mi. $75.00/day

ELEVATOR CONSTRUCTORS

	Wage	Benefit
District 1	$48.59	$34.08
District 2	$48.59	$34.08
District 3	$48.59	$34.08
District 4	$48.59	$34.08

Travel:
All Districts
0-15 mi. free zone
>15-25 mi. $38.90/day
>25-35 mi. $77.79/day
>35 mi. $84.90/day or cost of receipts for hotel and meals, whichever is greater.

FLOOR LAYERS

	Wage	Benefit
District 1	$18.36	No Rate Established
District 2	$18.36	No Rate Established
District 3	$18.36	No Rate Established
District 4	$18.36	No Rate Established

Lay and install carpet from rolls or blocks on floors. Install padding and trim flooring materials.

GLAZIERS

	Wage	Benefit
District 1	$18.50	$3.36
District 2	$17.71	$3.16
District 3	$16.79	$3.36
District 4	$20.33	$3.57

HEATING AND AIR CONDITIONING

	Wage	Benefit
District 1	$27.33	$15.39
District 2	$27.33	$15.39
District 3	$27.33	$15.39
District 4	$27.33	$15.39

Duties Include:
Testing and balancing, commissioning and retro-commissioning of all air-handling equipment and duct work.

Travel: *
All Districts
0-50 mi. free zone
>50 mi.
- $0.25/mi. in employer vehicle
- $0.65/mi. in employee vehicle

Per Diem: *
All Districts
$65.00/day

INSULATION WORKERS - MECHANICAL (HEAT AND FROST)

	Wage	Benefit
District 1	$27.67	$18.47
District 2	$26.55	$18.47
District 3	$31.62	$18.47
District 4	$27.67	$18.47

Duties Include:
Insulate pipes, ductwork or other mechanical systems.

Travel:
All Districts
0-30 mi. free zone
>30-40 mi. $20.00/day
>40-50 mi. $30.00/day
>50-60 mi. $40.00/day
>60 mi. $45.00/day plus
- $0.56/mi. if transportation is not provided.
- $0.20/mi. if in company vehicle.

>60 mi. $77.00/day on jobs requiring an overnight stay plus
- $0.56/mi. if transportation is not provided.
- $0.20/mi. if in company vehicle.

* Corrected 01/22/2016

IRONWORKERS - STRUCTURAL STEEL AND REBAR PLACERS

	Wage	Benefit
District 1	$26.90	$20.99
District 2	$26.50	$19.98
District 3	$26.50	$19.98
District 4	$26.50	$19.98

Duties Include:
Structural steel erection; assemble prefabricated metal buildings; cut, bend, tie, and place rebar; energy producing windmill type towers; metal bleacher seating; handrail fabrication and ornamental steel.

Travel:
District 1
0-45 mi. free zone
>45-60 mi. $30.00/day
>60-100 mi. $55.00/day
>100 mi. $75.00/day

Districts 2, 3 & 4
0-45 mi. free zone
>45-85 mi. $45.00/day
>85 mi. $75.00/day

MILLWRIGHTS

	Wage	Benefit
District 1	$31.00	$11.57
District 2	$31.00	$11.86
District 3	$31.00	$11.57
District 4	$31.00	$11.57

Zone Pay:
All Districts
0-30 mi. free zone
>30-50 mi. base pay + $4.00/hr.
>50 mi. base pay + $6.00/hr.

PAINTERS: INCLUDING PAPERHANGERS

	Wage	Benefit
District 1	$23.14	$ 8.11
District 2	$23.14	$ 8.11
District 3	$19.70	$ 8.11
District 4	$19.25	$11.78

Travel:
All Districts
0-120 mi. free zone
>120 mi. $45.00/day

PILE BUCKS

	Wage	Benefit
District 1	$28.00	$11.57
District 2	$28.00	$11.86
District 3	$28.00	$11.57
District 4	$28.00	$11.57

Duties Include:
Set up crane; set up hammer; weld tips on piles; set leads; insure piles are driven straight with the use of level or plum bob. Give direction to crane operator as to speed and direction of swing. Cut piles to grade.

Zone Pay:
All Districts
0-30 mi. free zone
>30-50 mi. base pay + $4.00/hr.
>50 mi. base pay + $6.00/hr.

PLASTERERS

	Wage	Benefit
District 1	$21.20	$10.68
District 2	$21.43	$ 9.41
District 3	$23.63	$ 7.19
District 4	$21.44	$ 7.14

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + $2.95/hr.
>60 mi. base pay + $4.75/hr.

PLUMBERS, PIPEFITTERS, AND STEAMFITTERS

	Wage	Benefit
District 1	$27.53	$13.36
District 2	$27.97	$13.73
District 3	$27.97	$13.73
District 4	$30.21	$16.01

Duties Include:
Assemble, install, alter, and repair pipe-lines or pipe systems that carry water, steam, air, other liquids or gases. Testing of piping systems, commissioning and retro-commissioning. Workers in this occupation may also install heating and cooling equipment and mechanical control systems.

Travel:
District 1
0-30 mi. free zone
>30-50 mi. $20.00/day
>50-75 mi. $35.00/day
>75 mi. $70.00/day

Special Provision:
If transportation is not provided, an additional $0.35/mi. is added to the amounts above for travel at the beginning and end of job, not for every mile traveled.

Districts 2 & 3
0-40 mi. free zone
>40-80 mi. $30.00/day
>80 mi. $60.00/day

Special Provision:
If employer provides transportation, travel pay will be ½ of the amounts listed above unless the employee stays overnight. If the employee chooses to stay overnight, the employee will receive the full amount of travel listed above even if the employer furnishes transportation.

District 4
0-70 mi. free zone
>70 mi.
- $90.00/day if transportation is provided.
- $90.00/day + $0.55/mi. (for one trip, there and back) if transportation is not provided.

ROOFERS

	Wage	Benefit
District 1	$17.53	$10.22
District 2	$19.68	$ 5.49
District 3	$17.31	$ 8.66
District 4	$21.28	$ 3.72

Travel:
District 1
0-50 mi. free zone
>50 mi. $0.30/mi.

Districts 2, 3 & 4
No travel established.

Per Diem:
Districts 2 & 3
Employer pays for room + $25.00/day.

Districts 1 & 4
No per diem established.

SHEET METAL WORKERS

	Wage	Benefit
District 1	$27.33	$15.39
District 2	$27.33	$15.39
District 3	$27.33	$15.39
District 4	$27.33	$15.39

Duties Include:
Testing and balancing, commissioning and retro-commissioning of all air-handling equipment and duct work. Manufacture, fabrication, assembling, installation, dismantling, and alteration of all HVAC systems, air veyer systems, and exhaust systems. All lagging over insulation and all duct lining. Metal roofing.

Travel: *
All Districts
0-50 mi. free zone
>50 mi.
- $0.25/mi. in employer vehicle
- $0.65/mi. in employee vehicle

Per Diem:
All Districts
$65.00/day

SPRINKLER FITTERS

	Wage	Benefit
District 1	$31.16	$18.37
District 2	$30.74	$18.37
District 3	$30.42	$18.37
District 4	$30.71	$18.37

Duties Include:
Duties Include but not limited to any and all fire protection systems: Installation, dismantling, inspection, testing, maintenance, repairs, adjustments, and corrections of all fire protection and fire control systems, including both overhead and underground water mains, all piping, fire hydrants, standpipes, air lines, tanks, and pumps used in connection with sprinkler and alarm systems.

Travel:
All Districts
0-60 mi. free zone
>60-80 mi. $16.50/day
>80-100 mi. $26.50/day
>100 mi. $80.00/day

* Corrected 01/22/2016

TAPERS

	Wage	Benefit
District 1	$23.14	$8.11
District 2	$23.14	$8.11
District 3	$23.14	$8.11
District 4	$23.14	$8.11

Travel:
All Districts
0-120 mi. free zone
>120 mi. $45.00/day

TEAMSTERS GROUP 2 (TRUCK DRIVERS)

	Wage	Benefit
District 1	$20.81	$9.16
District 2	$27.69	$9.16
District 3	$22.58	$9.16
District 4	$27.69	$9.16

This group includes but is not limited to:
Combination Truck and Concrete Mixer and Transit Mixer; Dry Batch Trucks; Distributor Driver; Dumpman; Dump Trucks and similar equipment; Dumpster; Flat Trucks; Lumber Carriers; Lowboys; Pickup; Powder Truck Driver; Power Boom; Serviceman; Service Truck/Fuel Truck/Tireperson; Truck Mechanic; Trucks with Power Equipment; Warehouseman, Partsman, Cardex and Warehouse Expeditor; Water Trucks.

Zone Pay:
All Districts
0-25 mi. free zone
>25-50 mi. base pay + $2.50/hr.
>50 mi. base pay + $4.00/hr.

TELECOMMUNICATIONS EQUIPMENT INSTALLERS

	Wage	Benefit
District 1	$22.75	$8.60
District 2	$23.37	$8.60
District 3	$23.37	$8.60
District 4	$22.08	$5.71

Duties Include:
Install voice; sound; vision and data systems. This occupation includes burglar alarms, fire alarms, fiber optic systems, and video systems for security or entertainment.

Travel:
All Districts
The federal mileage rate/mi. in effect when travel occurs if using own vehicle.

Per Diem:
All Districts
Employer pays for meals and lodging up to $65.00/day. When jobsite is located in Big Sky, West Yellowstone and Gardiner, lodging and meals will be provided by the employer for all actual and reasonable expenses incurred.

TILE AND MARBLE SETTERS

No Rate Established

Duties Include:
Apply hard tile, marble, and wood tile to floors, ceilings, and roof decks

Romney Hall - Programming Study

PPA No. 2012-02-14

October 7, 2016

Presented to:

MONTANA STATE UNIVERSITY

Submitted by:

CTA ARCHITECTS ENGINEERS
411 E Main St, Suite 101
Bozeman, MT 59715
406.556.7100

SRG PARTNERSHIP, INC.
110 Union Street, Suite 300
Seattle, WA 98101
206.973.1700

I. Executive Summary

Montana State University (MSU) has experienced increased student enrollment in the past decade, intensifying the need for optimizing the use of its existing facilities. Romney Hall is potentially a premier building on Campus that, upon renovation, will enable MSU to satisfy the classroom, veterans, disability and tutoring services required for MSU students' success. The needs, criteria, and potential uses are described below.

Romney Hall – North Elevation

Classrooms & Services

MSU's classroom capacity does not meet current student's needs.

- Montana State University's student enrollment has grown 29% since the fall of 2010. During the same period, campus instructional space has grown by 6%.
- New students are taking 15 credits or more per semester; this is an increase from 50% of the students in the fall 2011 to 70% in fall 2016. This is a key factor in MSU's improving four-year graduation rates.
- MSU has added more than 350 class sections in the fall semester alone since 2010.

Teaching this new generation of students requires increased support services in the writing and math tutoring centers and targeted support for veterans and students with disabilities.

More students are taking heavier course loads, with new pedagogies, exerting an increased burden on our classroom infrastructure. The addition of classroom facilities has failed to keep up with this pace. Over the past 14 years, MSU's classroom capacity per student has decreased more than 22%. The Registrar's office has identified classroom capacities of 26-50 seats and 100+ seats as being in the greatest demand on campus. The three Technology-Enabled Active Learning (TEAL) classrooms also remain in high demand.

Services key to student success are unable to respond to the demand due to lack of space. The available area of the existing Veteran Services space restricts the number of veterans being served. There is no room for private spaces for counseling and group study spaces. The present location of Disability Services is undersized for the services provided. The waiting area can only hold one student.

The existing Math Learning Center is undersized and; it lacks group study spaces needed for group tutoring. A satellite writing center in Romney Hall will also provide spaces to allow students a place to practice presentations, and engage in small group collaboration.

The Building

Today, the interior of Romney Hall is organized in such a way that it is not handicap accessible. For example, toilet rooms are inadequate and there are no elevators to overcome this. Several spaces within the building remain as designed and constructed in 1922. Spaces such as the swimming pool and locker rooms are original to the building and presently not in usable condition. The existing heating and electrical systems are beyond their useful lives and do not meet present standards. The building is not protected with a fire sprinkler system.

Romney Hall – Unusable Pool

Romney Hall's Potential

Romney Hall offers great opportunities to provide classrooms and collaborative learning environments in the highest demand and specific services directly related to the programs served by these classrooms. The proposed facility would include the following learning spaces.

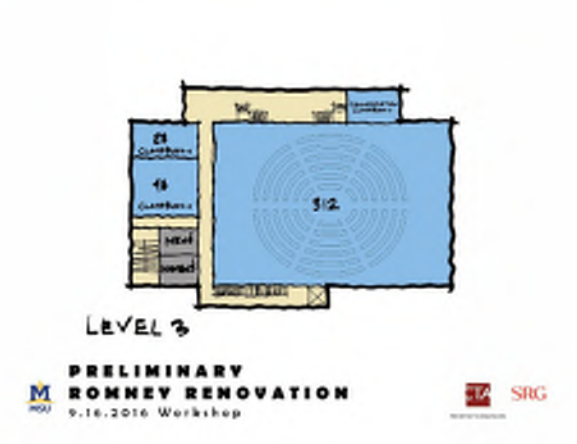
- 4 – 48 seat – preferred capacity for math classes
- 4 – 28 seat – preferred capacity for writing classes
- 2 – 100+ seat classroom
- 2 – 28 seat Collaboration Labs
- 1 – 300+ seat classroom in the round
- 1 – 90 seat TEAL Classroom
- 3 – 20 seat Collaboration Classrooms

The above delivers 1,010 classroom seats between the hours of 8 a.m. and 10 p.m., thus offering over 14,140 seat hours per day. The 28-seat and 48-seat classrooms are best for teaching writing and math respectively. The math and writing classrooms will be adjacent to the Math Learning Center and the Writing Center, and all will be equipped with the appropriate technology.

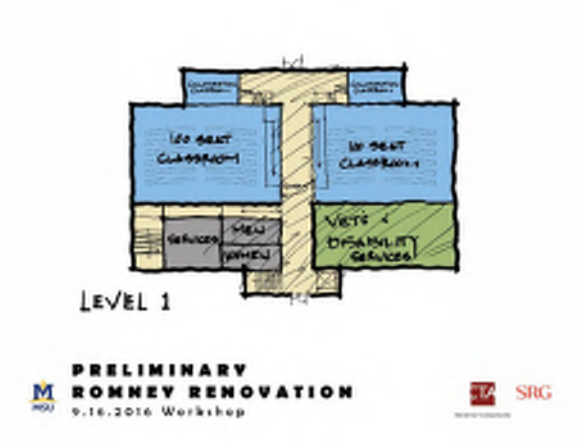
The Veteran Support Center and Disability Services will be located at grade level, in the center of campus for maximum accessibility.

New accessible restrooms, family care facilities, and single-use toilet rooms will be provided on each level. Mechanical and electrical systems will be replaced. A fire suppression system will be added to the building.

Level Two - Planning Diagram



Level Three – Planning Diagram



Level One – Planning Diagram

Level Four – Planning Diagram

II. Introduction

Working under the guidance of the Romney Hall Renovation Executive Team and Stakeholders, CTA Architects Engineers and SRG Partnership began gathered data, conducted user meetings, and developed a conceptual program and space diagrams. These will serve as the framework for decision making for the Romney Hall Renovation project. The following users have been identified as occupants for the renovated Romney Hall:

- Classrooms
- Veteran Services
- Disability & Reentry Support Services
- Math Learning Center
- Gallatin College Math Tutoring Center
- Writing Center

The classroom programmatic information was provided by the Office of the Provost and the Registrar's Office. Information for the other users was provided by the directors of their respective center or office.

A programming workshop was held on September 16, 2016. Attendees were asked to provide insights and information on the following topics:

- Collaborative space requirements
- Instructional support features
- TEAL classroom features
- Seminar room needs
- 100-seat lecture room layouts
- Building technology

The workshop culminated with presenting and discussing preliminary diagrams of each building level.

Romney Hall – 1923

III. Current Conditions

A Strategic Focus on Student Success

MSU has targeted increased student enrollment, diversity, persistence, and graduation in its strategic plan, with successes in all areas based on increased academic rigor and support. The following factors impact this initiative:

- MSU's student enrollment has increased 29% since the fall of 2010.
- This year MSU welcomed the most racially and ethnically diverse student body, as well as the largest number of Montana resident students, in the university's history.
- New students taking 15 or more credits increased from 50% in the fall of 2011 to 70% in the fall of 2016. Full credit loads add rigor, encourage persistence, and help students graduate in four years, thus at a lower cost. The "Freshman 15" model has proliferated across undergraduate classes, with 57% of the students taking full loads compared to 46% in 2011.
- Credit hour enrollment has increased a corresponding 28%.
- MSU has added more than 350 class sections in the fall semester alone since 2010.

To support student academic success, persistence, and timely graduation, faculty have redesigned courses from gateway prerequisites to senior capstones. Diverse students bring a variety of learning styles, experiences, and contributions to the classroom. Teaching this new generation of learners requires both technological and architectural improvements. Increased services in the writing center, math learning center, and targeted support for veterans and students with disabilities are necessary.

Student retention has increased as a result of MSU's efforts. Over the last five years, the second-year return rate of first-time and transfer students has grown from 70% to 72.5%, reflecting its greatest improvement and ranking as the highest in the Montana University System. Four-year graduation rates have increased 5% over the last five years, on a growing base of incoming students, producing record numbers of degrees for Montana.

More students, taking heavier course loads, with new pedagogies, and higher persistence, put an increased burden on MSU's classroom infrastructure.

Classrooms

MSU's student population has grown by 29% over the last 6 years and the number of class sections has correspondingly increased by 20%. The addition of classroom facilities has failed to keep with this pace. In 2001, classroom facilities on campus represented approximately 180 gross square feet (GSF) per student full-time equivalent (FTE). As enrollment continued to grow, the GSF per student FTE decreased. In 2015, that number represented approximately 140 GSF per student FTE, a decrease of classroom capacity per student of more than 22% in a 14-year span, resulting in compressing more students' learning in less space, and often in overcrowded conditions.

When considering the amount of state-supported facility per FTE student, MSU's Bozeman campus is the most efficient campus in the Montana University System. As shown in the table below, UM-Missoula operates with about 29% more state-supported space per student than MSU-Bozeman.

indicates classroom capacities of 26-50 seats and 100+ seats are in the greatest demand on campus. The Room Hour Utilization for the 26-50 seat classrooms and 100+ seat classrooms is 85 and 90 percent respectively (during a standard 8-hour day).

MSU's three Technology-Enabled Active Learning (TEAL) classrooms also remain in high demand. The Room Hour Utilization for the 63-seat TEAL classrooms is 90% and 98% for the 45-seat classroom.

TEAL Classroom – Gaines Hall

MSU State Supported Facility as of February 2016					
	Bozeman	Billings	Havre	Great Falls	Total
State Supported FCI SqFt *	1,963,458	710,848	328,526	200,009	3,202,841
Student FTE (2015)	13,550	3,923	1,105	1,282	19,860
State facility/FTE Student	145	181	297	156	161

UM State Supported Facility as of February 2016					
	Missoula	Butte	Dillon	Helena	Total
State Supported FCI SqFt	2,210,000	653,646	263,939	182,362	3,309,947
Student FTE (FY2015)	11,823	2,599	1,355	940	16,717
State facility/FTE Student	187	251	195	194	198

Continuing MSU's progress in Student Success requires effective and ample classroom space. An evidence-based method of determining the classroom goals for Romney Hall was used in this programming exercise. It identified the most effective and high-impact classroom types possible. The Registrar's data

Veterans' Center

The Veteran Services and Disability & Reentry Support Services are currently located in the lower level of the Strand Union Building.

Veterans' Services provides the following support:

- Dedicated tutoring services – Math, Statistics, Writing, and Chemistry
- Financial aid assistance
- Counseling and advising
- Aid in course registration
- Access to six computers
- Career Fair Reception (Veterans' employment opportunities.)
- Meeting place for the Veterans Club
- A quiet get-a-way space where they can commune with others that have had similar life experiences

Veterans' Center – Strand Union Building

The available area currently restricts the number of veterans served. Private spaces for counseling and group spaces for studying are needed but currently do not exist due to a lack of space.

Events such as annual job fair receptions regularly overflow into the hallway directly outside of their current location, due to a lack of room within. This disrupts the passage to other services provided in this area of the building.

Disability & Reentry Support Services provides the following support:

- Accommodations on Campus (housing and classroom needs)
- Provide class note takers (80 – 125 participants)
- Assist students and their families with physical and mental disabilities.
- Train students to use specialized technology

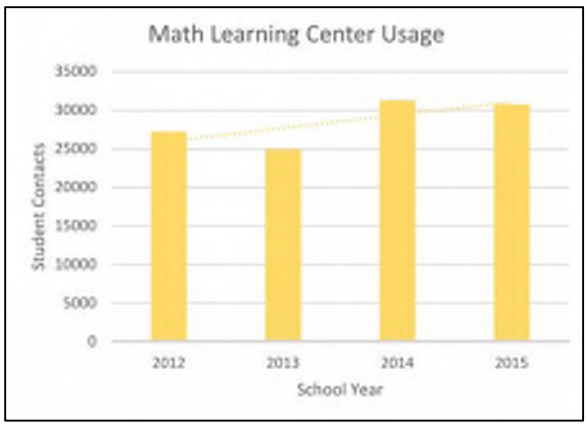
The present location is undersized for the services provided. The waiting area can only hold one student, therefore any additional students requiring services are forced to queue up in the hallway. The Disabilities Services' office space is difficult for wheelchair users to maneuver, the corridors are narrow and the space within each office is limited.

Math Learning Center

The Math Learning Center is currently located in the first floor of Wilson Hall. Due to the organization of the tutoring process and the number of qualified tutors available, a single facility on campus is the most efficient way for this service to operate. The existing Math Learning Center is undersized; it does not provide adequate space between the tutoring tables for the students and tutors to proceed through the space. Tutors and students that use wheelchairs cannot maneuver the crowded and non-code compliant space effectively.

Math Learning Center – Wilson Hall

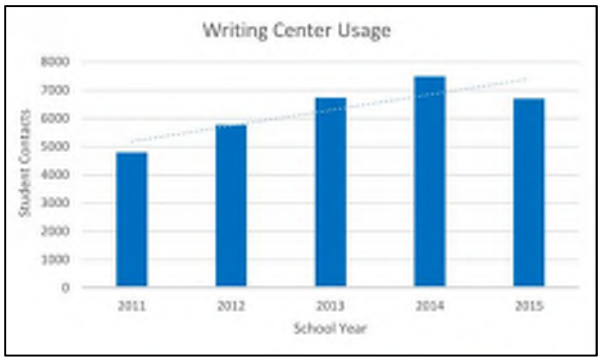
The Math Learning Center is also lacking group study spaces. These spaces would provide a room for 12-15 students to be tutored as a group, such as required for exam preparation. A six-seat breakout room with a wall-mounted monitor is needed for tutoring statistics. Space for workroom-related items and similar tasks currently does not exist.



Math Center use has increase about 13% in four years

Writing Center

The Writing Center presently operates at three locations – Wilson Hall (main location) and satellite locations in the Renne Library and in the lower level of South Hedges Residence Hall. The proposed writing center in the Romney Hall Renovation project would serve as a third satellite location.



Writing Center use has increase about 39% in four years

The proposed space will include the necessary functions needed for a satellite writing center, such as reception, one-on-one tutoring, on-site manager, and whiteboards. The opportunity in Romney Hall will also provide space to practice presentations, and a break-out room to allow for small group (4-person) collaboration.

Writing Center – Wilson Hall

Condition of Romney Hall

Romney Hall is a 53,074 GSF, well-constructed but grossly under-utilized, masonry building at the heart of the original campus core. In general the building envelope is in good, serviceable condition. The interior is organized in such a way that it is not accessible to the handicapped and there are no elevators to help overcome this. Level 1 is approximately six feet below grade/entry level, Level 2 is approximately ten feet above grade. In order to pass from the north entry through the building to the south entry one must navigate at least two sets of stairs.

The building currently houses the Education Health and Human Development (EHHD), Army Reserve Officers' Training Corps (ROTC), Gallatin College programs (Levels 1 & 2) and intermural programs (held in the main gymnasium and auxiliary gymnasium on Level 3). The former balcony of Level 4 is not used. Several spaces within the building remain as originally designed for the initial uses, such as the swimming pool and locker rooms, which are presently not in usable condition. The existing heating and electrical systems are beyond their useful lives and do not meet present standards.

Romney Hall – Unusable Pool

Romney Hall – Room 202

Romney Hall – Room 105

Romney Hall currently has 141 classroom seats which in turn provide 1,269 seat hours per day.

IV. Romney Hall's Potential

Classrooms

Romney Hall offers ample opportunity to provide classrooms in the highest demand and specific services directly related to the programs served by these classrooms. Aided with information provided by the Provost's and Registrar's Offices, the following classrooms are proposed for the Romney Hall Renovation project:

- 4 - 48 seat – preferred capacity for math classes
- 4 - 28 seat – preferred capacity for writing classes
- 3 – 20 seat Collaboration Classrooms
- 2 – 100+ seat classroom
- 2 – 28 seat Collaboration Labs
- 1 - 300+ seat classroom in the round
- 1 – 90 seat TEAL Classroom

Classroom in the round – Oregon State University

The above classrooms would total approximately 1010 seats. Because Romney Hall is so central to campus and is proposed to have the three student support centers, it is seen as a prime location to offer expanded instructional hours. Between the hours of 8 a.m. and 10 p.m. this building could be an instructional powerhouse offering more than 14,140 seat-hours daily.

The 28-seat and 48-seat classrooms are best for teaching writing and math respectively. The 20-seat collaboration classrooms allow not only for instruction but break-out spaces for student teams to study or work on team projects. Locating math and writing classrooms adjacent to the Math Learning Center and the Writing Center is ideal. Students leaving a class, not sure that

they understand a concept, can receive tutoring within the same building while the issue is fresh in their mind. The directors of each Center feel that is a significant advantage for helping struggling students.

The 300+ seat, classroom allows instructors to efficiently address foundational subject matter through a large general lecture. These course sections are often linked to smaller lab and recitation sections. This format enables the most appropriate instructors to efficiently share knowledge with large numbers of students. MSU has one large (300 person) lecture hall. Gaines Hall 101 is booked from 8 a.m. to at least 6 p.m. every day of the week. Consequently, MSU now teach multiple sections of certain courses where fewer sections could suffice. The proposed classroom-in-the-round design situates all students within six rows of the instructor. This innovative design enhances the communication between instructor and students by enabling the exchange of non-verbal communication including facial expressions. With this design we overcome many of the traditional drawbacks associated with a large lecture hall and can extend the efficiency of connecting qualified lecturers with the appropriate number of students.

Classrooms are to be equipped with the appropriate technologies. A faculty technology support space will be included to assist faculty with making the most of the technology available in their classrooms. The ability for faculty to prepare videos and other pre-recorded portions of a lecture is being considered.

Veteran Services and Disability & Reentry Support Services

Placing the Veterans' Center on a new grade level floor within the renovated Romney Hall locates them in the center of campus, with easy access to the new facility; neither an elevator nor ramp is needed. Replacing the south exit stair with a new exit stair and elevator addition will provide clear accessible vertical circulation that accesses each level. New accessible restrooms, family care facilities, and single-use toilet rooms will be provided on each level with new fully code-compliant toilet facilities.

Math Learning Center

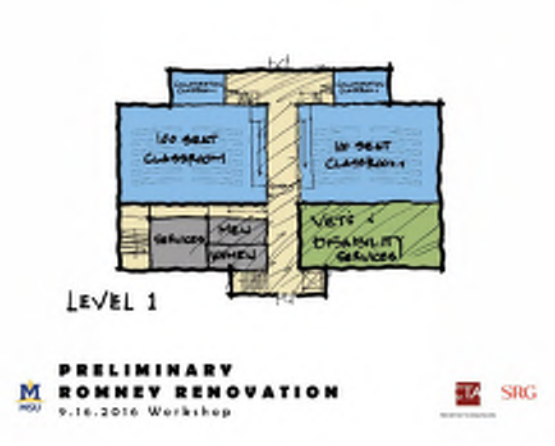
The relocated Math Learning Center will nearly double in size of the existing facility. New amenities include; two breakout rooms for group tutoring, a small meeting room for statistics tutoring and support spaces. Proximity to 48 seat classrooms (typical math classroom size) is an added benefit.

Writing Center

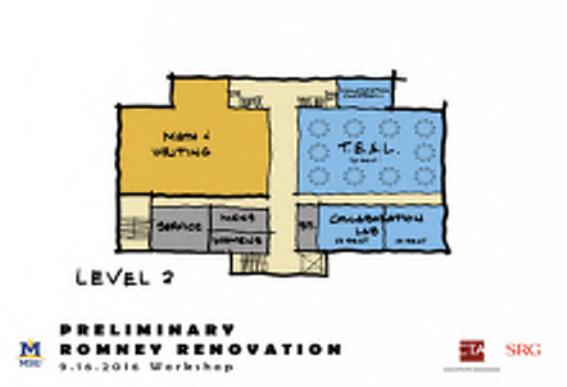
The new satellite Writing Center will provide additional tutoring stations on campus. A new breakout room equipped with video recording and playback equipment will offer students and faculty opportunities to receive assessments of their oral presentations. A workroom will also be provided. Proximity to 28 seat classrooms (typical writing classroom size) is an added benefit.

Building Circulation

A new grade level entry corridor would provide a clear path through Romney Hall, connecting the Romney Oval at the north with the Marga Hoseaus Fitness Center to the south.

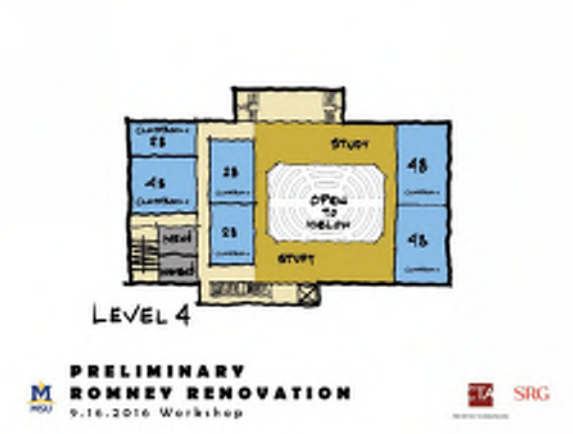


Level 1 – Planning Diagram



Level 2 – Planning Diagram

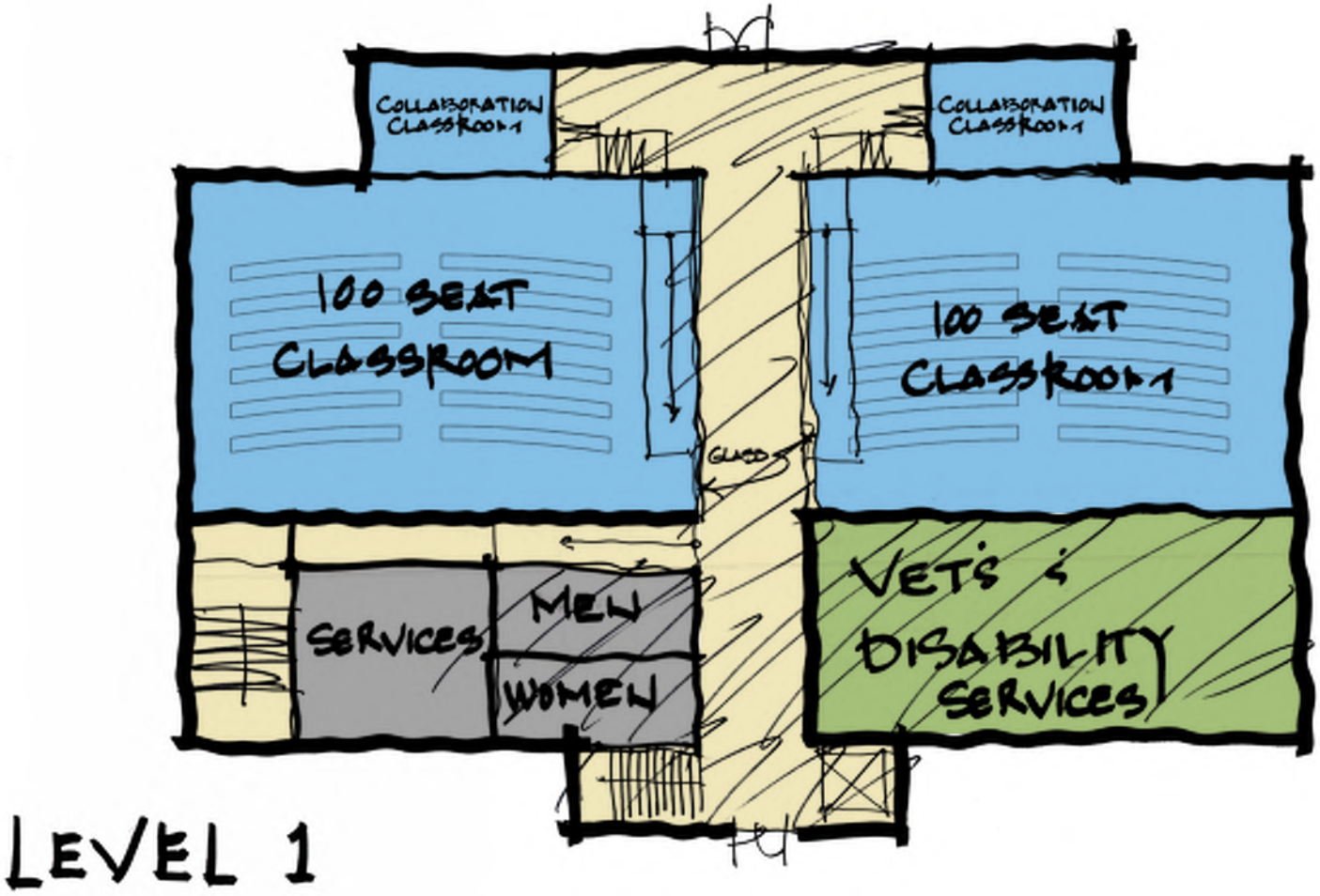
Level 3 – Planning Diagram



Level 4 – Planning Diagram

V. Appendix

- Planning Diagrams Level 1 - 4
- Classroom Space Utilization
- Project kick-off meeting minutes
- Programming meeting minutes
    - Math Learning Center
    - Writing Learning Center
    - Disability, Re-entry, and Veterans Services
    - Classrooms
- September 16th workshop notes
- Initial Programming Studies
- Tabulated Program of Spaces
- Existing Floor plans



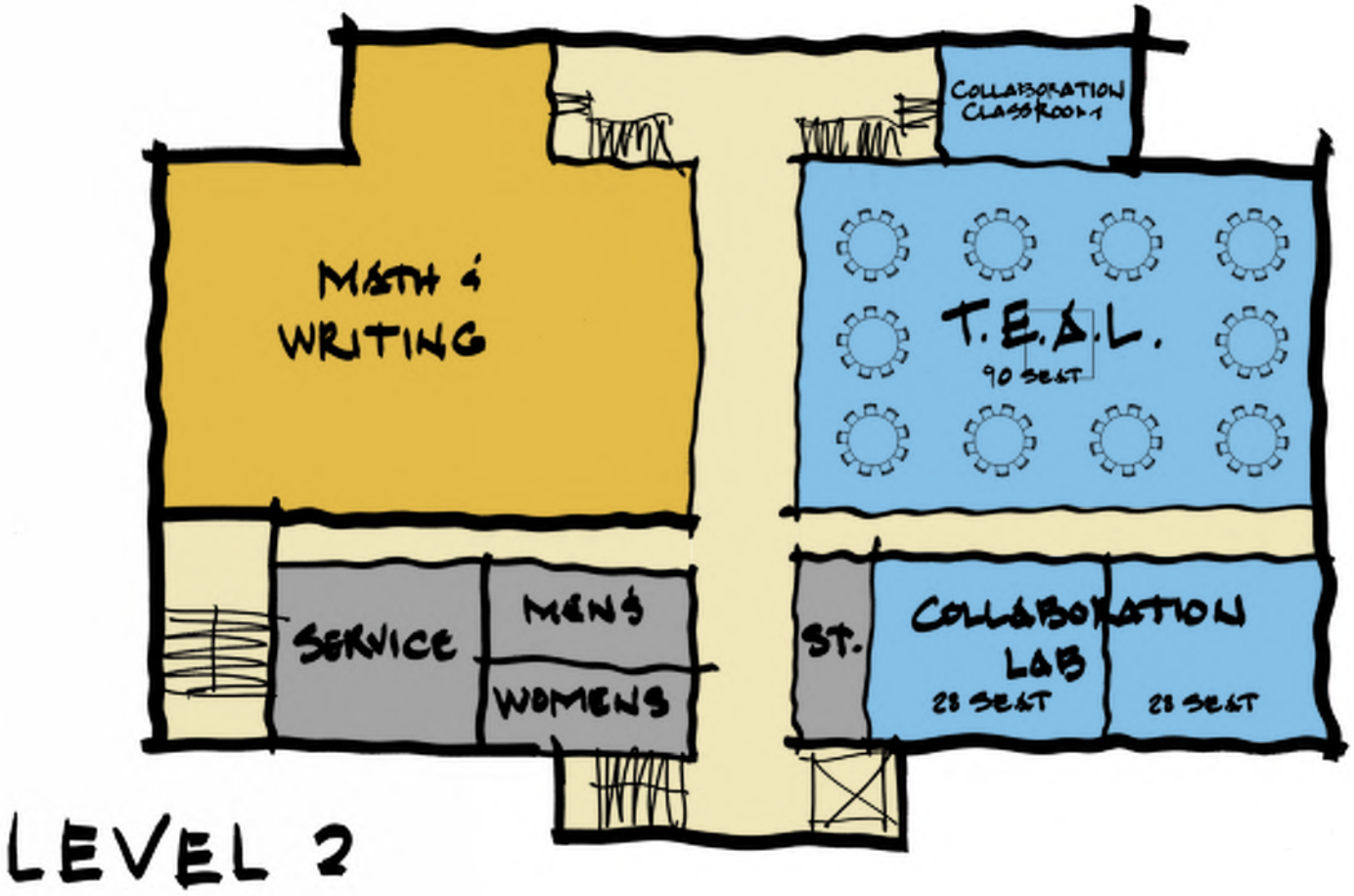
PRELIMINARY
ROMNEY RENOVATION

9.16.2016 Workshop

MSU

CTA ARCHITECTS ENGINEERS

SRG



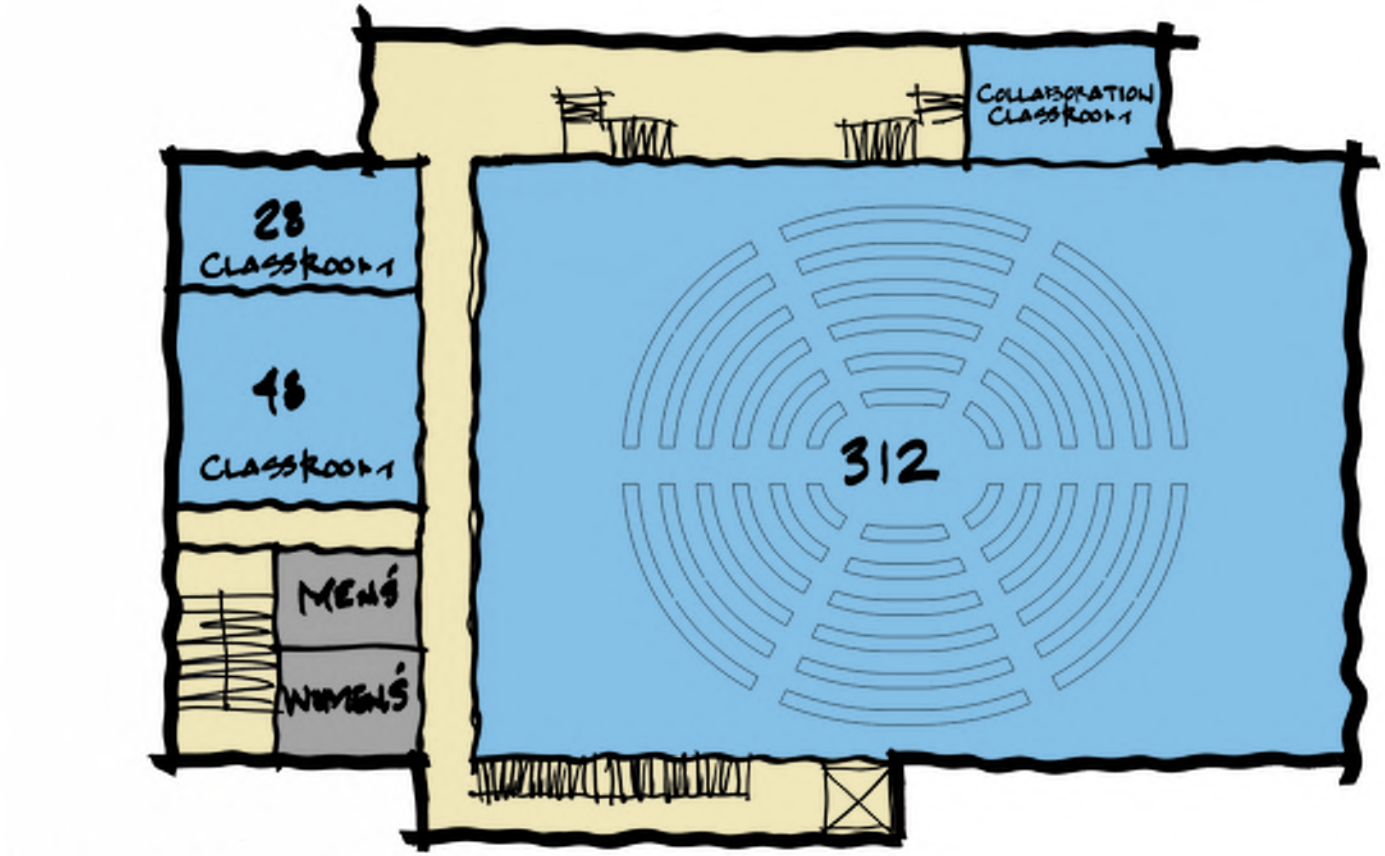
PRELIMINARY
ROMNEY RENOVATION

9.16.2016 Workshop

MSU

CTA SRG

ARCHITECTS ENGINEERS



LEVEL 3

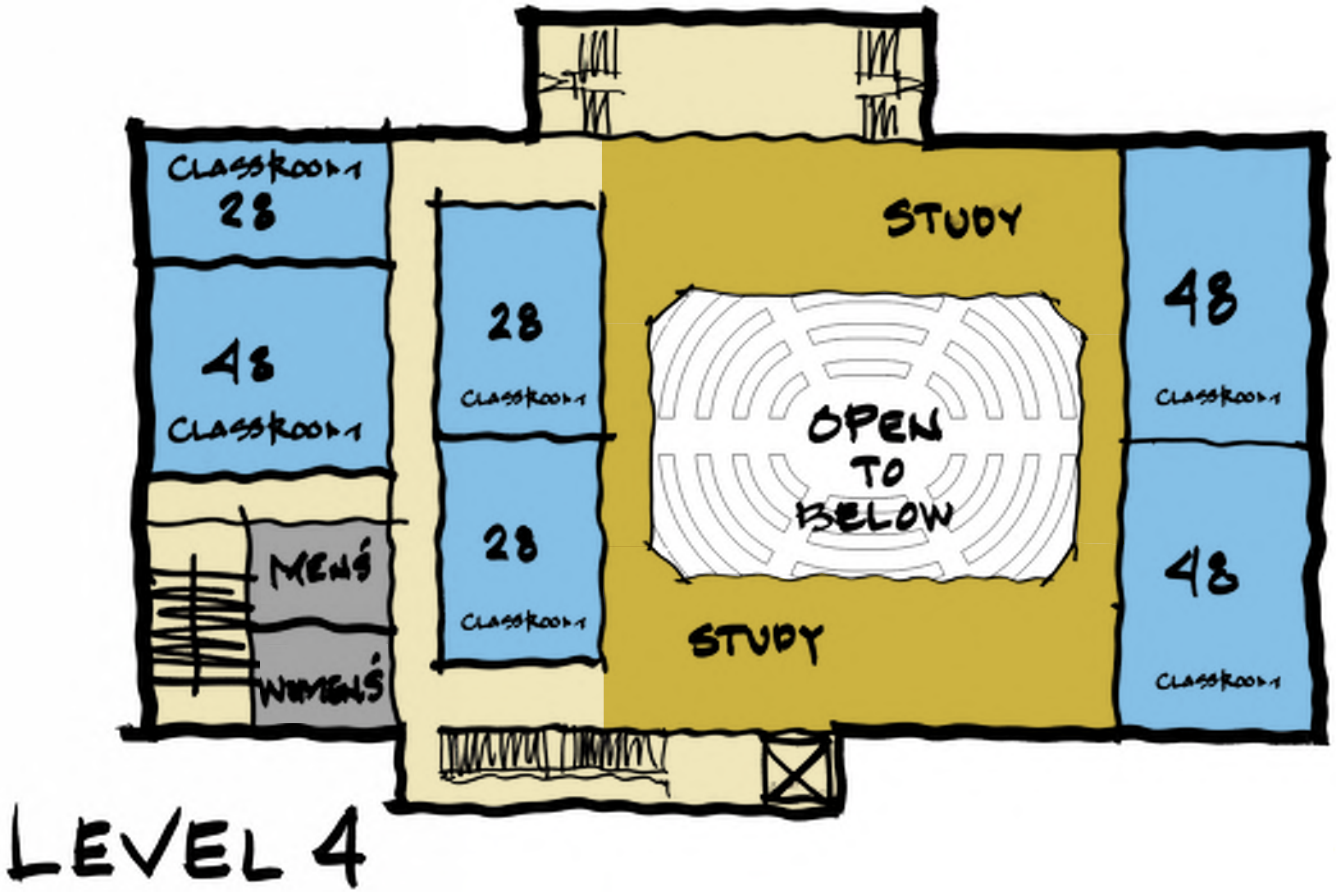
PRELIMINARY
ROMNEY RENOVATION

9.16.2016 Workshop

MSU

CTA SRG

ARCHITECTS ENGINEERS



PRELIMINARY
ROMNEY RENOVATION

9.16.2016 Workshop

MSU

CTA ARCHITECTS ENGINEERS SRG

Space Utilization

Average Weekly Utilization for Sections and Events by Room Type and Size

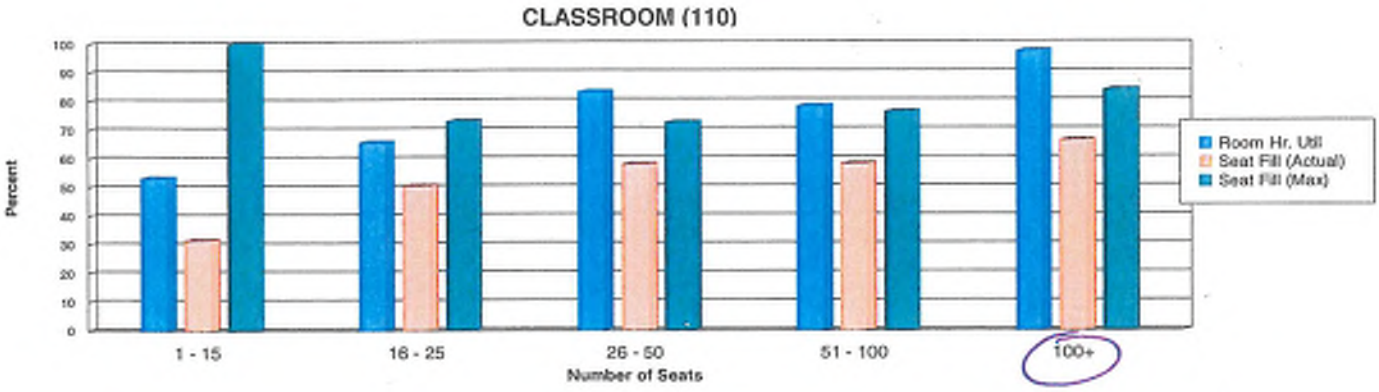
8/24/2016
1:47 PM

Term weeks: 14.00 Hours in Standard week: 40.00 Dates: 8/29/2016 - 12/9/2016

Standard Week: Monday, Tuesday, Wednesday, Thursday, Friday - 8:00 AM to 5:00 PM

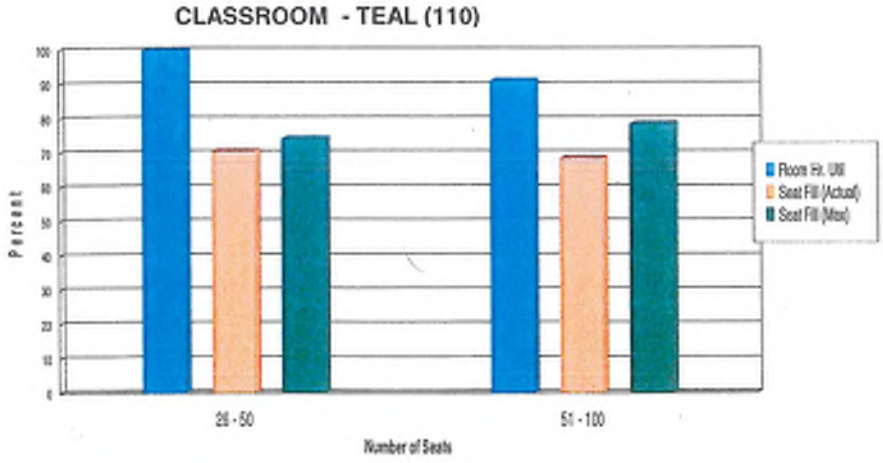
TEAL
LG

Room Type - Capacity	# of Rooms	Room Hrs.	Room Hr. Util.	Room Capacity	Enrollment/ Max Enrollment	Fill Ratio Actual Enroll.	Fill Ratio Max Enroll.
CLASSROOM (110)							
1 - 15 Seats	3	63.93	53.27%	12.87	4.04 / 13.36	31.40%	103.78%
16 - 25 Seats	20	525.36	65.67%	22.29	11.24 / 16.24	50.40%	72.86%
26 - 50 Seats	75	2,492.95	83.10%	39.00	22.53 / 28.28	57.78%	72.53%
51 - 100 Seats	19	594.04	78.16%	68.50	39.80 / 52.17	58.10%	76.16%
100+ Seats	12	467.15	97.32%	172.25	113.85 / 144.31	66.09%	83.78%
	129	**4,143.43**	**80.30%**	**55.73**	**33.59 / 43.03**	**60.27%**	**77.22%**

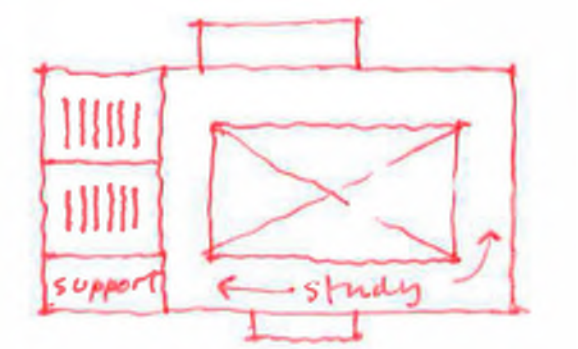


CLASSROOM - TEAL (110)

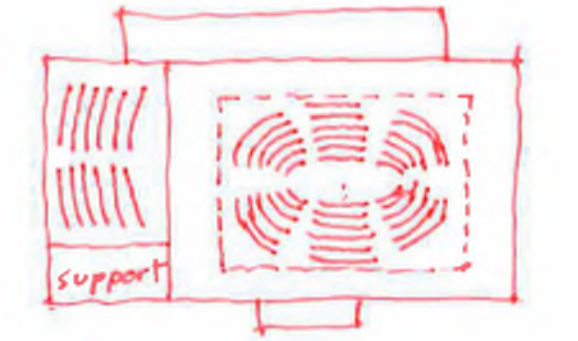
Room Type - Capacity	# of Rooms	Room Hrs.	Room Hr. Util.	Room Capacity	Enrollment/ Max Enrollment	Fill Ratio Actual Enroll.	Fill Ratio Max Enroll.
26 - 50 Seats	2	80.54	100.67%	45.00	31.74 / 33.41	70.52%	74.24%
51 - 100 Seats	1	36.43	91.07%	63.00	43.15 / 49.41	68.49%	78.43%
	3	**116.96**	**97.47%**	**50.61**	**35.29 / 38.39**	**69.73%**	**75.86%**



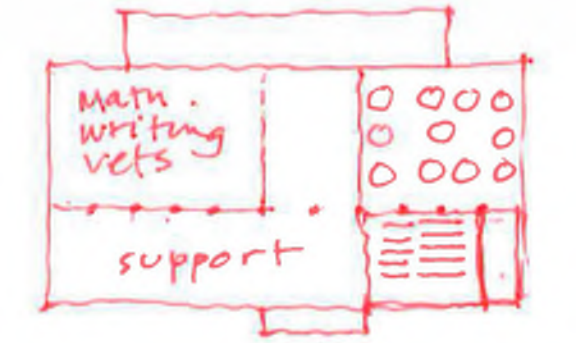
ROMNEY HALL
SEAT CAPACITY STUDY
6 September 2016



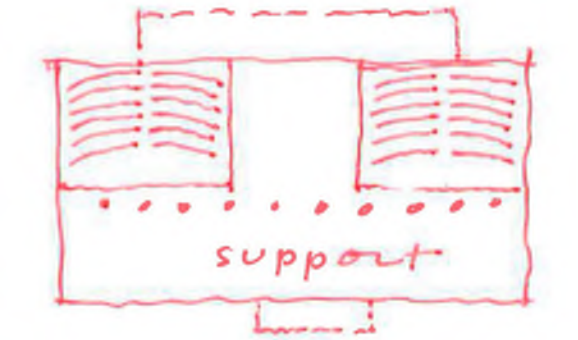
LEVEL 4
2 48-seat classrooms
Study balcony overlooks large lecture hall



LEVEL 3
250-300-seat tiered lecture hall
100-seat tiered lecture hall



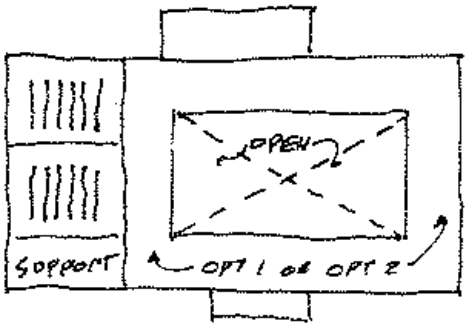
LEVEL 2
Math Center
Writing Center
Veterans Support
99-seat TEAL classroom
60-seat classroom



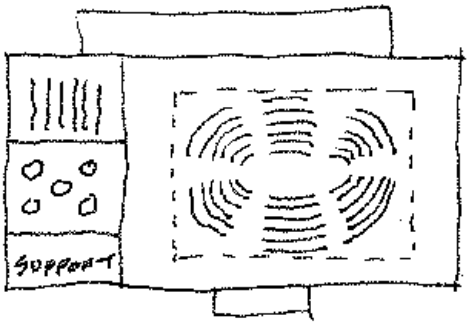
LEVEL 1
2 100-seat tiered lecture halls

~ 855 MAX TOTAL SEATS

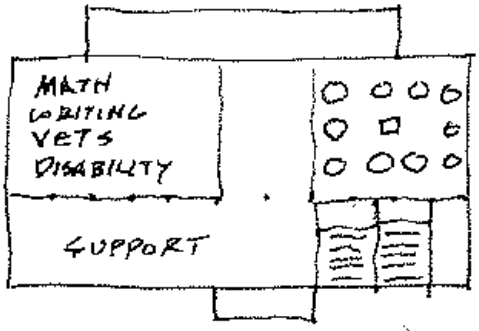
Romney Hall
Classroom Capacity Study
September 9, 2016



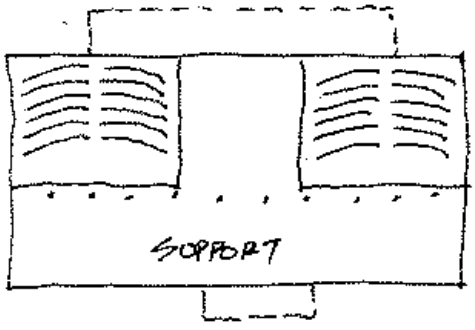
LEVEL 4
2 Each – 48 Seat Classrooms
Option 1 – Breakout Rooms & Collision Spaces
Option 2 – 28 Seat Classrooms, Breakout Rooms, & Collision Spaces



LEVEL 3
1 Each - 250-300 Seat Tiered Lecture Hall
2 Each – 48 Seat Classrooms

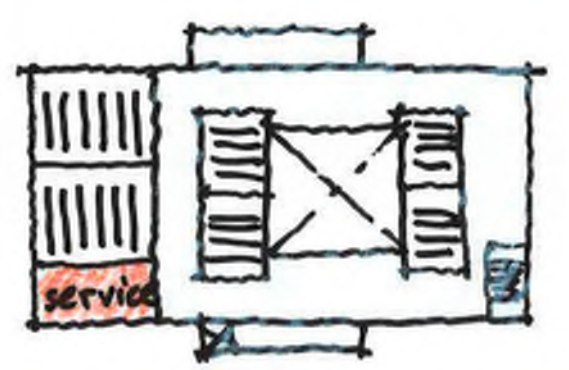


LEVEL 2
Math & Writing Centers
Disability, Re-entry, and Veterans Services
1 Each – 90 Seat TEAL Classroom
N Each – 28 Seat Classrooms

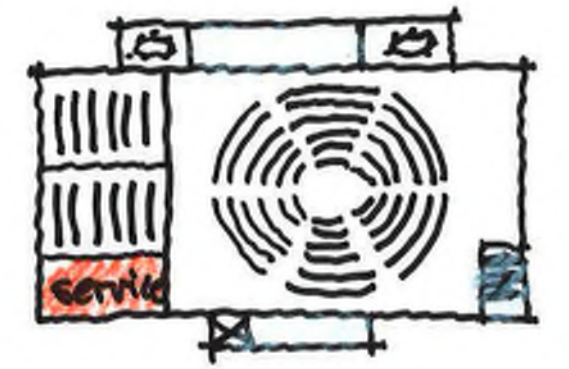


Level 1
2 Each – 100 Seat Tiered Classrooms

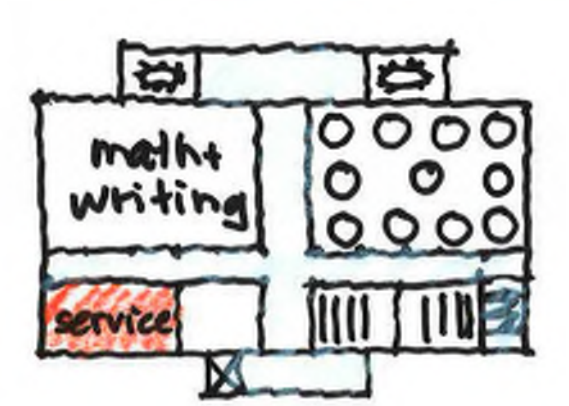
ROMNEY HALL
PROGRAM STUDY
13 September 2016



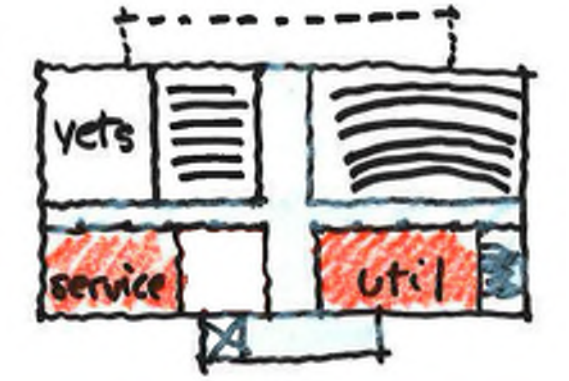
LEVEL 4
2 48-seat classrooms
3-4 28-seat classrooms
Study balcony overlooks large lecture hall



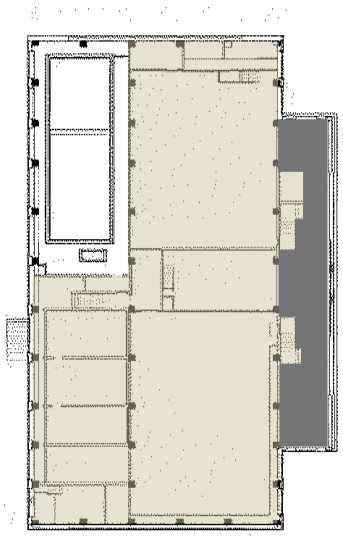
LEVEL 3
300-seat flat floor lecture hall
2 48-seat classrooms
2 20-seat seminar rooms



LEVEL 2
Math Center
Writing Center
99-seat TEAL classroom
2-28-seat classrooms
Tech support center

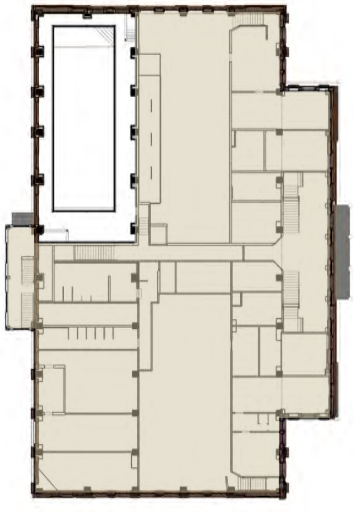


LEVEL 1
100-seat tiered lecture hall
Veterans Center (at grade)
48-seat classroom

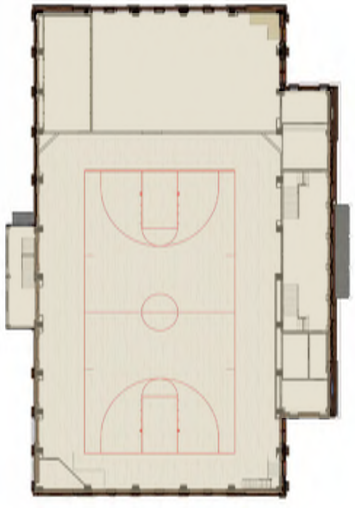


Floor 1

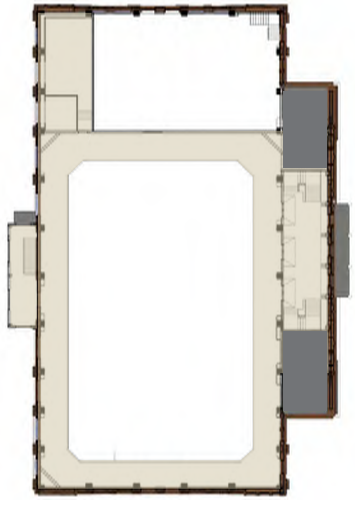
Floor 1A, Entry



Floor 2



Floor 3, Gym

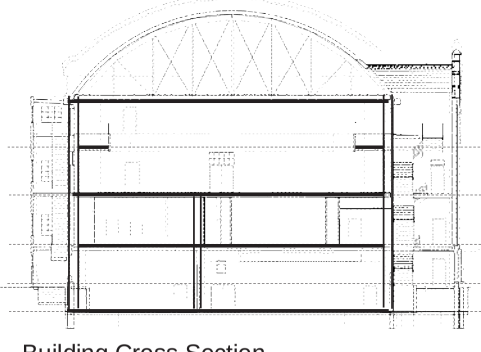


Floor 4

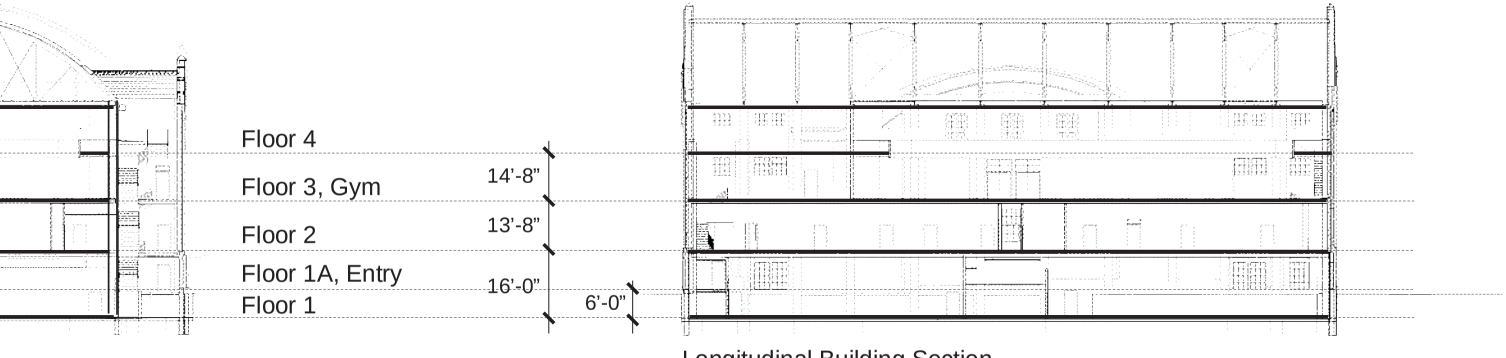
Existing Floor Area

Existing Assests:
- Long spans
- Exposed concrete structure
- Tall ceilings

Existing Challenges:
- Confusing circulation
- Not ADA accessible
- Lack of visual connections



Building Cross Section



Longitudinal Building Section

PIONEERING ENVIRONMENTS

CTA SRG

Romney Gym Adaptive Reuse Study

50% Programming Draft
PPA No. 2012-02-14
August 9, 2013

Presented to:

MONTANA STATE UNIVERSITY

Submitted by:

CTA ARCHITECTS ENGINEERS
411 E Main St, Suite 101
Bozeman, MT 59715
406.556.7100

SRG PARTNERSHIP, INC.
110 Union Street, Suite 300
Seattle, WA 98101
206.973.1700

Table of Contents

Introduction

Executive Summary

Programming

Historical Significance

Historic Photographs

Architectural Assessment

Structural Assessment

Mechanical Systems Assessment

Electrical System Assessment

Code Analysis

Appendix as Separate Volume

Introduction

Property Information

Property Name & Location

Romney Gymnasium, Montana State University – Bozeman

Property Size & Orientation

Romney Gymnasium has approximately 47,176 square feet within four stories. This primarily rectangular building has a protruding entry bay on the north elevation, facing the walkway to Montana Hall.

Construction Date 1922

Architect

Shanley & Baker Architects, Great Falls, MT

Historic Status & Integrity

Romney Gymnasium has long been considered a primary feature of the historic core of MSU's Bozeman campus. This Italian Renaissance Revival style building is listed as a contributing feature in the upcoming nomination of the Montana State University Historic District.[1] The building retains a high degree of integrity. It is located on its original site with much of the original context intact; its massing, design, materials, and workmanship remain, and its association with the university remains strong. It is considered an iconic and favored heritage building on campus.

The building is significant for its superb architectural design and execution, as well as its use as an integral component of university events and athletic programs.

Images

Unless otherwise noted, all photographs included herein have been provided by CTA. The other images are credited accordingly.

Construction Drawings

Original 1921 construction drawings, as well as those from subsequent renovation projects, were provided by MSU Facilities archives.

Acknowledgments

CTA and SRG are grateful for the immense support and thoughtful insights provided for the duration of the project from the State Architecture & Engineering Division, MSU Facilities & Planning staff, MSU President Cruzado and her staff, the Romney Building Committee, and the numerous people who provided input during programming sessions, public forums, and other avenues.

[1] Jessie Nunn, "Montana State University Historic District Nomination," July 25, 2013. This nomination will be considered for approval at the Montana Historic Preservation Review Board meeting on September 13, 2013.

Figure 1: Romney Gymnasium's north facade from the northeast. The building was named after Ott Romney, MSU's head football and basketball coach from 1922 to 1928 (the year the Golden Bobcats basketball team was awarded the national championship).

State A&E Division

Russ Katherman, Contract Officer

Joe Triem (now with Legislative Services)

MSU Facilities, Planning, Design & Construction (FPDC)

Walt Banziger, Director of FPDC

Joe Bleehash, 1st Project Architect

Sam DesJardin, 2nd Project Architect

Bob Lashaway, Associate VP, University Services

Dennis Raffensperger, MSU Architect

Terry Sutherland, Archivist

MSU President's Office

Anne Cantrell, University Communications

Romney Building Committee (RBC)

Dr. Allen Yarnell, MSU Executive Office; RBC Chairman

Kenning Arlitsch, Dean of the Library

Jeff Butler, Director of Facilities Services

Nancy Cornwell, Dean of Arts & Architecture

Charles French, MSU Student Representative

Dr. Ron Larsen, MSU Provost's Office

Dewitt Latimer, MSU CIO

Lindsay Murdock, ASMSU VP - Student Rep.

Dr. Betsy Palmer, Assistant Professor, Educ.

Brian Rossmann, Associate Dean, Library

Project Objectives

In September 2012, Montana State University (MSU) – in partnership with the State of Montana – engaged the team of CTA Architects Engineers and SRG Partnership to provide professional services for programming an adaptive reuse of the iconic Romney Gymnasium on the MSU-Bozeman campus. The project had been proposed by MSU as follows:

> In response to academic program development and growth, Montana State University intends to complete a programming study for the renovation of Romney Gymnasium to house programs which directly serve students, faculty, and the local community. Design and Construction of the project would commence pending legislative authority approval and funding through the State LRBP process, anticipated in the 2013 session.
>
> Constructed in 1922 as MSU's original state-funded health and physical education building, the 50,525 square foot Romney Gym is now obsolete and in need of a complete renovation in order to continue serving the University mission. Romney Gym is one of the most noteworthy structures on the MSU Campus. The building, located at the apex of the Romney Oval and on axis with Montana Hall is situated in a prominent campus location and is an exemplary example of the Italian Renaissance style. Beautifully detailed with brick and terra cotta façade, large windows, copper detailing, and barrel vaulted roof, it constitutes an iconic MSU building providing significant historical value to both the State and campus' heritage.
>
> The future renovation and adaptive re-use of the facility must sensitively address the historic character of the building, both

Figure 2: Romney Gymnasium is on axis with Montana Hall to the north.

> inside and out. A well-conceived renovation will make beneficial use of the building's prime location, improve spaces that are currently under-utilized, and take advantage of the large open areas while also updating the building's core services and accessibility deficiencies to meet today's building codes and use demands.[2]

The above parameters set the stage for an actively engaged programming effort that explored the use of the building in a new way and opened up the venue for MSU program participation. In addition, the following guiding principles were established:

> Per University procedures and policy, a renovation of Romney Gym will comply with Board of Regents and MSU's Heritage Building & Sites Policy. State MCA Statutes, Board of Regents policy and MSU Policy, outline coordination efforts with the State Historic Preservation Office (SHPO) that must be followed, and subsequently would recommend inclusion of the local Bozeman Historical Preservation Advisory Board (BHPAB).

The initial project scope of work was for this study/programming phase only; completion of the project was scheduled to coincide with the 2013 Legislative session, for review as part of the State Long Range Building Program (LRBP). It was hoped that approval and funding would be forthcoming, allowing the University to proceed with the renovation.

Revised Objectives

The Romney Gym Adaptive Reuse project was not funded during the 2013 Legislative session, resulting in postponement of completion of the programming and the renovation itself. This document reflects the process and work completed at this stage, with the aim of keeping the findings relevant and useful when the project is re-initiated. The work product shown herein represents completion of the building assessment and the preliminary stages of programming. The former provides an understanding of the physical requirements of the renovation that are strictly related to the building itself, regardless of what use it accommodates. The latter provides an overview of the potential users of the building, the potential general divisions of space and use, and the recommended treatments to the building to support these uses. It is hoped that these findings will be useful when the project recommences.

[2] Architecture & Engineering Division, State of Montana. Request for Qualifications, April 20, 2012.

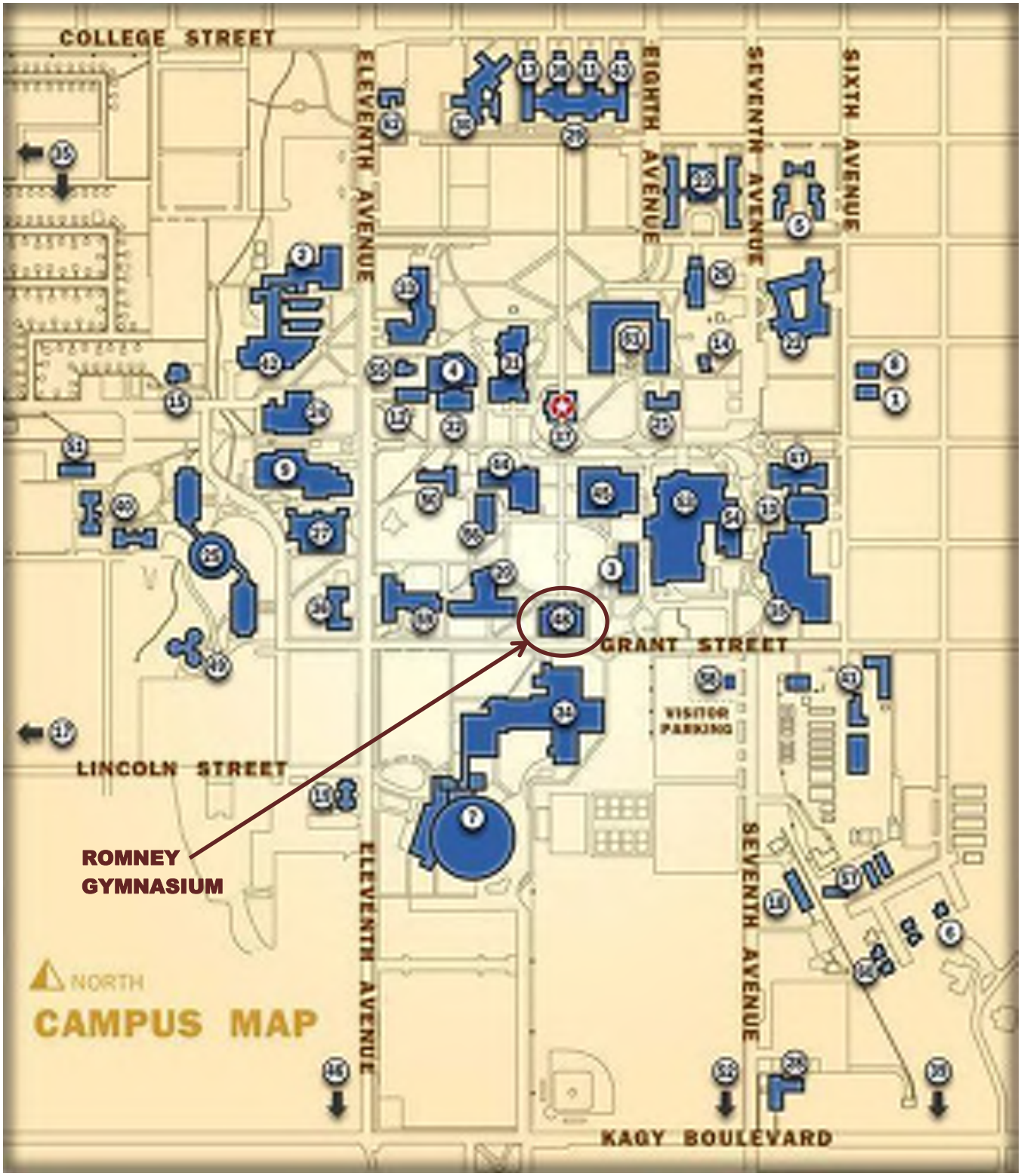


Figure 3: The MSU campus map depicts the pivotal location of Romney Gymnasium, at the historic core of campus.

Methodology

Process Summary

The process for the historic Romney Gymnasium Adaptive Reuse Study was designed to interact with a broad range of prospective building users, including students, faculty and university staff, and to support development of a program of potential building uses and proof-of-concept design studies with sufficient detail to inform a reliable cost estimate. Work began in September 2012 and was concluded in March 2013.

The Romney Building Committee (RBC) was formed to advise the design team and review the progress of the work. The committee of approximately fifteen members included student, faculty, administration and state representatives, as well as MSU Facilities Planning staff.[3] The RBC met nine times with CTA and SRG, facilitating thoughtful and productive meetings. The design team also met with the President and members of her staff.

The study comprised three primary elements: programming, concept design, and assessment.

Programming

In addition to meetings with the Romney Building Committee, the design team met with at least eighteen different campus constituencies - multiple times in some cases - to understand their current or future space needs as prospective tenants in the renovated Romney Gym. These groups represented both current and potential future tenants.
Two planning processes designed to further the placement of user groups in the building were postponed upon receipt of notification that legislative funding was not forthcoming.

A campus call for competitive proposals to occupy space in the renovated building was drafted, in an effort to start the programming efforts with a clean slate. A hands-on workshop called "the Planning Game," crafted to explore options for organizing the selected program elements within the existing building footprint, would have actively engaged the selected occupants in a three-dimensional exercise of space allocation. Both of these crucial activities were delayed until funding was assured, thus not stultifying the next programming efforts. Without the specific information anticipated from these two activities, the final program has become a more general outline of the types of activities that would be most suitable for each space within the building.

[3] A complete listing of the committee members is included in Acknowledgments above; minutes from these meetings are included in the Appendix.

Concept Design

Conceptual design studies explored ideas for reinvigorating Romney Gymnasium. These studies were also intended to test the proposed program within the existing building, to investigate strategies for addressing deficiencies in the building systems, and to inform a detailed cost estimate. Concept diagrams were presented in meetings with the Romney Building Committee and the MSU President, as well as in a series of campus forums that reached a larger audience.

Assessment

As a prelude to the building assessment and conceptual design, CTA analyzed the building's historic significance and historical features to identify character-defining elements that should be retained, preserved, and restored in the building's renovation.

CTA also conducted a comprehensive detailed assessment of existing building systems, including structural elements, exterior envelope, and electrical and mechanical equipment and distribution. This report is based upon observations of the visible and apparent condition of the building and its major components on the dates of the

Figure 4: MSU President Cruzado encouraging audience feedback during a public forum held on campus in January 2013.

inspections. The inspections were based on those building components accessible to view; unless otherwise noted, no inspection openings were made for this study. CTA makes no representations regarding latent or concealed defects that may exist. This report is made only in the best exercise of our ability and judgment. Not all locations of all materials are described herein, yet all areas of concern – within the Scope of Work – are addressed.

A brief code analysis provided general parameters related to sizing for exiting and restroom facilities.

Executive Summary

Benefits of Original Construction

Romney Gym benefits from a thoughtful design that was well executed with high quality durable materials – as is typical for a historically significant campus icon. The design, however, was for very specific uses and presented on several half levels, resulting in an interior which is not currently conducive to ease of orientation, accessibility, and use. The structural frame of the building can be adapted to house a greater variety of uses and provide for clearly articulated spaces that are accessible and easily navigated.

Core Connectivity

The building's location at the core of campus makes it essential that the building be able to act as a conduit for the north and south halves of the campus. This connectivity can be achieved with a central, cross-axial grade level corridor from the north to the south entry. The introduction of this grade level corridor opens up exciting design possibilities for the first and second floors that are explored in the Concept Design.

In conjunction – and as a balance – to reconfiguration of the first and second floors, the significant spaces of the third and fourth floors will essentially remain as they are. The Main and Auxiliary Gyms and the balcony are already enlivening spaces with exciting volumes that can accommodate a wide variety of activities.

Programmatic Possibilities

Programming with the selected MSU departments and university public generated enthusiasm for a building that would be student and faculty centric. The process generated the following Project Vision Statement:

> The Renaissance of Romney Hall will create spaces dedicated to student academic success and faculty excellence. The renovation will sensitively safeguard the historic character of the building, maximize use of its spaces, and create an environment that supports integrated interdisciplinary learning, discovery, and engagement. The building will energize individuals to discover and pursue their aspirations and stretch across disciplines to successfully reach their full potential. This transformative vision is guided by the Montana State University Strategic Plan 2012, which sets overarching goals for MSU (see www.montana.edu/strategicplan).

Required Features

Code- and function-required core amenities such as stairways, restrooms, and mechanical/electrical rooms fit neatly along the south wall of the building.

The electrical, mechanical, and plumbing systems are outdated and severely deficient. Renovation will include replacement of these systems and installation of the requisite fire protection systems, audio-visual, information technology systems, and an elevator. Energy efficient aspects – both passive and active - will be integrated into these systems and the building design. The building's ample window openings provide opportunities for harvesting daylighting.

Estimated Construction Cost

Adaptive reuse of Romney Gym, including several proposed features – an atrium and a skylight – furniture and IT/AV equipment, and professional services is estimated in 2012 dollars at $17,128,079. The most cost effective renovation includes a full shut-down of the building, with relocation of current residents. Phasing of the construction would be cost prohibitive, particularly for the mechanical and electrical systems. These estimated costs do not include relocation of current building residents, nor new facilities that might be required for residents that are permanently relocated.

Next Steps

The planning for this project is in abeyance until funding is forthcoming from the state legislature. This document has been generated to help jump start the process when funding becomes available. It is hoped that sufficient background has been provided to render these recent efforts useful. It is not intended that this project be frozen in time, but that new ideas and technical possibilities will help guide a vibrant reinvigoration of future programming and planning processes.

Programming

Project Vision Statement

Early in the process, the Romney Building Committee generated a mission statement intended to guide the entire project. This was revised as the project moved forward, in response to valuable input from the groups interviewed, the committee itself, and the public. The most recent statement reflected the more tightly defined vision for the building and its impact on the university culture:

> The Renaissance of Romney Hall will create spaces dedicated to student academic success and faculty excellence. The renovation will sensitively safeguard the historic character of the building, maximize use of its spaces, and create an environment that supports integrated interdisciplinary learning, discovery, and engagement. The building will energize individuals to discover and pursue their aspirations and stretch across disciplines to successfully reach their full potential. This transformative vision is guided by the *Montana State University Strategic Plan 2012*, which sets overarching goals for MSU (see www.montana.edu/strategicplan).[4]

Program Summary

With the overarching programmatic goal of creating an active, collaborative community environment that integrates information, technology and learning, many combinations of tenants and activities are possible for adaptive reuse of Romney Gymnasium. The selection of specific tenants will depend on the degree to which their programs help to achieve this goal, as well as on the suitability of their activities to the actual spaces available. At least eighteen different groups expressed keen interest in being part of the renovated building. The Request for Programming Proposal process, when resumed, will likely identify additional groups with similar interest.

[4] Romney Building Committee, "Montana State University Romney Hall Center for Academic Success: Adaptive Reuse Project Request for Program Proposals," March 18, 2013. This request has not been issued; a copy is in the Appendix.

The Physical Traits of the Building

Each floor of the building is different and offers unique opportunities and challenges for prospective tenants. Table 1 on page 16 outlines the spaces available at each level, as well as the optimal types of uses for each space.

First Floor

The first floor of the building is below the adjacent exterior grade. By infilling the swimming pool, and also inserting a new floor in the space above it, significant new floor space can be added to the building. Building services, including new mechanical and electrical spaces, new stairs and new toilet rooms, can be most efficiently located in this area along the south side, where existing columns create a narrower zone. Stairs and toilets would stack in this location at each floor.

Two large, high bay spaces occupy the east and west zones of the second floor. Windows into these two spaces create good visibility from the exterior, and creation of new openings in the floor above could create excellent interior visibility as well, making them well-suited for high energy activities that will attract students to the building, such as a cafe/study space, fitness studio or collaborative work/prototyping space. Subdivision of these two spaces into a series of smaller spaces does not take full advantage of their volume, visibility and architectural character.

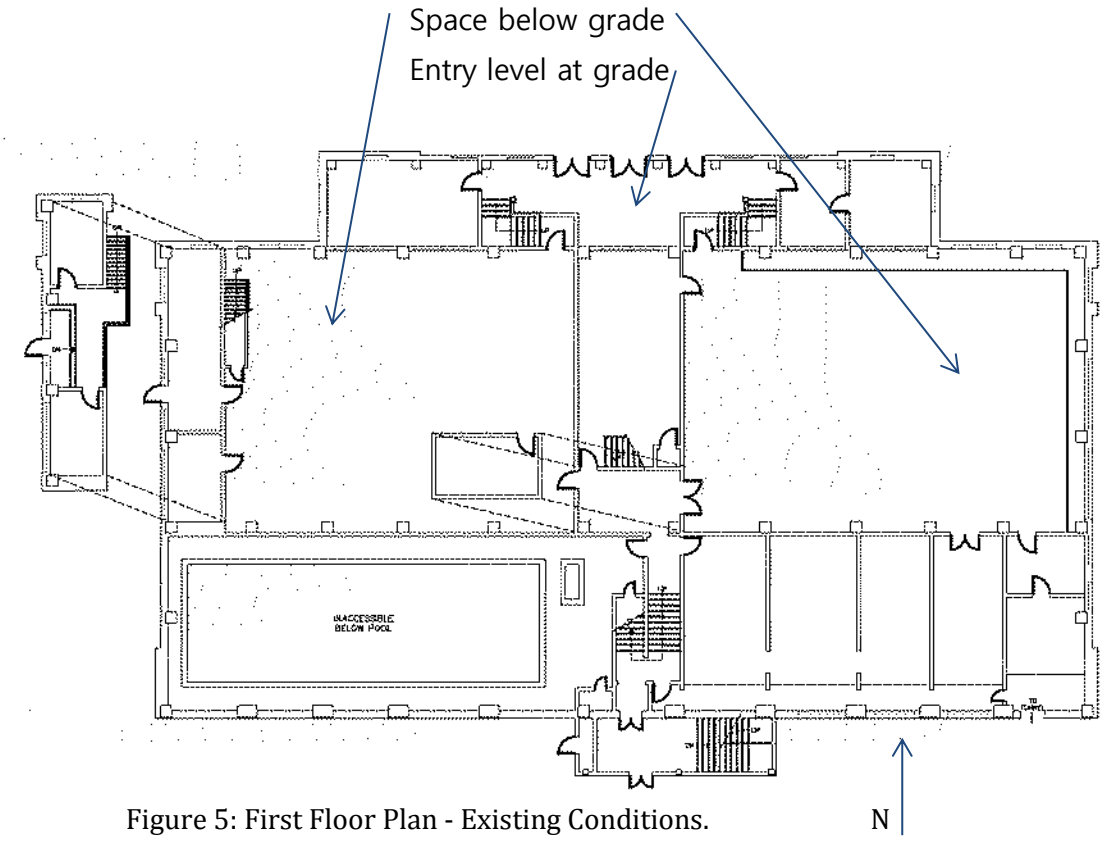


Figure 5: First Floor Plan - Existing Conditions.

Entry Level at Grade

An intermediate level primarily occupied with circulation, there is little available assignable space at the entry level. Small, existing spaces adjacent to the main north stair are well suited to their current classroom and office use.

Second Floor

The existing floor-to-floor heights yield a maximum ceiling height at the second level of about 12′-6″ measured to the underside of the floor slab above; this drops to about 9′-0″ clear below the existing beams. With these restrictions, this floor is the best location in the building for office-type functions. Meeting rooms or classrooms are also possible, if large projection surfaces are not required.

Creation of one or more large floor openings at the second level will maximize the sense of openness and visibility within the building. This reduces available assignable area of the building by approximately 2,000 square feet and is reflected in the Program Summary.

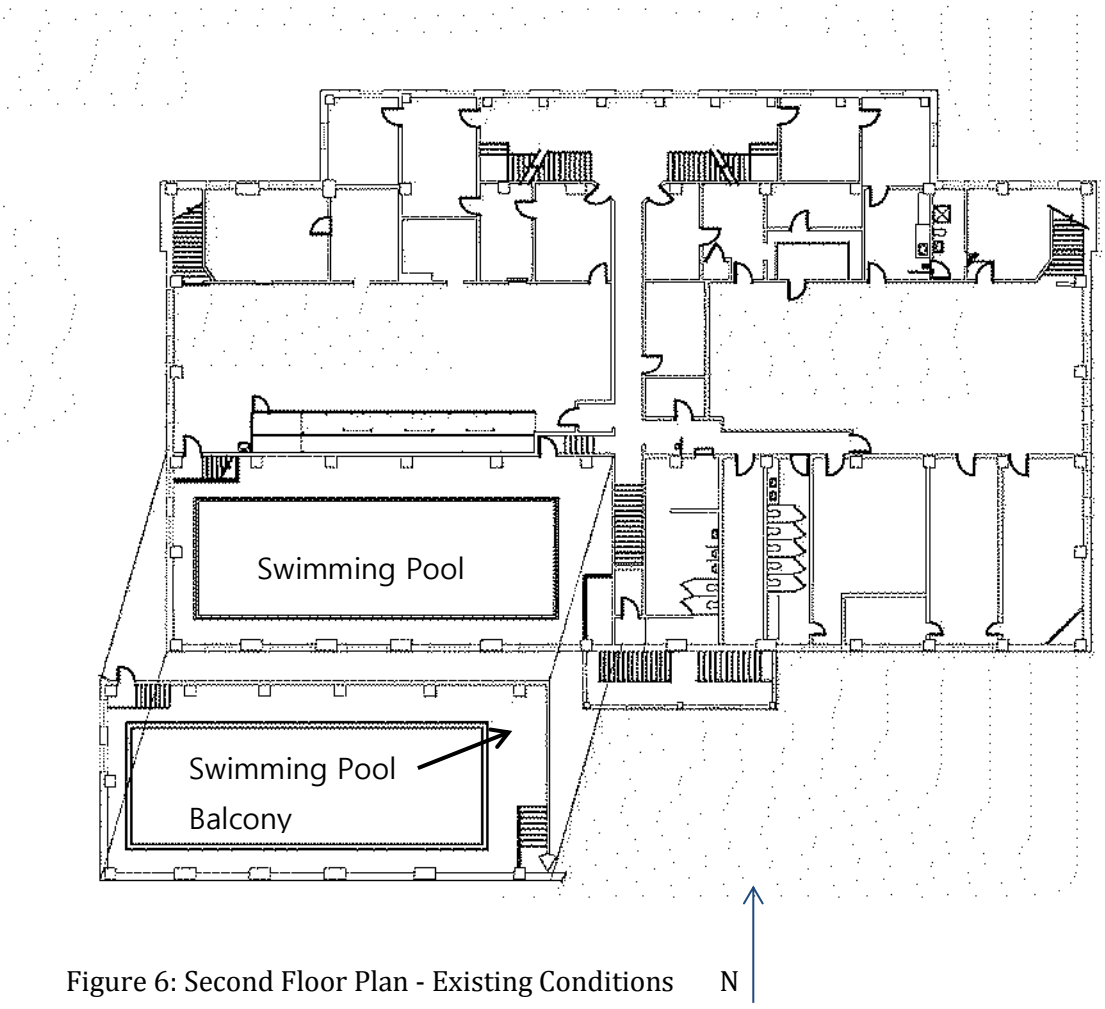


Figure 6: Second Floor Plan - Existing Conditions

Third Floor

The third floor gymnasium is the building's most dramatic space, with a large, spacious volume, beautiful maple flooring and plentiful daylight from large windows. Unique on the main campus in terms of both size and character, the optimal use of the gym remains a multi-use space that can accommodate a wide variety of activities. Sensitive introduction of power and data connections throughout the space combined with a selection of flexible, moveable furnishings would allow use of the space for: student study, lectures, film presentations, receptions or other functions, as well as dance and recreational athletic activities.

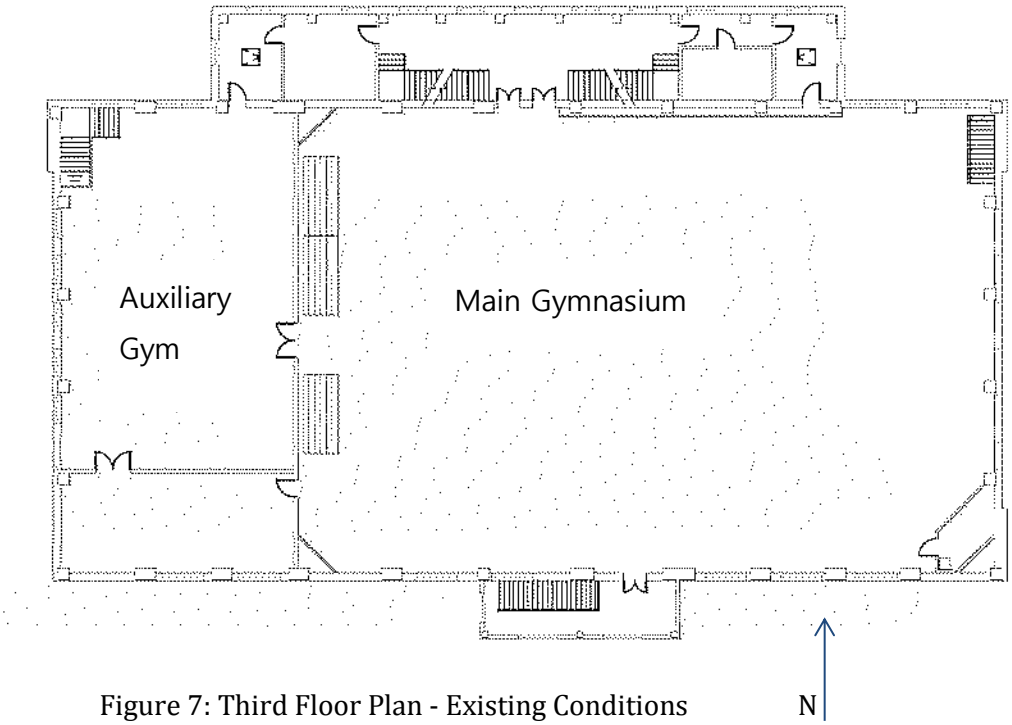


Figure 7: Third Floor Plan - Existing Conditions

Adjacent to the Main Gymnasium, the existing Auxiliary Gym – currently used as a dance studio - is also well suited to serve as a multi-use activity space. To capture additional useable area at the Fourth Floor above, this space could be lidded over, which would reduce the floor-to-ceiling height to approximately 13'-5", in which case the space could also be subdivided to provide meeting rooms and break-out space for large groups meeting in the gym.

Fourth Floor

As noted, a new floor could be inserted above the existing dance studio, yield additional low-ceiling space suitable for offices or study space. Replacement of the existing mezzanine around the gym to more closely resemble its original, wider configuration would also create flat floor space for student study or small group work (see p. 62). Because extending the primary elevator to the fourth level would penetrate the existing

manner, a second, two

dance studio space pr

route from Floor 3 to

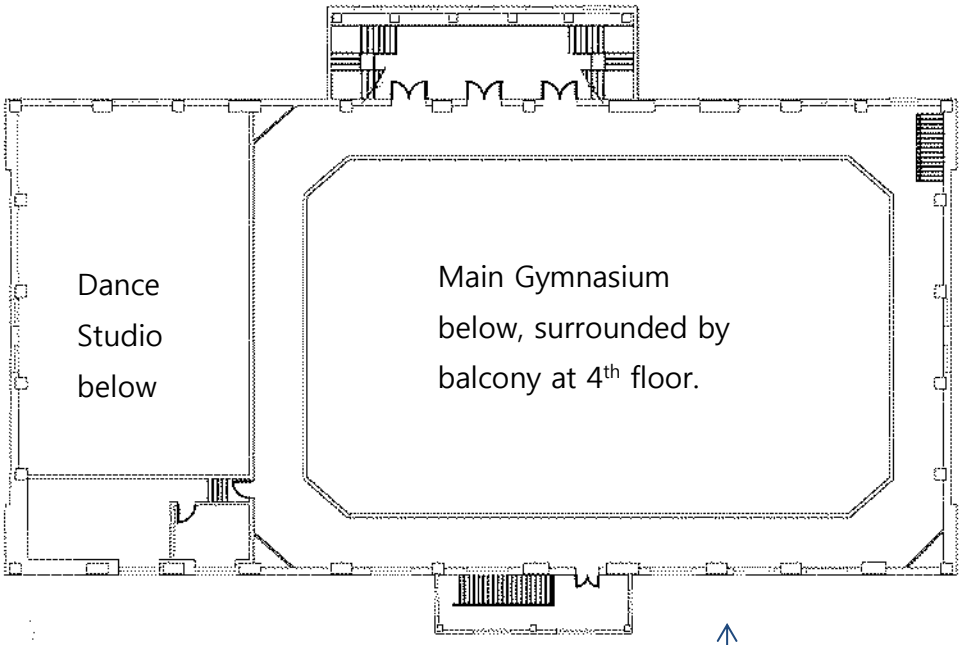


Figure 8: Fourth Floor Plan - Existing Conditions

Concept Plans

The following 11x17 drawing sheets represent the existing conditions of the building and the possible transformations that have been explored to accommodate the various uses discussed during the programming sessions described above. Table 1 below provides Space Identification numbers that are keyed to the final floor plans.

Table 1: General Program Summary

	Total ASF	Space ID	Approx Area (ASF)	Optimum Use	Notes
Floor 1	8,600	1.01	3,700	Activity	Below-grade, high bay space w/ high windows, great visibility from entry level
		1.02	3,700	Activity/ Café	Below-grade, high bay space w/ high windows, great visibility from entry level
		1.03	1,200	Workshop/ Studio	Below-grade, high bay space w/ limited windows
Floor 1A (Entry)	595	1A.01	200	Classroom/ Meeting	Existing classroom
		1A.02	395	Classroom/ Meeting	
Floor 2	10,495	2.01	200	Classroom/ Meeting	
		2.02	395	Classroom/ Meeting	
		2.03	3,700	Office/ Meeting	Floor-to-ceiling height 12-6" (9'-0" below beams)
		2.04	3,700	Office/ Meeting	Floor-to-ceiling height 12-6" (9'-0" below beams)
		2.05	2,500	Office	Floor-to-ceiling height 12-6" (9'-0" below beams)
Floor 3	12,225	3.01	395	Storage/ Supporty	
		3.02	2,300	Activity/ Assembly	Retain existing wood floor. New floor above reduces ceiling height to 13'-5". Moveable furnishings to allow
		3.03	9,530	Multi-use Activity/	Retain existing wood floor. Moveable furnishings to allow flexible use for study, meeting, recreational activities
Floor 4	7,150	4.01	2,300	Study/ Office	Limited ceiling height (~8'-8")
		4.02	4,850	Study	Extend existing mezzanine to original configuration

39,065 Total, Approximate Assignable Area

Historical Significance

Statement of Significance

Romney Gymnasium is significant for its architectural design excellence as well as its place within the history of Montana State University. Romney Gym is one of seven Italian Renaissance Revival buildings constructed on MSU's campus in the 1920s. Each of the seven is distinct in character, yet bonded by their stylistic similarities. The seven buildings in this elite grouping are Romney Gym, Roberts Hall, Traphagen Hall, the Heating Plant, Herrick Hall, Lewis Hall, and Ryon Laboratories. All seven were designed by Shanley & Baker, with assistance from Bozeman architect Fred Willson.[5]

Period of Significance

Constructed in 1922 as MSU's original state-funded health and physical education building, Romney Hall is one of the most noteworthy structures on the MSU Campus. The building, located at the apex of the Romney Oval and on axis with Montana Hall, is situated in a prominent campus location and exemplifies the Italian Renaissance style. Beautifully detailed with a tapestry brick and terra cotta clad façade, large windows, copper detailing, and barrel vaulted roof, it is an iconic MSU building of significant historic value to both the state's and the campus' heritage.

The Period of Significance for Romney Gymnasium, from construction in 1922 to 1968, is in conformance with the campus's proposed period of significance, as stated in the National Register nomination:

> "The district's period of historical significance extends from the founding of the University in 1893 as the Agricultural College of the State of Montana (MAC) through its diamond anniversary in 1968. This 75-year period encompasses the institution's growth from a small 'cow college' to a leading technical school to a modern university, as indicated by its name changes to the State College of Agriculture and Mechanical Arts in 1913, to Montana State College in 1920, and to Montana State University (MSU) in 1965.[6]

Statement of Integrity

Examination of Romney Gymnasium's character-defining features – as presented on the following pages – reveals a property with

[5] Willson typically provided construction administration for these joint projects.

[6] Jessie Nunn, "Montana State University Historic District National Register of Historic Places Registration Form," July 25, 2013, p. 51-52.

high integrity. Its original form, use, and details remain intact and highly demonstrative of their original character. Few changes have been made to the building. This, however, has allowed for the building to be less useful over time, primarily due to staggered floor heights and the resultant lack of accessibility.

Significance Rankings

In order to sensitively renovate Romney Gym for expanded use and accessibility, it is necessary to identify those spaces and features which are highly significant and those spaces that are less so. The most significant spaces and features should be restored, whereas lesser features can be modified as required for new functions. The former areas are typically the public places; the latter areas are back-of-the-house service areas that are considered support spaces that are considered viable for redesign. The pool, at half-level, is difficult to make accessible and to maintain (it was closed in the 1980's due to continued leaking), hence is considered for practical purposes to be less significant.

The following plans categorize the building into Significance Rankings that should be considered during future renovation efforts. Note that even those areas that are ranked as having low significance are still part of the significant building; their volumes and structure should remain generally intact. Adverse effects of wholesale remodeling could have cumulative negative impacts on the building.

RANKINGS LEGEND

High: Quintessential & indispensible

Medium: Important - without it, significance is diminished

Low: Little effect on building's significance, but adverse effects could be cumulative

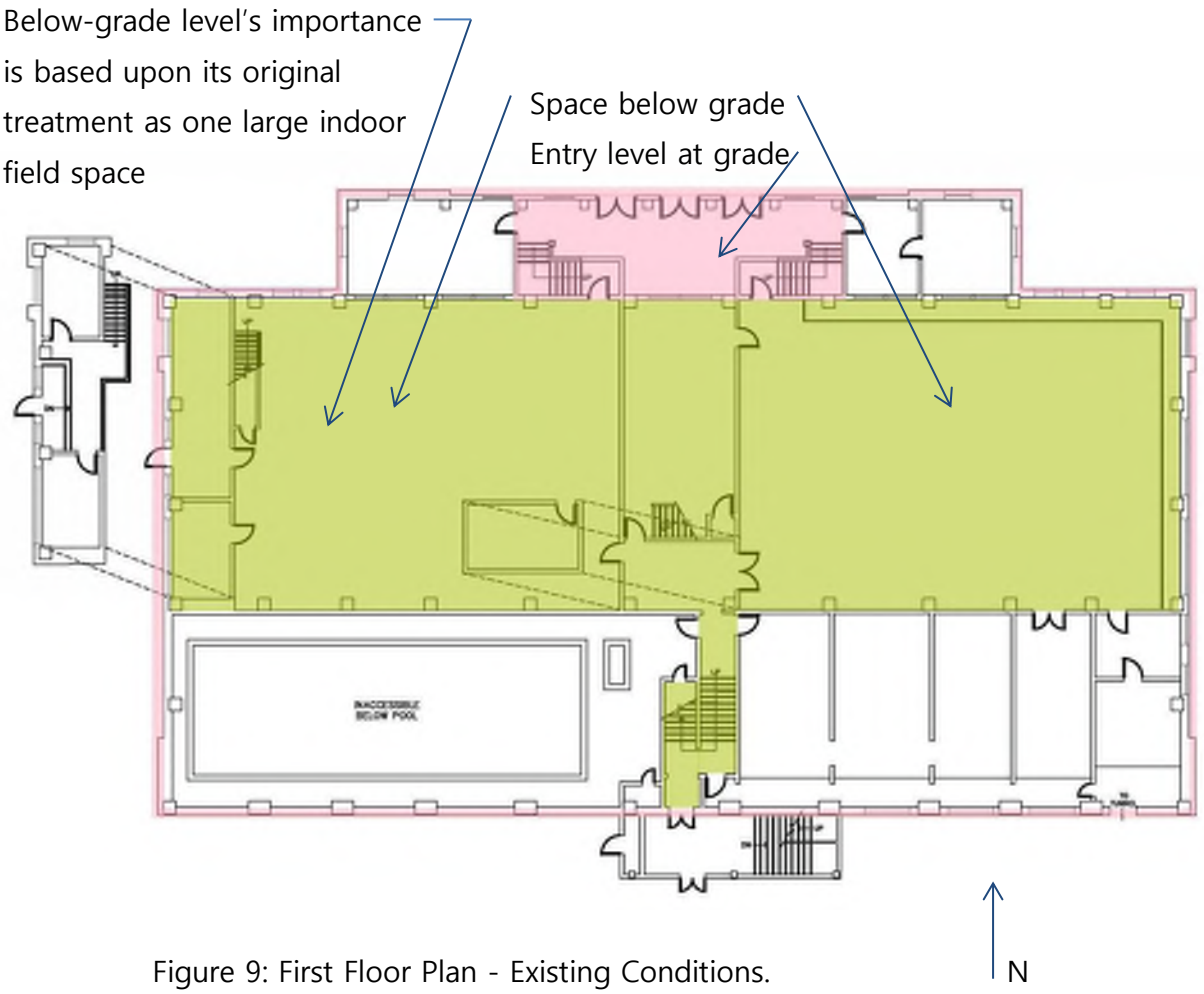


Figure 9: First Floor Plan - Existing Conditions.

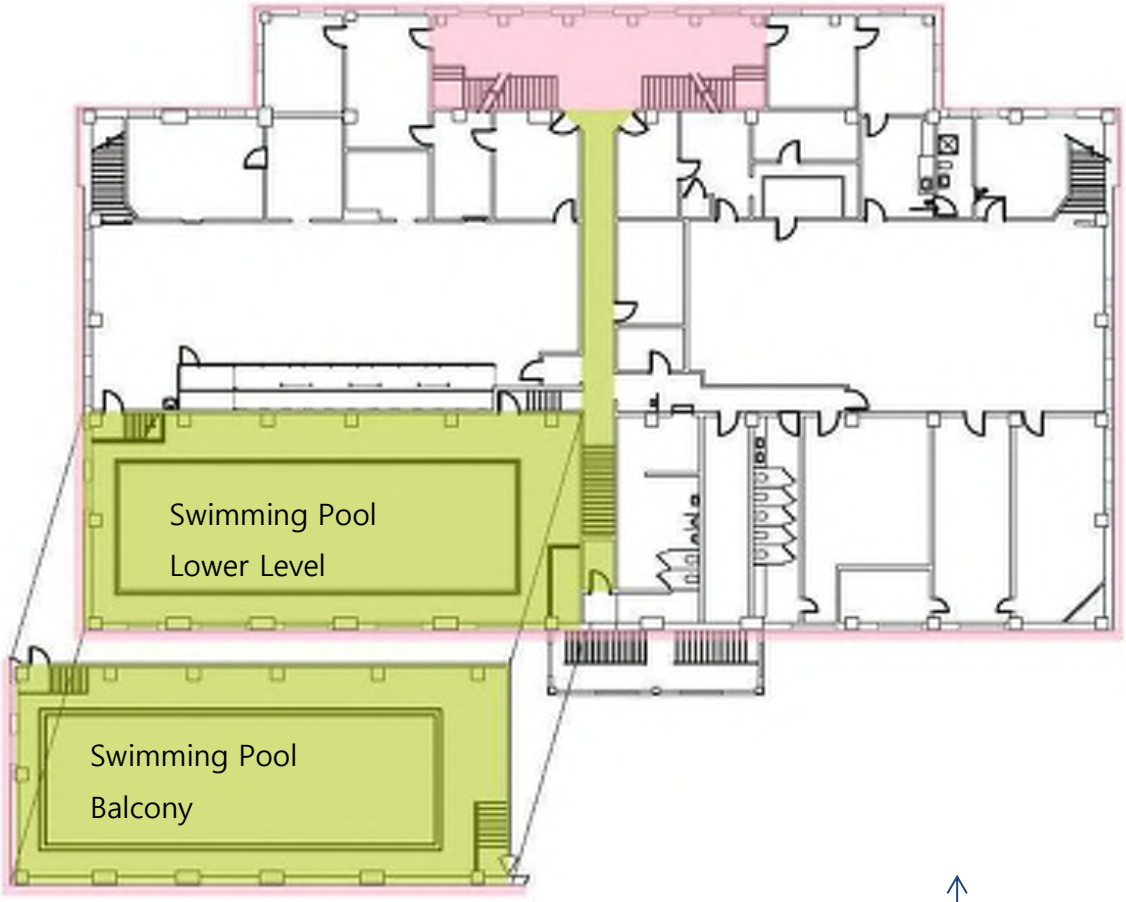


Figure 10: Second Floor Plan - Existing Conditions.

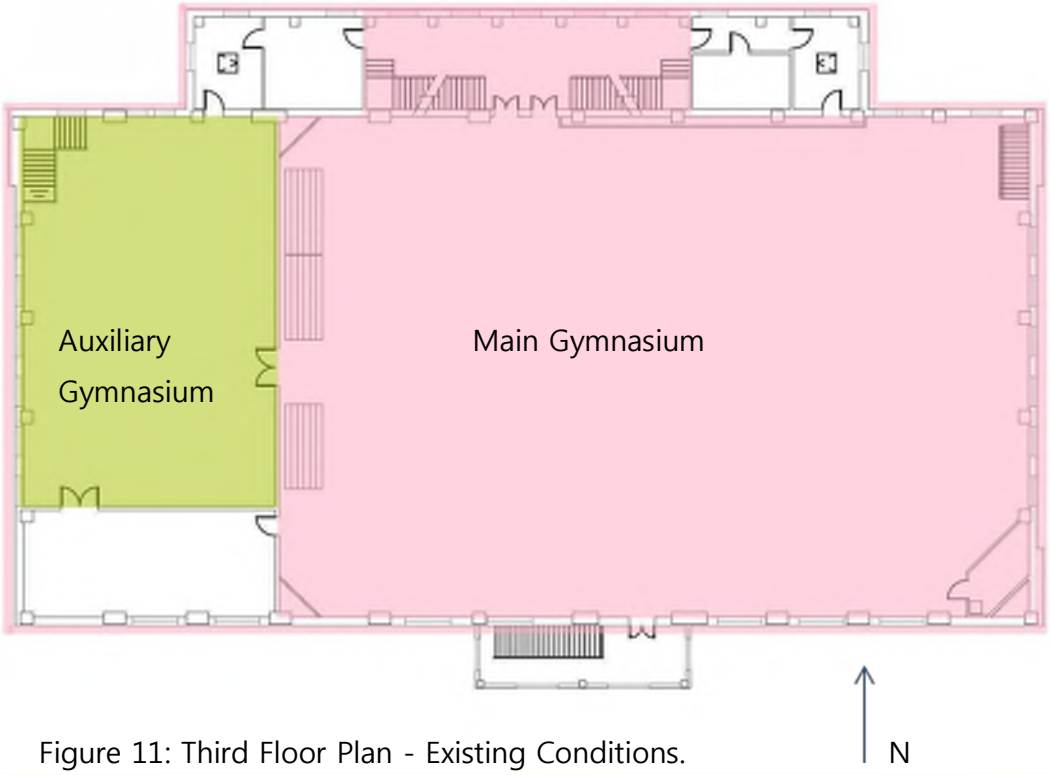


Figure 11: Third Floor Plan - Existing Conditions.

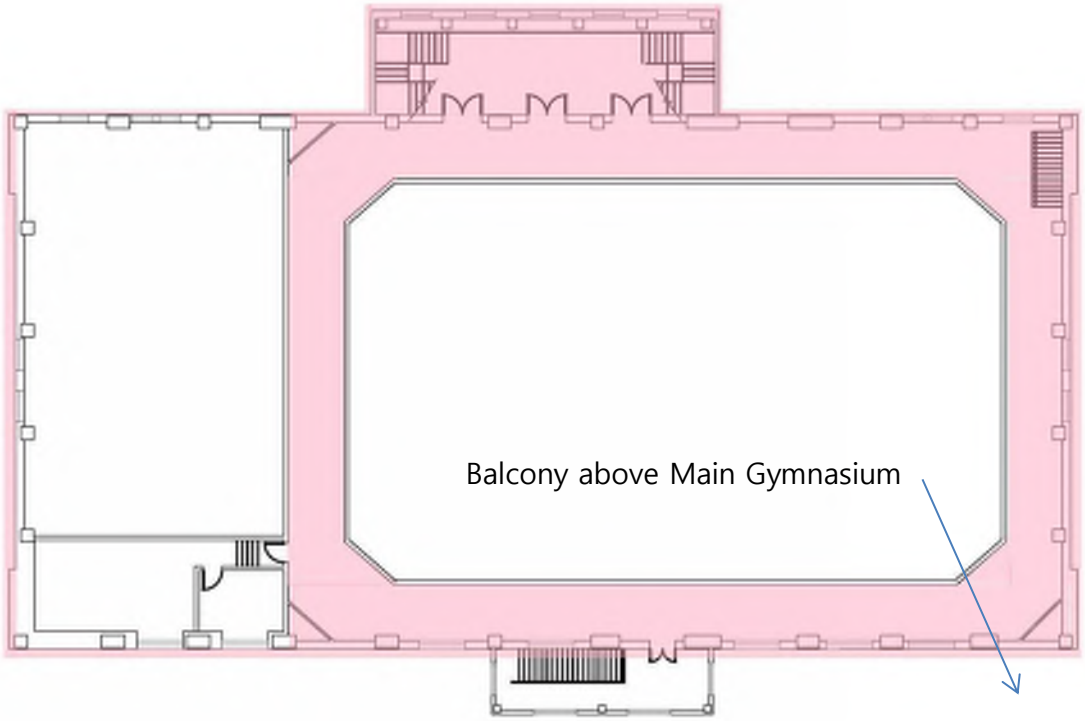


Figure 12: Fourth Floor Plan - Existing Conditions.

RANKINGS LEGEND

High: Quintessential & indispensible

Medium: Important - without it, significance is diminished

Low: Little effect on building's significance, but adverse effects could be cumulative

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Character-Defining Features

Character-Defining Features

General

Significant structures are comprised of various components that contribute to their significance and help define their historic use. A character-defining feature is a "prominent or distinctive aspect, quality, or characteristic of a historic property that contributes significantly to its physical character."[7]

The following pictorial inventory highlights the features and contributing components that are paramount to expressing the architectural and historical significance inherent in Romney Gym, providing a basic level of understanding what needs to be protected and remain unharmed.

Figure 13: The main facade that faces north towards the Romney Oval.

[7] U.S. Department of the Interior, National Park Service.

Figure 14: The copper marquise announces the main, north entry.

Figure 15: Rich brick and terra cotta detailing at one of the gable end walls.

Figure 16: Barrel roof, copper ornament, and clay tile coping at parapet wall (at the right).

Figure 17: North stair hall with terrazzo flooring and tall windows that penetrate the landing above.

Figure 18: Two-story Main Gymnasium with ample natural light and balcony at perimeter.

Historic Photographs

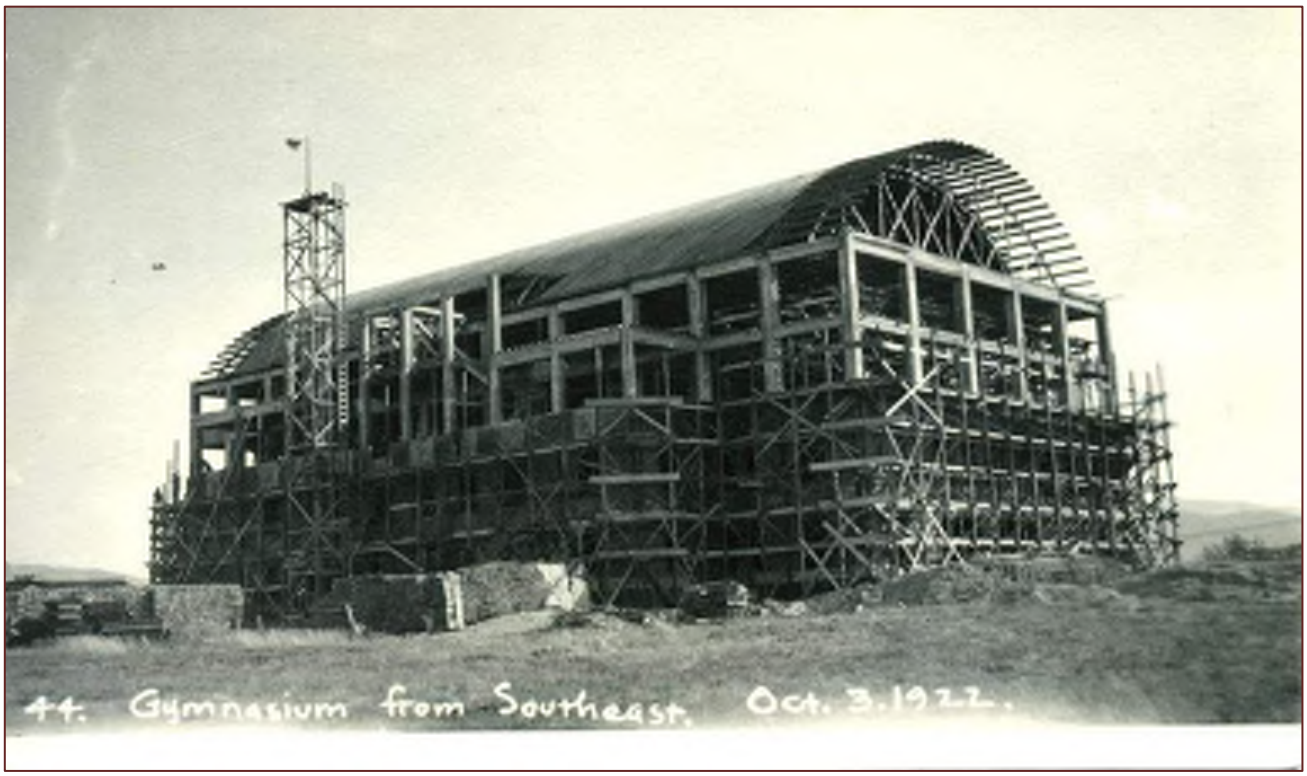

Figure 19: Construction photograph, October 3, 1922. Photograph courtesy of MSU Special Collections.

Figure 20: Post-completion photograph, c. early 1923. Photograph courtesy of MSU Special Collections.

Figure 21: The main, north entry soon after completion. Photograph courtesy of MSU Special Collections.

Figure 22: Bird's-eye view looking west, showing Gatton Field to the left. Photograph courtesy of MSU Special Collections.

Figure 23: 1929 basketball game in the Main Gymnasium. Photograph courtesy MSU Special Collections.

Figure 24: Memorial service for former MSC president James M. Hamilton, in the Main Gymnasium. September 26, 1940. Photograph courtesy MSU Special Collections.

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Assessment - Exterior

Architectural Assessment - Exterior

General

The exterior condition assessment addresses the building only, and not the site. The exterior components – including roofing, drainage, masonry, trim, and openings – are those that protect the exterior envelope of the building, hence the integrity of the interior as well. The assessment begins at the top of the building and continues sequentially down to grade.

The original and subsequent construction documents aided this assessment; relevant findings are noted herein.

Note about Hazardous Materials

Several of the components in a building of this age often have lead or asbestos content sufficient to warrant special care in their treatment – be it removal or repair. Testing for such hazards was not included in this project. Suspect materials for asbestos and lead are typically roofing felt, caulks, mortar, and window putties; and paint, respectively. Future renovation planning efforts should include comprehensive testing for hazards, so that remediation can be incorporated into the project.

Roofing – Sheet Metal

Description

A graceful barrel vaulted roof is sandwiched between two brick parapet walls. A cross barrel extends from the main roof to cover the north entry bay. As part of the textural expression of the building, the copper sheet roofing was installed over 3" high by 7" wide wood battens located 2 feet on center. These ribs are evident in the historic photographs.

The current roofing was installed in 1985. The copper caps and battens were removed, and the copper panels between the battens were retained. Pre-finished galvanized snap-on 1"-high seam panels, located 13" on center, were installed over the existing copper and roof deck.[8] The brown color appears intended to match the original patinated copper cornice that remains. The roof was accessed from a hatch at the south stair.

Three rows of brown plastic snow guards ("Sno Gems") are glued to the sheet metal roof between every seam at each barrel half of the roof. The guards have 5" square flat plates mounted diagonally to orient the vertical fins perpendicular to the snow load.

[8] Drawings for this project #85-0040, prepared by Taylor Architects of Bozeman, are located in MSU Facilities Archives.

Condition

The sheet metal, seams, and finish are in good condition. The single ply reinforced membrane used at the base of the barrel is ripped and degraded from UV exposure. It is assumed that where concealed by the sheet metal, it is sufficiently protected from damaging UV rays. A number of the snow guards – about five to seven per row – have disengaged from the roofing; a pile of fallen guards rests near the roof access. Rusted scars remain where some of the guards were located. Sealant at the skyward side of the guards is degraded.

Figure 25: The standing seam roofing, looking west.

Figure 26: The reinforced membrane lapped at the base of the sheet metal is often torn, broken down by UV rays.

The juncture at the parapet walls appears to consist of base flashing of the sheet metal roofing and counter flashing of painted galvanized sheet metal. The 1985 drawings indicate that original copper flashing was retained at the top of this assembly; such stepped flashing is only visible where the parapets straighten at the lower eaves of the roof. The extant flashing appears to be of a lighter gage metal subject to bending and deformation, yet it has been refastened at regular intervals.

According to the 1985 project specifications, the material was a hot-dipped 24-gauge steel with a Kynar coating. The roofing's 10-year warranty expired on September 30, 1996.

Figure 27: Painted flashing at the parapet walls appears to be in good condition.

Recommendations

The roofing installed in 1985 appears to have been of good materials and benefited from a quality installation. The seams are tight, the panels are not oil canning or tearing, no hail damage was evident, and rusting is limited to the prior snow guard locations.

Figure 28: Rust is forming where moisture was trapped under a snow guard, since fallen.

The rusted areas should be treated to remove the rust and repainted with a system compatible with the Kynar coating. This scope of work will constitute more than the fallen snow guards, as rust is developing at other guards that still remain in place. The snow guards should be reinstalled. The skyward sealant at all the snow guards should be replaced; sealant should not be installed at the lower sides, to allow water and snowmelt to exit.

The sheet metal roofing should be replaced within ten years.

Roofing – Flat Roofing

Description

There are four sections of flat roofing on the building: the two roofs that flank the front barrel above the main north entry, the roof over the south stair, and the roof over the north entry marquise. Only the south stair roof was accessed during the assessment; a roof access hatch was installed here during the 1985 reroofing.

Figure 29: Sealant failure at the skyward side of the snow guards allows moisture to travel behind the snow guard.

The 1985 drawings indicate that a 45 mil single ply membrane was installed over 3" isocyanurate insulation mechanically fastened to the decks of the upper flat roofs. The membrane appears to be SBS with integral aggregate cover. This same material lines the built-in gutters at the base of the barrel roof. The seams are adhered, not mechanically fastened.

Figure 30: The flat roofing membrane extends over the parapet wall and is used to line the built-in gutter.

The flat roof of the entry marquise, as viewed from inside the building, appears to be a similar single-ply membrane of a darker color. The original flat-seam copper roofing was to have been removed as part of the 1985 reroofing project.

Figure 31: The flat membrane roofing over the marquise has mold growth and openings at the seams.

The parapets of the south flat roof have sheet copper coping; no provision has been made for expansion and contraction of the sheet metal or the flat membrane which is flashed over the wall beneath the sheet metal.

The 1985 project records indicate that the Hi-Tuff Roofing 10-year warranty began on September 17, 1986.

Condition

The flat membranes of the upper roofs appear to be in good condition. The seams are tight, the material is not heavily worn, and the aggregate cover appears sufficient.

The seams of the flat membrane of the marquise roof appear to be opening up, with deterioration of the adhesive. Organic growth, in the form of moss clumps, is prevalent (as it is at this north face of the building) but not damaging.

Recommendations

The open seams should be resealed immediately. The roofing will probably outlive its usefulness within ten years and should be replaced at or before that time.

Roof Drainage & Collection

Description

The barrel roof drains to built-in gutters that run the full length of the building, flanking the base of the barrel. In 1985, the original copper gutter liners were removed and replaced with a flat roof membrane as noted above. The membrane is lapped over a new copper drip edge that was integrated with the original copper cornice.

The gutters slope to drains that used to feed exterior downspouts; replacement copper downspouts now enter the building at the

cornice line and run exposed (painted to blend in with the walls) inside the building. It appears that heat build-up in the attic prevents the downspouts from freezing. The original downspouts directed water to grade outside the building; it is unclear where the current downspouts direct run-off to. It is probable that they are connected to the sewer line below the lower level flooring.

Steel tie-backs have been installed at regular intervals across the built-in gutters, from the base of the barrel to a track along the top of the cornice.

The flat roofs flanking the north barrel roof drain to built-in gutters lined with the roofing membrane. Drains located towards the inside corners lead to corrugated copper downspouts that direct the run-off to grade.

The marquise roof is gently sloped to copper scuppers that collect and direct the water to open-faced copper gutters at the west and east sides of the marquise.

Condition

The gutters appear to adequately slope to the drains, yet the liners are worn and some of the seams appear to be open. The north downspout runs have minimal elbow extensions which could lead to excessive water build-up adjacent to the building's foundation.

Efflorescence and open mortar joints at the masonry walls below the gutters and scuppers indicates that open joints in the gutter system

Figure 32: The north flat roof and built-in gutter east of the entry bay barrel roof.

are allowing moisture into some of the walls below.

Recommendations

In the short term, tighten and resecure all joints in the gutter liner, cornice, and scupper systems, sealing their skyward seams where able. This will require a close inspection of all joints and the detail where of the juncture between the gutter and the cornice. The gutter liners should be replaced within five years.

Figure 33: Gaps in the sheet metal seams of the cornice-to-gutter system, and at the liner seams are probably causing moisture penetration into the walls below.

Figure 34: The copper downspouts are now run inside the building, and painted to blend with the wall.

Provide longer extensions at the north downspouts adjacent to the entry bay roof and the marquise roof.

Figure 35: The copper downspouts are now directed into the warmth of the building. Drain and downspout at northwest corner of main barrel-vaulted roof.

Figure 36: Open seams in the gutter liner or the sheet metal have allowed moisture to penetrate the masonry wall below.

Roofing Penetrations

Description

Paired hooded steel vents penetrate the bottom of the barrel roof at regular intervals coincident with the columns of the building. These ventilators are indicated – at these same locations – on the original elevation drawings. The plans depict chases flanking the columns, with registers for both supply and return air. This coincides with the differentiation in the ventilators at roof level; half are for exhaust and half are for fresh air intake. These ventilators are connected to brick chases that continue down through the attic floor to align with the chases indicated on the drawings, and present in the plaster-lined chases visible in the brick pilasters of the Pool Room. This indicates that these devices are not used to ventilate the attic. Attic ventilation is provided by large louvers in the two end gable walls.

Figure 37: The paired ventilators flank the columns.

Figure 38: The paired ventilators are now of galvanized sheet metal.

It is presumed that the original ventilators were of copper; the current ventilators might have been installed during the 1985 reroofing project. Snow guards are (and were) located above each pair of ventilators.

Figure 39: Several of the vent flaps are missing.

Condition

The ductwork itself is in good condition. Some of the vent flaps are missing, which could allow driving rains to enter the shaft. A regular pattern of sealant application at the upslope side of each shaft is indicative of a chronic water infiltration pattern evident on the fourth floor ceiling below (see Interior Assessment below). A build-up of dried-up sealant appears to have resulted in gaps between the sheet metal and the sealant.

Figure 40: A regular application of sealant at the upslope side of each ventilator has been required to reduce water penetration.

Recommendations

Provide flaps where missing at the ventilator caps. Remove all the sealant, confirm proper flashing (install new as required), and reseal with sealant designed for this application (proper expansion and contraction capabilities, material compatibility, etc.)

Parapet Walls

Description

The end gable walls flanking the main barrel roof and fronting the north barrel roof are capped with "Imperial Mission Tile Coping."[9] This tile, manufactured by Ludowici since 1888, is still manufactured today. The original tile has a matte green glaze. Subsequent replacement tiles – in darker green and terra cotta - have been installed. The terra cotta tiles have only been installed on the back sides of the parapets.

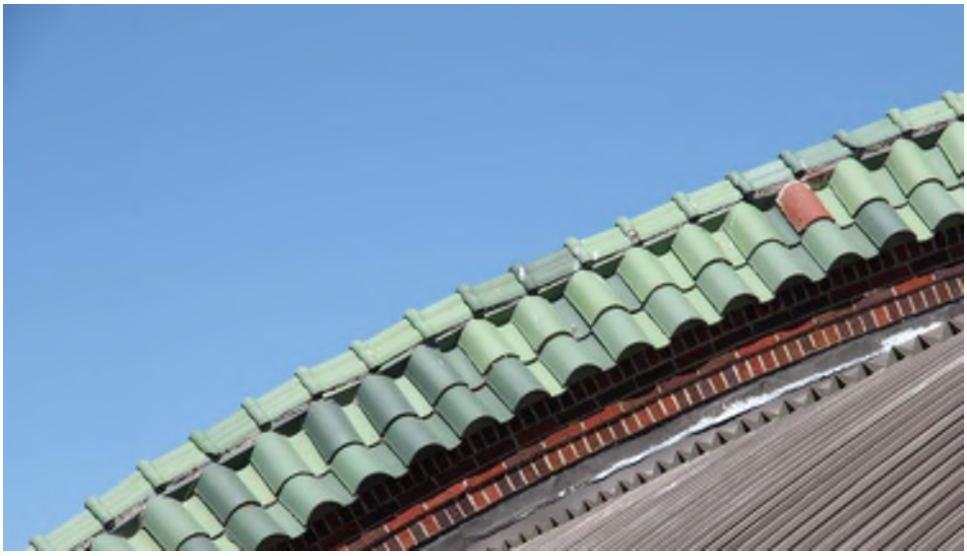

Figure 41: Mission style clay tile covers the arched parapets. Roofside view of west parapet wall.

Figure 42: The ends of the parapet walls are pronounced with terminal bump tiles.

Condition

The tiles appear to be mortared securely in place. The good condition of the parapet walls below indicate that the tiles are providing sufficient protection.

Recommendations

No work required.

[9] Original 1921 construction drawings.

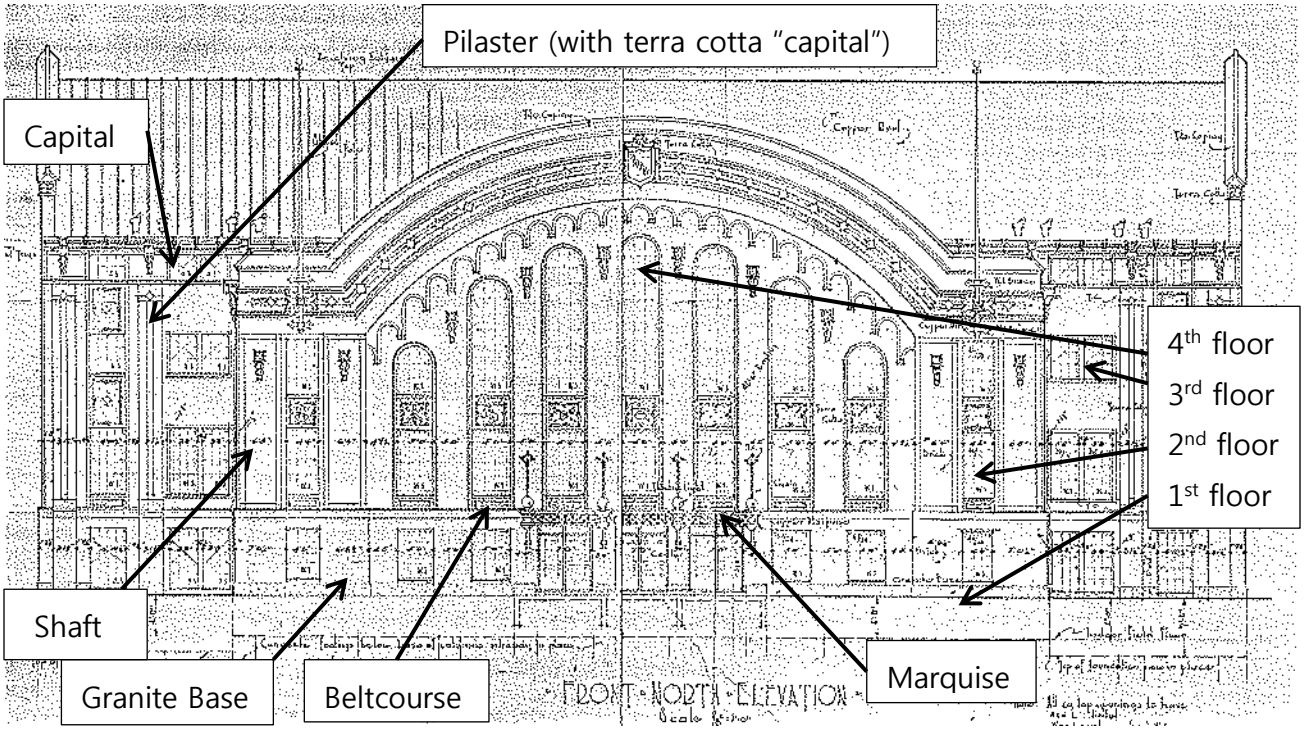

Figure 43: North elevation drawing from 1921 construction drawings.

Walls - Brick

Description

The main walls above the granite base of the building are finished with tapestry bricks with a corduroy nap texture set in a running bond. The colors of these tapestry bricks range from orange-red to chocolate-brown. The walls are articulated into base (granite and brick below the beltcourse), shaft (three stories of brick), and capital (copper cornice). The shaft of brick is further divided into a regular pattern of recessed window panels and pilasters.


Figure 44: The beltcourse is neatly terminated at the exterior corners with double-headers, accentuated by the re-entrant corner above.

Brick and terra cotta ornament are incorporated into the exterior walls. Rowlock brick cap the beltcourse of soldier brick, define the arch borders, and create panels in the

spandrels. Double-headers form the outer corners of the beltcourse, accentuated by the re-entrant corner above.

Stacked brick provide a strong vertical expression at the pilasters and window mullions.

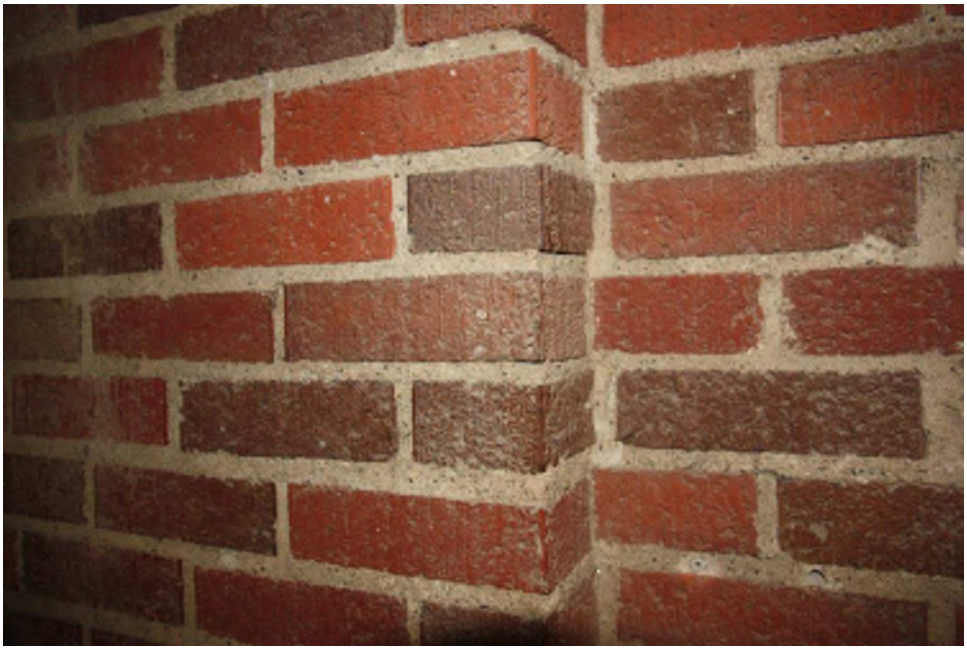

Figure 45: Most of the mortar joints are original and in excellent condition.

The mortar joints in the brick are a buff color with distinct aggregate. The mortar appears to be a lime-based composition with aggregate of a varied size and color range. The mortar joints have a flush profile. This treatment is consistent with that of the other Italian Renaissance Revival style buildings on the MSU campus.

Figure 46: 1923 photograph of the north elevation, with distinct line of mortar color variation (see arrow point). Photograph courtesy of MSU Special Collections.

Condition

The general field of wall brick is in good condition, with minor variations in the mortar joint conditions. There are isolated areas of mortar erosion due to normal weathering. Joints typically wear over time and need to be repointed. Most of the mortar joints have held up well and have not been repointed.

This is a testament to the vigilant construction supervision provided by Fred Willson.

There appears to have been a pause in construction of the brick walls – perhaps for inclement weather – that is apparent in a clear distinction on all elevations just below the fourth floor windowsill level. See Figure 46 for early appearance of this marking.

There is a regular pattern of mortar joint

erosion at brick below terra cotta units, where the joints have failed. A second area of typical erosion is at the skyward joints of the beltcourse. While the beltcourse adds visual interest to the building, it is problematic in terms of detailing. The beltcourse extends beyond the upper wall plane, exposing the horizontal surface of the joints to snow, ice, and water penetration. Provision of a sloped concrete wash at the top of the beltcourse was helpful initially, yet now water is directed into the vertical joints below. Most of the top rowlocks of the beltcourse have been repointed, seemingly with a hard mortar, trapping water within the brick itself, causing extraction of salts onto the wall surface. Where salts have remained in the brick, they have frozen and exerted enough pressure to spall the outer surface of the masonry unit off (exposing the more vulnerable biscuit to moisture penetration).

Figure 47: There is a regular pattern of open mortar joints in the terra cotta trim causing open mortar joints in the brick directly below.

Figure 48: Close-up of open joints in brick below terra cotta trim.

A note about mortar: Mortar used to repoint and repair historic masonry construction should always have a compressive strength

less than the brick or stone, and a flexural bond strength sufficient enough to produce proper bond between the mortar and the masonry unit; this is vital for the long-term durability of the masonry. Mortar used for repointing should also be at least as permeable as the adjacent historic masonry; this allows the mortar – in lieu of the masonry units – to relieve the wall stresses.

Figure 49: The beltcourse is vulnerable to water penetration, resulting in mortar loss and organic growth.

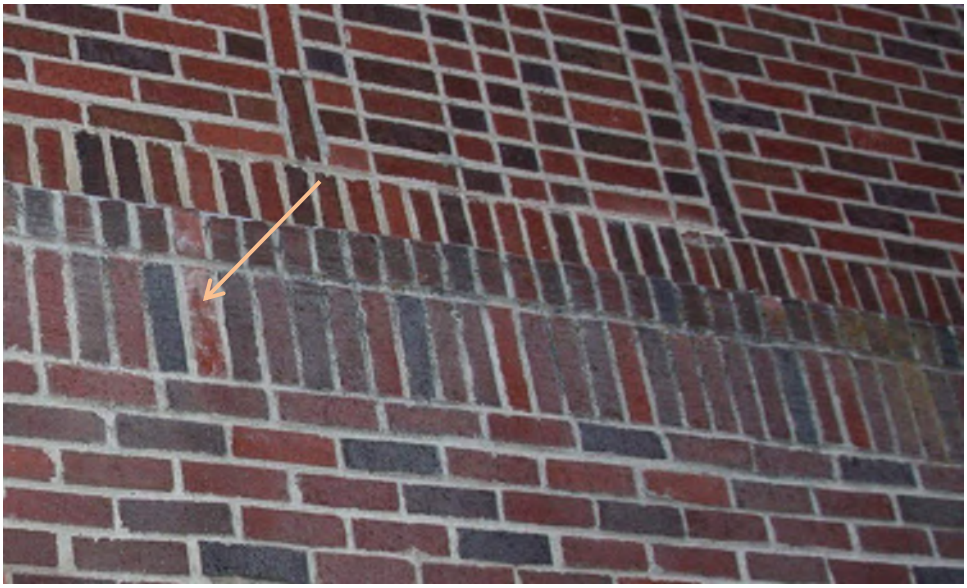

Figure 50: Soldier brick on the west face of the building has spalled (see arrow tip).

The north face of the building is subject to cooler, moister temperatures, as indicated by the substantial growth of moss and lichens on the horizontal masonry surfaces. Wall areas below the built-in gutters are subject to water – and resultant efflorescence – from leaks in gutter joints (see Roof Drainage & Collection above).

There is minor impact damage to the brick at the base of the southwest corner of the south stair well.

Recommendations

The open mortar joints should be repointed with a mortar of high lime content; this applies to approximately 10% of the joints. The rowlock and soldier brick of the beltcourse should be repointed and the skyward joints

should be provided with extra protection. The sloped wash should be removed and replaced with a lead caming system (Weathercap, for instance).

The lichens and moss should be removed with a biocide.

Efflorescence salts should be brushed off, as the salts attract more salts. The joints in the gutter systems need to be sealed.

Figure 51: Efflorescence salts are accumulating at the northwest corner of the entry bay; water is entering through leaks in the gutter above.

Figure 52: Vegetative growth is most prevalent at the horizontal surfaces of the north face of the building.

Figure 53: Moss accumulation at the beltcourse at the northwest side of the building.

Figure 54: Lichen growth at the northwest side of the building, with moss at the top of the granite base.

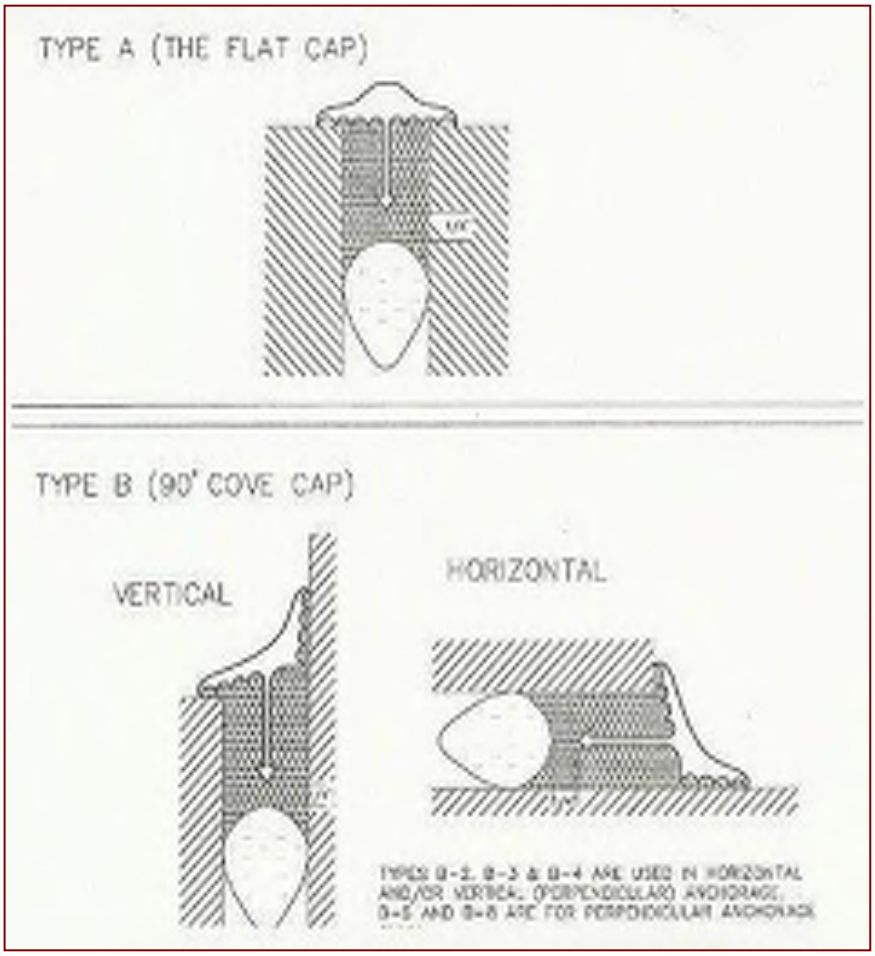

Figure 55: Weathercap can be used on existing joints as narrow as 1/4" and can be used at vertical wall joints.

Figure 56: Example of Weathercap installation at similar beltcourse at Traphagen Hall, MSU campus.

Walls – Terra Cotta Ornament

Description

A mottled glazed terra cotta decorates Romney Gym at all the main broad arches, the windowsills of the upper three floors, pilaster caps, intermittent spandrels, and arched window surrounds. Some of the sills are lug, and some are slipped into the masonry opening. Some of the sill joints are the lip type, and some are flush.

Figure 57: The west facade contains most of the typical terra cotta attributes of the building.

The most elaborate pieces are the foliate brackets that are aligned with panels on the copper cornice, the bead-and-reel trim accentuating the window surrounds and arches, the "M" shield with garlands atop the front end gable, and the sports' gear spandrels at the north façade.

Figure 58: The gentle arches that align with the barrel vaulted roof are articulated with terra cotta trim and ornament.

Condition

There is no spalling of the terra cotta – each unit is sound and appears to be well adhered to the wall structure. Many of the mortar joints of the arched and sill units are open. This has created open joints and staining in the brick below. As with the brick, there is mold growth on terra cotta units on the north façade. It appears that approximately 20-25% of the mortar joints are eroded.

Figure 59: The "M" shield at the top of the north facade is framed with tightly-woven leafy garlands.

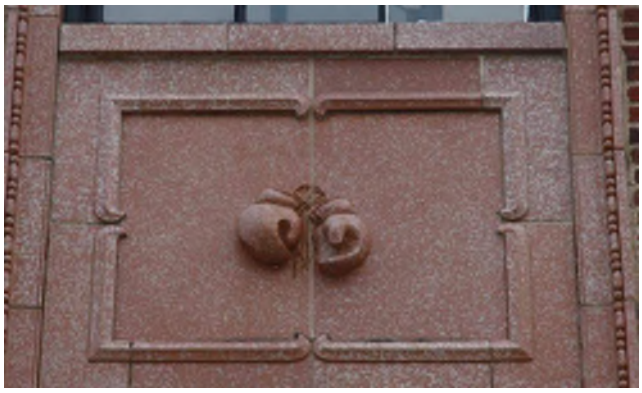

Figure 60: The thin terra cotta strings of the boxing gloves remain intact.

Figure 61: A number of the sill joints are open, as is typical for vulnerable skyward joints.

Figure 63: The north entry facade sports the most terra cotta ornament.

Figure 62: Open joints in the terra cotta arch units impact the condition of the brick below.

Recommendations

The moss should be removed with a biocide. The open mortar joints should be repointed. Consideration could be given to protecting the skyward sill joints with lead caming.

Figure 64: Moss on the north face terra cotta holds moisture against the mortar, causing eventual erosion.

Walls – Granite Base

Description

Light gray granite forms the base course that is set on the foundation at grade on all sides of the building. This ashlar base has very thin, flush profile, mortar joints. The granite is similar to that used at Traphagen and Lewis Halls of the same time period, yet it has a pronounced bevel at the top.

Figure 65: A number of the vertical joints between the granite base units are open.

Condition

A number of the mortar joints between the granite units are open. This is natural erosion of the mortar caused by typical runoff. The stone is stained from dirt splashing from the base of the building, and stained with lichen and moss on the north façade. None of the granite has spalled. One unit appears to have been cracked during the installation of the grade level door at the west façade.

Figure 66: Lichen, moss, and dirt trap moisture against the granite base at the north facade.

Recommendations

Clean the granite to remove soiling, moss, and lichen. Repoint the open

mortar joints. Patch the crack at the west base with compatible mortar patching compound.

Openings - Doors

Description

There are three pairs of wood glazed doors at the primary building entry at the north elevation. These stile-and-rail doors appear to be the original 3'-wide clear finished birch doors (based on photographs) with original transoms above. Hardware at the easternmost door has been modified to provide an accessible entry lever. All the doors are fitted with panic bars, heavy duty hinges, door closers, and kick plates. There is a 1½" lip at the entry threshold; rubber mats are used to provide a ramped transition to the exterior terrazzo landing.

Figure 67: The main entry doors are the original stile-and-rail doors with ample glazing.

The south entry has a non-original aluminum storefront unit with a pair of doors flanked by sidelites. A pair of doors similar to those at the front entry are located at what was the original exterior south entry, inside the stair well.

Figure 68: A hollow metal door has been inserted to provide grade level access to the Human Performance Lab at the west lower level of the building.

A door has been inserted into a converted window opening at the grade level of the west facade. This hollow metal door is flanked with steel sash that was probably relocated from one of the Pool Room openings (since infilled with glass block).

Condition

The doors are in serviceable condition and are wide enough to provide handicapped accessibility.

Recommendations

A smoother more permanent transition ramp from the terrazzo landing to the main entry door thresholds should be provided. The finishes and hardware should be refurbished.

Figure 69: Typical wood sash - six-over-six - at the second floor of the north stair hall.

Openings – Wood Windows

Description

Wood windows are located at all the openings of the north entry bay and the adjacent office openings of the north elevation. The standard windows are 1¾"-thick wood double-hung windows with divided lites (typically six-over-six) of cylinder glass. The muntins are 1¼"-wide with typical cyma recta profile, sealed with putty at the exterior. The interior sash, trim, and stools are clear finished. The aprons are typically concealed by furred interior walls.

Figure 70: Typical condition, with paint wear at exterior sill and interior stool. Original zinc weatherstripping at jambs, sill, and meeting rails makes the system more airtight.

The smooth operation is facilitated by two steel pulls at the bottom rail, steel Fitch style sash locks, and the standard pulley-weight system suspended with rope.

The windows are all fitted with zinc weatherstripping at the sills, jambs, and meeting rails.

Figure 71: The exterior components of the wood windows are generally in excellent condition.

There is sufficient depth (1-1/8″) for exterior storm windows, yet none appear to have been extant. The interior jamb depth of 2½″ can accommodate installation of interior storm windows, with sufficient clearance for operating hardware.

Figure 72: The exterior components of the windows at the upper floors are in excellent condition.

Condition

The typical window in an 8′-4″ tall opening is in excellent condition and operates smoothly. Some of the sash are heavy and slide down.

The interior wood stools are typically worn to bare wood, as they are typically subject to the steam heat generated by the radiators. The exterior wood sills and brickmolds are in excellent shape; some of the paint is worn. The paint at some of the bottom rails and stiles is worn, and some of the glazing putty is worn. It should be assumed - until tested – that the paint layering contains lead.

The tall third floor windows at the north wall of the entry stairway have bowed and deflected, responding to their unsupported height of 16′-20′. Gaps between the meeting rails contribute to air leakage.

Recommendations

The windows appear to have been regularly maintained; putty has been replaced, and the paint has been recoated. The interior finishes should be rejuvenated, some of the sash weights readjusted to provide smooth operation (and prevent sash slippage), the exterior putty replaced when worn, and the exterior finishes touched up.

The tall windows at the north entry wall need to be treated as above and stabilized to prevent air gaps. Consideration should be given to rendering the tallest units inoperable.

The windows can be made more energy efficient in several ways, resulting in U-values comparable to new insulated glass units. Each unit can be fitted with an exterior or interior storm, the latter of which eases maintenance issues due to greater accessibility. In addition, the windows could be fitted with vinyl jamb liners, allowing for removal of the weight and filling of the pocket with insulation.

Figure 73: A gap at the meeting rail of the two-story window of the north stair hall.

Openings – Steel Windows

Description

Steel windows are located at all the openings of the original Main Gymnasium, Locker Rooms, and Pool Room. Configurations vary from three to six panes in width; heights vary from one to four panes. Many of the windows have (often sizable) horizontally-pivoted sash centered within the opening. The standard windows are 1½"-thick Fenestra steel windows with divided lites of cylinder glass. The muntins are 7/8"-wide with typical cavetto profile, sealed with putty at the interior. The sash are set into the jambs, with flat wood exterior brickmold.

The pivot sections are each operated with a steel handle; the extent of opening is governed with a steel chain.

Condition

The sash are generally sound and operable. The glazing putty is generally sound, yet much of the paint cover is worn. The windows are stable, yet much of the paint finish is worn and interior steel has surface rust in the Locker Rooms. Some of the chains and hardware parts are missing.

Figure 74: The steel sash allow for light-filled athletic spaces in the building.

The exterior steel is in good condition, with protective paint well adhered.

Recommendations

Sandblast and repaint all steel members. Replace all glazing putty. Provide replica pieces for missing hardware and lubricate existing hardware. Repaint steel.

The windows can be made more energy efficient in several ways, resulting in U-values comparable to new insulated glass units. Each unit can be fitted with an exterior or interior storm, the latter of which eases maintenance issues due to greater accessibility. Interior windows can be fitted with operable or removable portions to facilitate operation of the prime sash.

Figure 75: The steel sash pivot horizontally at the center, allowing for up to 100% of natural ventilation.

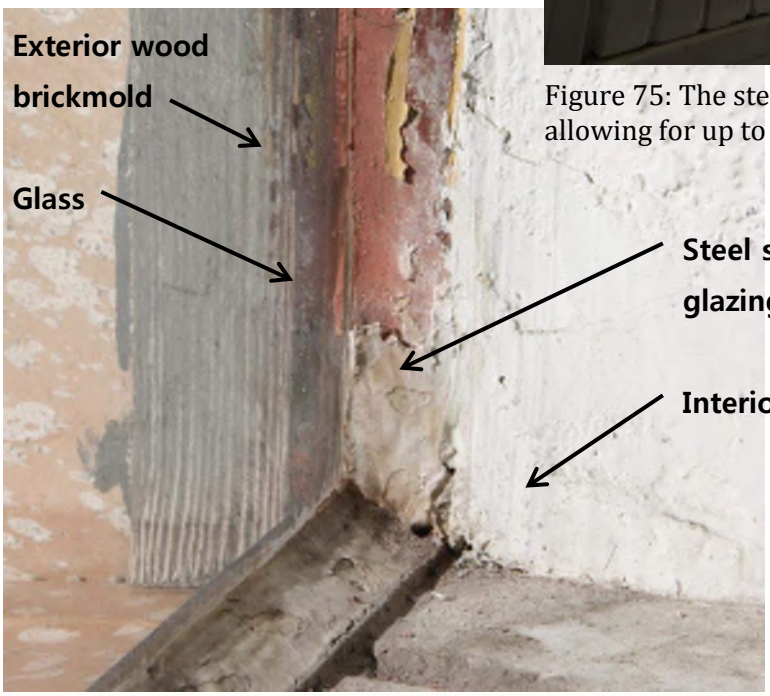

Figure 76: The steel sash are set directly into the window jamb. The putty and paint are worn.

Figure 77: The chain is held by the holder, allowing for varying levels of opening, while stabilizing the sash.

Figure 78: The glazing putty is at the interior, making touch-ups easier. Surface rust is typical for the sash in the locker rooms.

Openings – Glass Block Windows

Description

The original steel windows have been removed from the large window openings in the Pool Room and replaced with 8″ glass block. The blocks are fitted with vents.

Figure 79: The large Pool Room window openings have been filled in with glass block.

Condition

The glass block is in good condition.

Recommendations

Remove the glass block and install new steel sash, with insulated glass, in a configuration to match the original (as determined by historic photographs, size, and original construction drawings).

Figure 80: Glass block window openings in the Pool Room; the original steel sash (1 pane high) remain below.

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Assessment - Interior

Architectural Assessment - Interior

General

The interior condition assessment addresses the primary interior architectural finish components, including the plaster finishes, brick, wood flooring, windows, and doors. Structural components have been assessed separately; see Structural Assessment.

The original and subsequent construction documents aided the assessment; relevant findings are noted herein.

Note about Hazardous Materials

Several of the components in a building of this age often have lead or asbestos content sufficient to warrant special care in their treatment – be it removal or repair. Testing for such hazards was not included in this project. Suspect materials for asbestos and lead are typically plaster, vinyl floor tiles, caulks, mortar, and pipe insulation; and paint, respectively. Future renovation planning efforts should include comprehensive testing for hazards, so that remediation can be incorporated into the project.

Attic – Structure

Description

The attic is accessed from a recently installed ceiling hatch (with pull-down stair ladder) in the fourth floor office carved out of the top of the southeast handball court space.[10]

The steel trusses are purported to be the first use of riveted steel for non-industrial purposes in Montana. The steel truss structure is addressed in the Structural Assessment. The original shiplap ¾" x 6¾"pine or doug fir roof decking remains diagonally oriented, fastened to the joists that span the trusses.

The attic floor is insulated with both blown-in and batt insulation.

Condition

The steel structure and wood decking are in good condition.

Recommendations

See Structural Assessment.

Gymnasium Balcony

Description

The Main Gymnasium balcony was originally wider and had stepped risers providing seating. In c.1970, the balcony was reconfigured with removal of the tiered

[10] The installation is unknown, but this might have been coincident with the 1982 attic insulation project documented in the MSU Facilities Archives project dated June 18, 1982.

seating and the front 5′-4″ wide section in front of the steel support rods. A level floor was provided. The steel support rods and channels remain visible as a guide to the original configuration. A plywood clad guard wall was constructed as the face of the new balcony.

Condition

The balcony is in good condition. See discussion of Plaster Ceilings below.

Recommendations

See Concept Plans for consideration of reintroduction of a wider balcony.

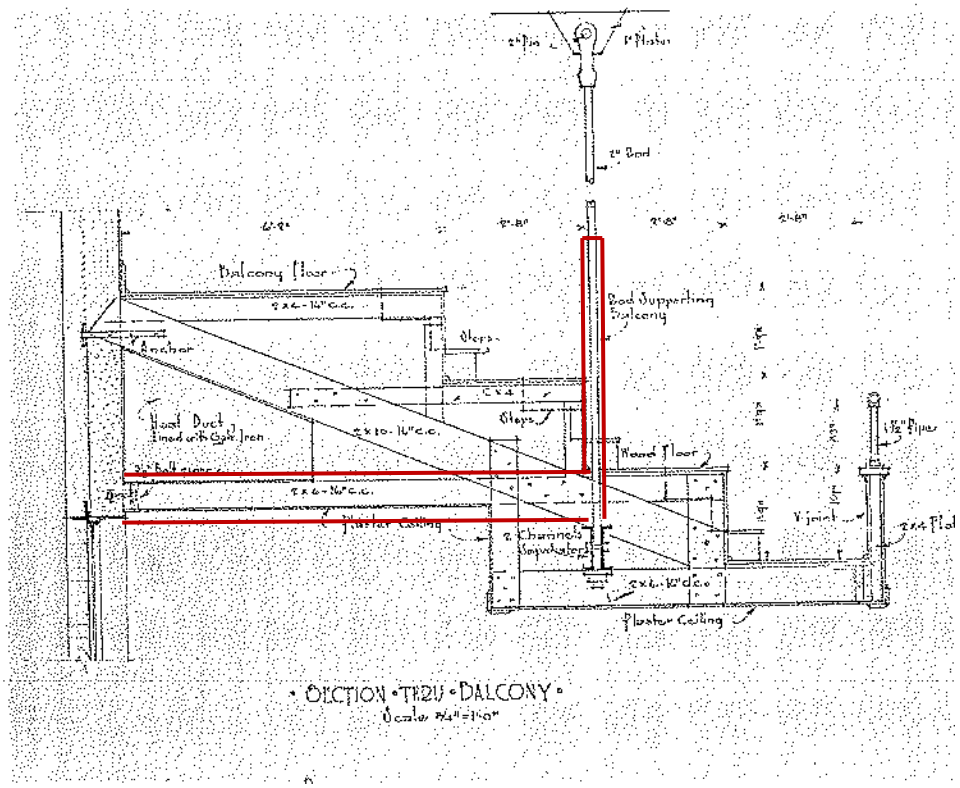

Figure 81: Red lines of existing balcony superimposed over cross-section of balcony detailed on the 1921 construction documents.

Figure 82: The original steel support structure is visible at the underside of the existing balcony. Plaster washers have been used to resecure the plaster soffit.

Walls & Ceilings- Plaster

Description

The wall and ceiling finishes are primarily plaster on expanded metal lath. See below for different treatments at some of the lower walls. Many of the interior walls have since been furred out approximately 1½" and finished with gypsum board; the furring incorporated rigid insulation over the existing substrate.

Condition

The plaster is generally in good condition. Several representative areas of deterioration were identified:

Figure 83: Plaster failure at Main Gym ceiling below roof ventilator.

1. The fourth floor ceiling below leaking at the rooftop ventilators. The damage ranges from water staining to delaminating plaster. Areas have been patched, indicating that this has been a chronic problem.
2. Flaking, bubbling paint and delaminating plaster at south ceiling of Pool Room, from leaking pipe of radiator in floor above.

3. Flaking paint and plaster loss at south window heads of Pool Room. This appears to be from moisture generated by pool.
4. Minor cracking at east and west walls for north entry stair hall, indicative of differential movement.
5. Much of the plaster at the soffit below the Main Gymnasium balcony has been delaminating; plaster washers have been used to readhere the plaster. This condition is probably caused by live loads and impact on the balcony above.

Figure 84: Looking up at plaster head of Pool Room glass block window. Plaster topcoat has delaminated and metal lath has rusted.

Figure 85: The Pool Room walls are completely finished with a smooth tawny-colored ironspot brick set on a concrete base.

Recommendations

Patch and repair plaster after root cause has been addressed.

Walls - Brick

Description

Tawny-colored ironspot brick was used as a durable lower wall finish in the Main and Auxiliary Gyms and for the full-height walls of both levels in the Pool Room. At the windows, rowlock brick form the interior sills.

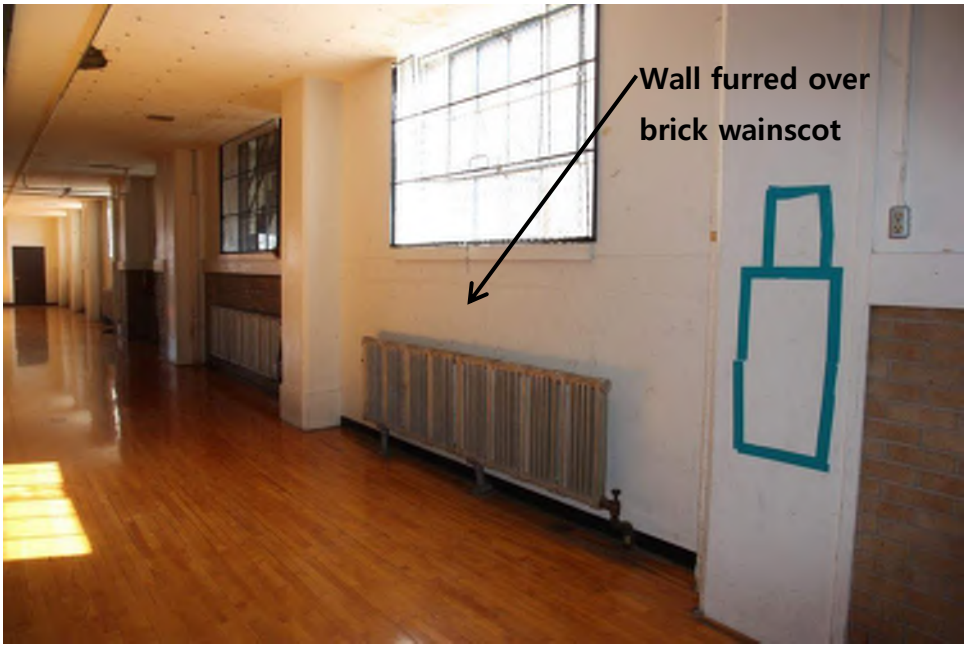

Figure 86: Some of the brick wainscot in the Main Gym has been concealed with a furred wall finished with gypsum board.

Condition

Some of the brick walls have been concealed with furring finished with gypsum board, and some of the rowlock sills have been painted. Where visible, the brick and mortar joints are in good condition.

Recommendations

No work is required unless exposure of the brick is desired.

Walls - Marble

Description

Highly figured/veined marble shower partitions are extent in the west Locker Room. The panels are ¾″ and 1″ thick and are typically 3′-8″ wide x 6′-8″ high.

Condition

The marble slabs are generally in

Figure 87: Highly figured marble slabs remain at the shower area in the west Locker Room on the second floor.

excellent condition and have high salvage value.

Recommendations

Remove the marble slabs carefully and salvage for use elsewhere.

Openings – Wood Windows

Description

See Exterior Assessment.

Openings – Steel Windows

Description

See Exterior Assessment.

Openings – Wood Doors

Description

The interior doors are primarily the original flush birch door with brass rimlock latch operated with a knob, and ball bearing hinges. Some of the doors have been replaced with new flush hollow core doors with new lever handles that engage the cylinder locksets, and hinges. Each original opening is trimmed with a mitered maple casing with a backband.

Figure 88: The typical original door was a flush wood door with mitered trim.

Condition

The doors and trim are in good condition.

Recommendations

No work is required on the existing doors, except as required to provide accessibility (levered latching operation) and to accommodate new interior room configurations.

Stairways & Handrails

Description

There are three primary interior stairways in the building – two within the north stair hall and one at the south end of the center corridor - and an exterior (since enclosed) concrete stairway at the south exterior. Both interior stairways have a concrete structure with terrazzo risers, treads, and landings. Wood handrails are supported by a black-

painted metal spindle guardrail system and substantial cast metal newel posts. The handrails are 29" high and the guardrails are 33" high.

Figure 89: The front main stair hall risers, treads, and flooring are finished with durable terrazzo.

The south, once exterior, stair is of exposed concrete. Painted pipe handrails are 38" high, without extensions. A single run of concrete stairs is located at the northwest corner of the building, from the Auxiliary Gym down to the west Locker Room.

Wooden stairs once provided access up to the balcony of the Main Gym. The southwest stair has been fully removed, whereas the lower run of the northeast stair remains.

Condition

The stairs and handrails are generally in excellent condition. One of the terrazzo nosings in the north stair run is abraded from impact.

The handrails and guardrails at the front stairway are not compliant with accessibility standards or code; they are not high enough and don't have extensions.

Recommendations

No work required. The handrails and guardrails can be retained as existing conditions per the International Existing Building Code and the Americans with Disabilities Act (ADA).

Flooring - Terrazzo

Description

Terrazzo flooring, set over concrete, provides a durable floor finish in the main north stair hall and the main north-south corridor. The terrazzo is continued up as the wall base.

Condition

The terrazzo is in excellent condition.

Recommendations

No work is required.

Flooring - Concrete

Description

The flooring at the lower level is of poured concrete (it is presumed to be under the plywood flooring in the east space). The second floor Locker Rooms have painted concrete floors underneath the wall-to-wall carpeting. Coved concrete bases facilitate cleaning.

Condition

The concrete is typically concealed, making assessment difficult.

Recommendations

Examine condition after removal of carpeting and equipment.

Flooring - Wood

Description

The Main and Auxiliary Gyms have tongue-and-groove hard maple flooring with a clear protective finish.

The east lower level space has a plywood floor (with staggered joints) on turned 2x's. The adjacent flooring on this level is now concrete.

Condition

The maple flooring and finish is in very good condition, with only minor water staining. Streetshoes are not allowed on the floor, to prevent damage to the finish.

Recommendations

Continue current treatment and maintenance of the wood flooring.

Figure 90: The original hard maple flooring in the Main Gym has been well maintained, thus continues to be durable.

Assessment – Structural

Gravity Systems

Barrel Vault Roof System

Description

The vaulted roof system is comprised of diagonal board sheathing applied over two-by-ten wood framed joists spaced at sixteen inches on center spanning between barrel shaped riveted steel trusses made up of steel angles and plates. The joists bear on a ledger attached to the masonry end walls. The joists are blocked solid and the trusses are braced at quarter points at both the top and bottom of the system. Additional vertical cross bracing has been installed at the center of the truss in three bays corresponding with limited bracing applied underneath the board sheathing in plane with the roof.

Condition

The board sheathing in the majority of the building appears to be intact. Some areas of staining from previous roof leaks are evident. Patchwork of the sheathing, is evident in some locations near the eaves. Some of the patched areas are at abandoned vent piping locations. The roof joists looked to be in good condition. Some occasional splits and cracks are observed but in less than one percent of the joists. A preliminary strength evaluation indicates that the joists are capable of carrying the intended roofing material loads

Figure 91: Steel trusses in the attic.

Figure 92: Diagonally-oriented board sheathing is visible above the joists. Note the regularly spaced bridging to the left and right of the steel truss and the loose-fill insulation at the floor level.

and snow loads.

The steel vaulted trusses appeared to be in good shape. No undue warping or crippling of members is evident. A preliminary stress analysis of the truss indicates that the system has the capacity to carry its intended load of ceiling, roof materials and snow load.

Recommendations

Limited, random joist replacement is required as necessary.

Gymnasium Ceilings

Description

The ceiling of the Main Gymnasium and adjacent Auxiliary Gymnasium is supported by two-by-eight lumber joists spaced at sixteen inches on center spanning from the bottom chord to bottom chord of adjacent trusses. The joists are fire cut into the end walls and blocked. A layer of blown-in rock wool insulation is covered with and fiberglass batt insulation which rests atop the joists. Within some areas of the attic space above the Main Gymnasium ceiling it appears that a slightly elevated secondary framing system is in place perhaps to serve as past equipment support.

Condition

The joists appear to be in good shape. Some cracking or splitting is likely present in a few of the members. The insulting materials covered most of the joists; therefore total

Figure 93: The ceiling of the Main Gymnasium appears to be well supported structurally.

conditions could not be verified. A preliminary analysis indicates the joists have the capacity to carry the intended ceiling loads and minor maintenance foot traffic.

Recommendations

None related to gravity loading.

Third Floor Framing System

Description

The third floor supporting the Main Gymnasium, Auxiliary Gymnasium, and Fencing Arts room (hand ball court) is comprised of a cast-in-place concrete joist and beam system. The joists generally extend six inches in depth below the bottom of the two-inch deep concrete floor. These joists are supported by cast concrete "Tee" shaped beams. These Tee beams span approximately forty-eight feet and thirty-two feet between concrete columns.

Condition

In general the system appears to be in good shape although not much was visible due to surface and ceiling finishes covering the materials. No extraordinary creep can be detected in the longer span beams of the floor system. A preliminary analysis for a few of the beams and joists indicate that the system in general can carry the intended loads of assembly type occupancy.

Recommendations

No recommendations are currently required.

Figure 94: Large cast concrete Tee-beams support the third floor above this second floor room at the west side of the building.

Second Floor Framing System

Description

The second floor supporting the Locker Rooms, toilets and lounges is comprised of a cast-in-place concrete joist and beam system like the third floor with one exception as noted below. The joists generally extend six inches in depth below the bottom of the two-inch deep concrete floor. These joists are supported by cast concrete "Tee" shaped beams. These Tee beams span approximately forty-eight feet and thirty-two feet between concrete columns. The exception is that the hand ball court partition walls support the floor joists along the southeast half of the building.

Condition

Like the third floor system, in general the system appears to be in good shape although not much was visible due to surface and ceiling finishes covering the materials. No extraordinary creep can be detected in the longer span beams of the floor system. A preliminary analysis for a few of the beams and joists indicate that the system in general can carry the intended loads of assembly type occupancy.

Recommendations

No recommendations are indicated at this time.

Figure 95: Deep cast concrete Tee-beams support the second floor (erstwhile locker rooms) above.

Pool Balcony and Pool Plaza System

Description

The Pool Room viewing balcony is a four-inch concrete slab supported by steel beam framing suspended by 1¼" diameter steel rods from the concrete floor framing above around the inside perimeter and eight by eighteen inch deep concrete beams along the outside perimeter.

The pool is an earth supported cast-in-place reinforced concrete basin supported by a thirty-inch wide continuous footing. The pool deck is a four-inch deep cast-in-place slab supported by the pool perimeter walls and the exterior perimeter concrete foundation wall or cast in place beams on the interior, depending on location.

Condition

The suspended pool balcony appears to be in good shape; no deterioration is evident. The pool appears to have settled perhaps an inch or two. This has taken the surrounding concrete pool deck with it. The stairs and miscellaneous masonry elements either supported by the deck or in contact with the deck have stress cracks related to the movement. This does not pose a hazard but is unsightly.

Recommendations

One could likely point the cause of settlement to a leak in the pool plumbing system, and

Figure 96: The pool balcony is suspended from steel rods tied to the Tee-beams at the ceiling.

presume the settlement has diminished. It is recommended that the stairs and miscellaneous masonry elements in contact with the pool deck be restored.

Figure 97: The stair structure at the east end of the pool has settled with the pool slab.

Figure 98: The pool basin is supported by cast-in-place concrete walls, visible in the lower level space below. The chlorine tank is in the foreground.

Lower Level Floor System

Description

The lower level floor is comprised of a concrete slab bearing on grade.[11] Concrete columns protrude from the slab to carry the second floor system. Between columns at the perimeter, a concrete grade wall is in place with light reinforcing indicated to be in the top and bottom of the wall. The handball court side walls are concrete bearing walls for the floor above. These walls are eight inches thick and are indicated to be reinforced with rods at four feet on center each way.

Condition

Much of the concrete floor was covered. However there were no exceptional cracks telegraphing through the flooring products. It could be assumed that cracks do exist in the slab however. The columns likewise are covered.

Recommendations

None at this time other than floor grinding or preparation may be necessary for new flooring products. Also, many of the new flooring products are susceptible to moisture migrating through the concrete from the sub grade. Careful selection of products, moisture testing, and application procedures are warranted for any new flooring.

[11] The concrete floor is not original to the building; it is unknown when it was added. The original construction documents call for "tan bark" athletic flooring.

Figure 99: The south stairway is of exposed concrete structure. The walls were infilled c. 1945.

South Stairway System

Description

The south stair is comprised of nine-inch thick reinforced concrete frame work supported by concrete frames spanning to concrete columns. The landings are constructed of five-inch deep concrete flat slab or concrete joists similar to the main floor system.

Condition

In general, the stairs and beams appear to be in good shape; no significant cracking in the elements can be found.

Recommendations

No recommendations at this time.

North Stairway System

Description

The concrete stair is comprised of nine-inch thick reinforced concrete frame work supported by concrete frames spanning to concrete columns. The landings are eight-inch flat plate slabs. The system is finished with colorful terrazzo.

Condition

In general, the stairs and beams appear to be in good shape no significant cracking in the elements can be found.

Recommendations

No recommendations at this time.

Foundation System

Description

The foundation system for the building is unknown. The original drawing set of Shanley and Baker, dated November, 1921, indicates that the foundation system was already in place except for the pool foundation, footings under the handball court bearing walls, and footings under the columns of the south stair well. All of these described footings are indicated to be shallow spread type footings.

Condition

Condition of the footings is unknown. It is evident that the pool structure has settled. The remainder of the building appears to have behaved uniformly.

Recommendations

No recommendations at this time.

North Covered Entry System

Description

The covered roof over the north entry is depicted to be a wood framed structure supported by steel chains anchored to a concrete column or beam line in the exterior wall. The concrete exterior plaza is depicted to be resting on ten-inch thick concrete grade beams.

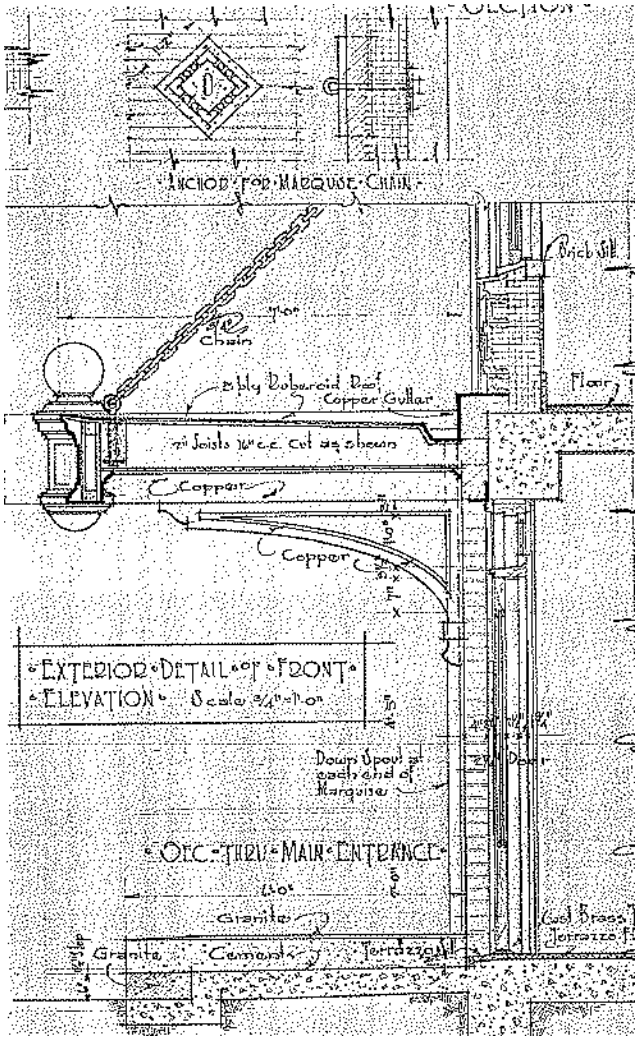

Figure 100: Marquis section from Sheet 11 of the 1921 construction drawings.

Condition

No distress is evident in the framing system or chain suspension system. The entry slab appears to be in good shape.

Recommendations

No recommendations at this time.

Lateral Force Resisting Systems

Existing Concrete Frame

Description

The current lateral force resisting elements of the building might be considered one of the following:

1. System 1: The masonry exterior walls, consisting of the window-perforated exterior face brick, pass outside the concrete frame; this is combined with infill hollow clay tile backing.

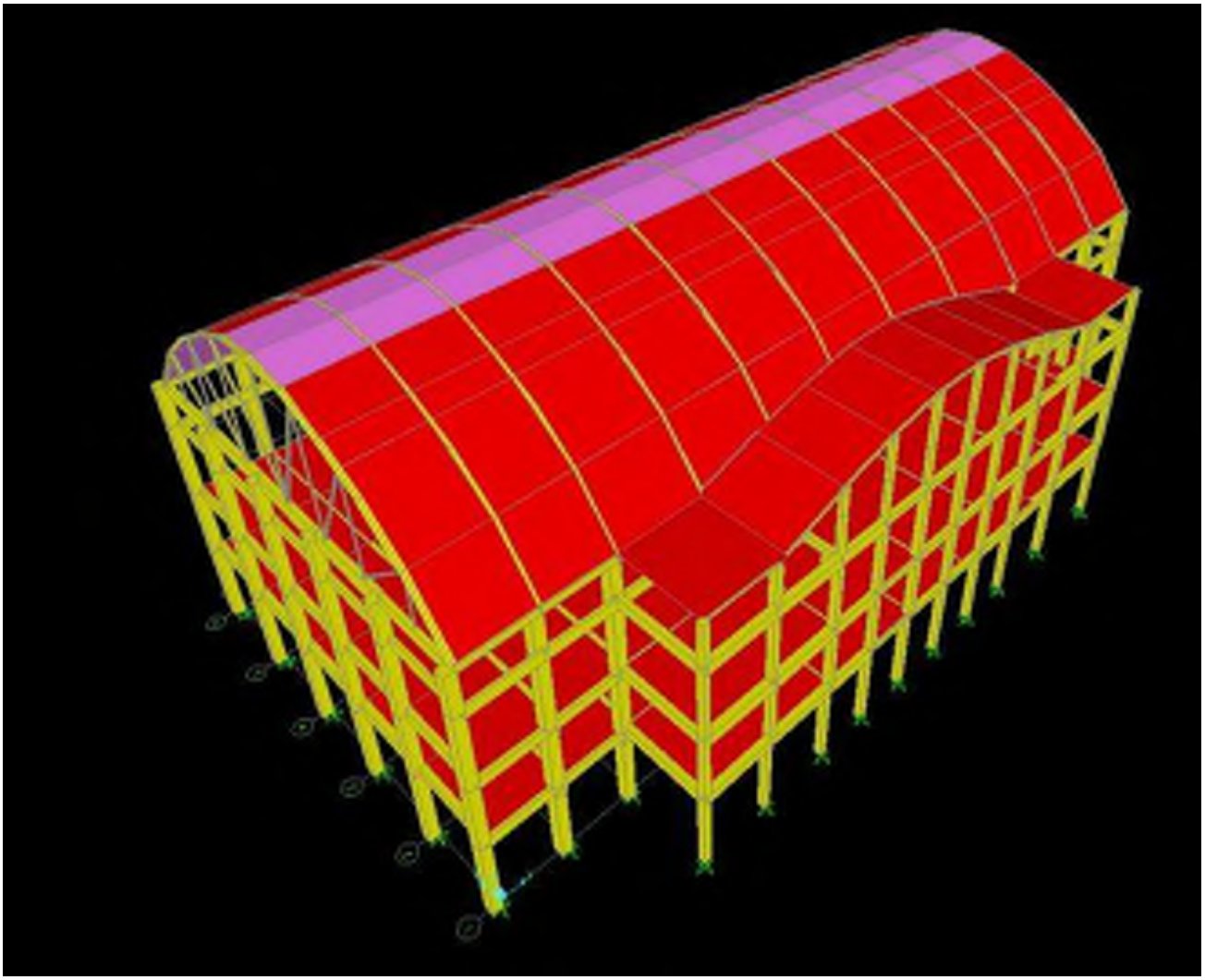

Figure 101: Finite Analysis Computer Model to Assess the Effects of Seismic Loading on the Building Frame.

2. System 2: The concrete frame of beams and columns.
3. System 3: A combination of the frame and masonry infill, which could potentially provide resistance. The second and third concrete floor systems and the diagonally oriented board-sheathed vaulted roof act as the horizontal distribution systems (diaphragms).

A preliminary assessment of the validity of using each of these components reveals the following:

The masonry construction of the hollow clay tile as infill within the concrete frame has a very small section of material to form a compression strut within the space of the concrete frame elements. This, coupled with the relatively large ratio of window opening to concrete column and beam space with a thin brick veneer, would provide minimal - if any - lateral resistance to the frame.

Ultimately, the concrete framework of columns and beams provide the lateral force resisting elements of the building. A finite element analysis model of the building was constructed to determine the forces developed in the building system related to code-prescribed seismic forces.

The forces in this model exceed the capacity of the concrete frame. Typical of this period construction, the columns are lightly reinforced and the beams and columns have little confining reinforcing at the important column to beam intersections. The lack of ductility and low strength of the system would indicate low performance for the building in a credible seismic event. These types of systems are difficult to strengthen within the confines of the column and beam geometry and are often reinforced by using concrete shear walls or other systems.

Preliminary analysis of concrete shear walls between frame columns or pairs of columns dispersed in the corners of the building or in segments of the building indicates that it is feasible to provide lateral resistance to the structure through the addition of these elements. It is even feasible to perforate the shear walls to preserve the historic window openings if the shear walls were to continuously encompass two column bays or more.

The concrete floor diaphragms of second and third floors are adequate to disperse lateral forces among a lateral force resisting system comprised of shear walls at the perimeter or interior building locations. However, the diagonally sheathed vaulted roof and plaster ceiling of the floor below are largely insufficient to carry these magnitude loads.

The majority of the masonry walls are of a height and thickness that falls within a ratio

that would be deemed to perform acceptably in a seismic event. Despite the acceptable ratios of the majority of walls areas of cracking and small collapse are possible.

However, the slender tall walls above the third floor ceiling in the end walls of the barrel vault i.e., the north, east and west walls, are of a ratio that would indicate very poor performance. As well, the clay tile wall separating the Main Gymnasium from the Auxiliary Gymnasium is thin and tall and might perform poorly. The fourth floor balcony in this case may provide some relief in the form of bracing the wall, in effect reducing its height; however, further

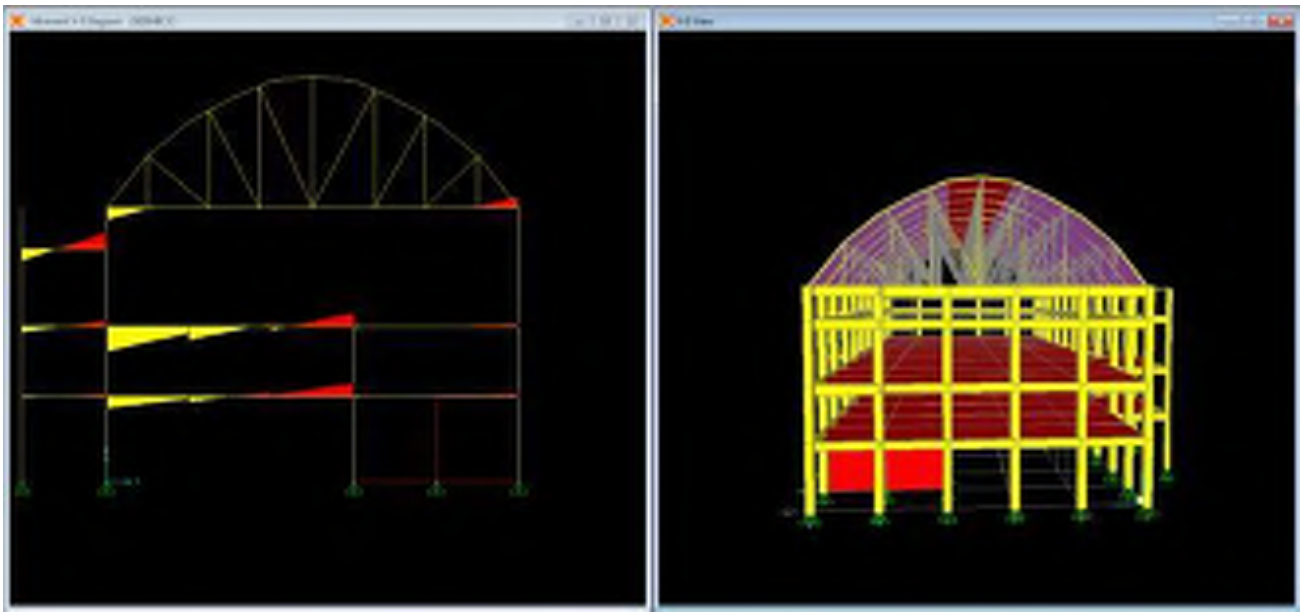

Figure 102: Code-Prescribed Shearing Forces Depicted in the Concrete Frames oriented south-to-north.

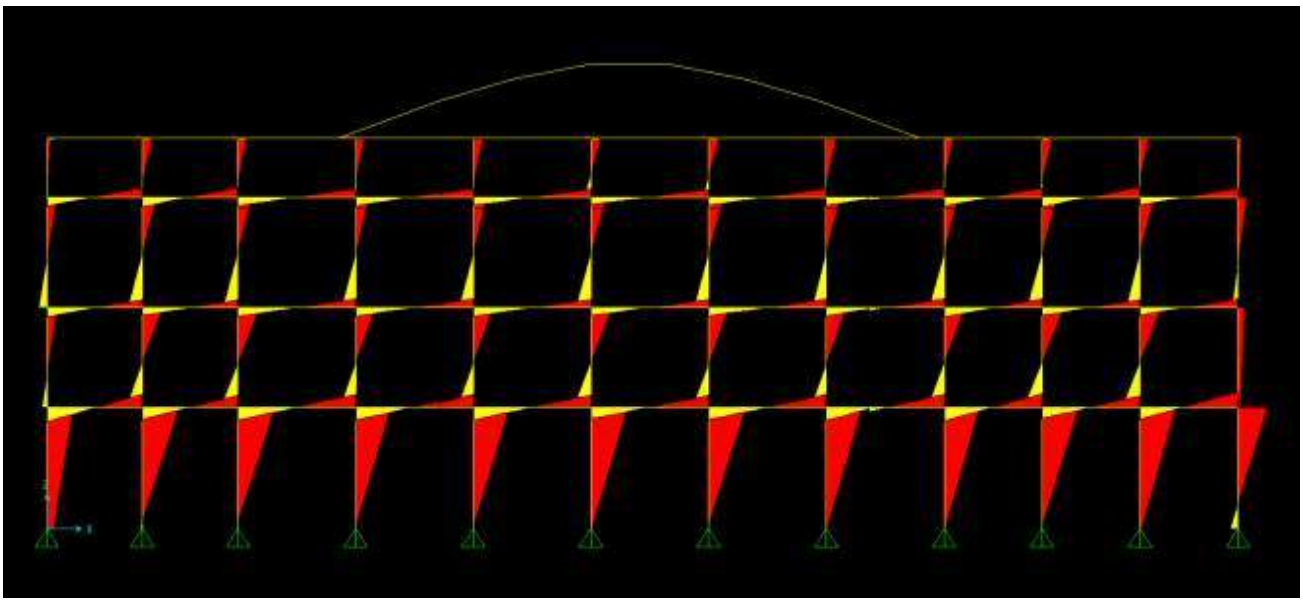

Figure 103: Code-Prescribed Moment Forces Depicted in the Concrete Frame oriented east-west.

investigation is warranted.

Recommendations

It is recommended that a detailed seismic analysis be performed in conjunction with future adaptive reuse plans incorporating the following elements:

1. Provide shear walls to accommodate the historical qualities of the building, either perforated or not, in locations suitable to the adaptive reuse of the building.
2. Install a suitable diaphragm slightly above a plane of the current Main Gymnasium ceiling. The wood diaphragm does not have the capacity needed for this application. A steel horizontal braced diaphragm or a steel frame supported steel deck diaphragm would have the capacity to accommodate the seismic loading. This would mean that the wood supported ceiling of the third floor areas would need to be removed and replaced. A braced configuration following the form of the vaulted roof may have a small chance of working, however careful consideration of the additional seismic stresses imposed on the existing steel

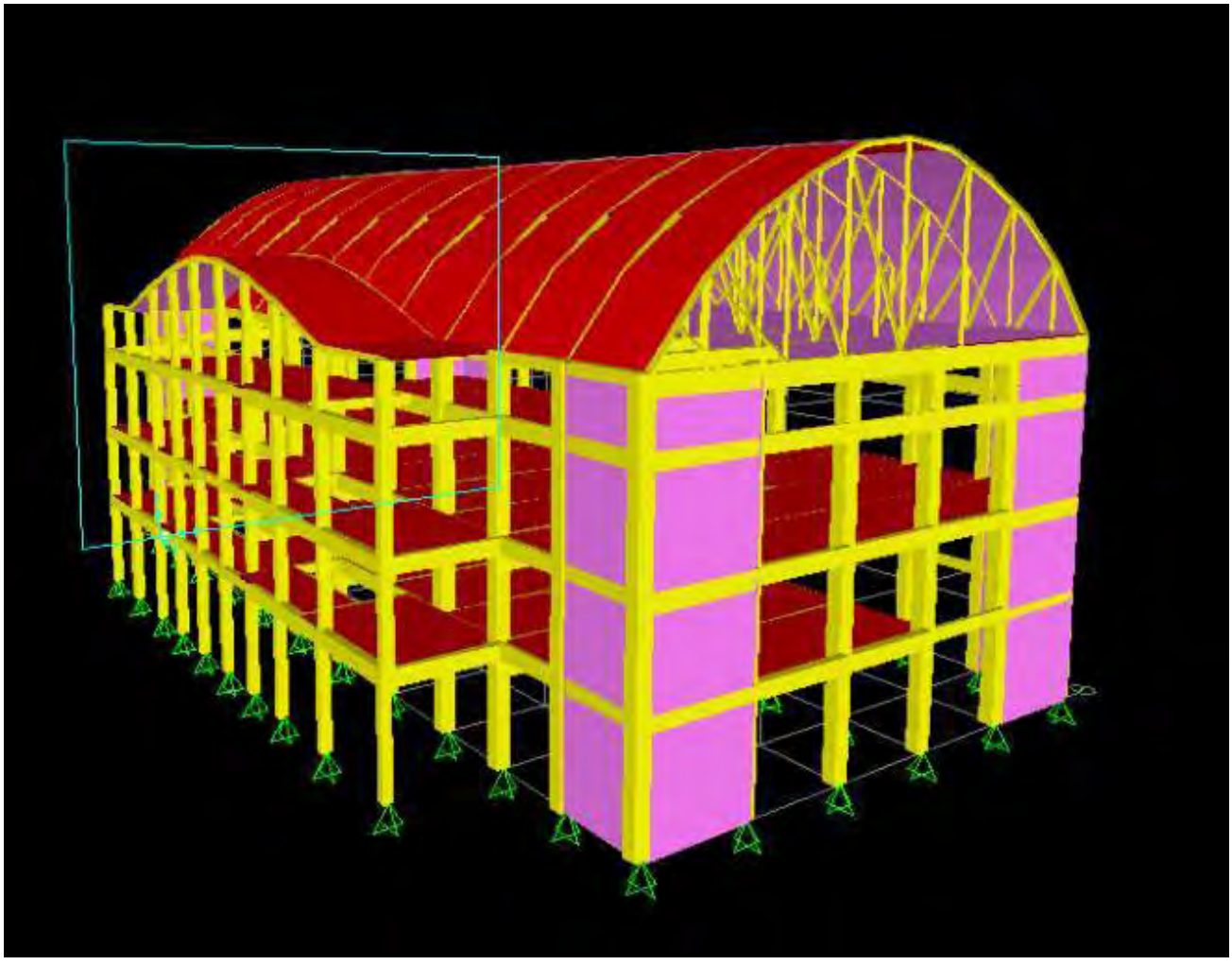

Figure 104: One option of Shear Walls Constructed in the Building's Corners (depicted in purple).

trusses may reveal this to be infeasible.

The tall slender masonry walls inside the ends of the vaulted ceiling, i.e., the north, east, and west walls above the third floor ceiling, require strengthening in the form of interior stud walls or steel framing to eliminate out-of-plane collapse potential. Further investigation is required of the clay tile wall separating the Main Gymnasium and Auxiliary Gym.

The recommendations mentioned above were considered using code-prescribed seismic forces with force levels at a design objective to greatly reduce the loss of life in a credible seismic event. These forces are termed as life-safety level performance objectives in code literature. Within this objective, the building components such as masonry walls, stairs and other systems may be damaged significantly. Some racking or permanent displacement of segments of the building might occur. At this potential damage level, it might be cost prohibitive to repair the systems. Higher building performance objectives could be considered; they would require further enhancements to systems, depending upon asset valuation and economics.

Figure 105: The gable end brick walls are too slender to prevent collapse in a seismic event.

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Assessment – Mechanical

Heating System

Description

Heating is provided to the Romney Gym through the campus steam system. Steam is delivered from the campus central boiler plant through stream piping routed through the utility tunnel located below W. Grant Street south of the building. Steam enters the building in the lower level of the southeast corner. From this point steam is routed mainly along the perimeter and up along the exterior of the building. The terminal steam units consist mainly of steam radiators. Most of the radiators are original to the building. Condensate is gravity fed back to the steam entrance in the mechanical room. From this point the condensate is pumped back to the central steam plant.

Throughout the building there are several HVAC systems that have been added throughout the years to ventilate, provide cooling, and exhaust the ever changing spaces. These systems consist of supply air fans, water source heat pumps that utilize domestic water as a heat medium, and exhaust fans.

Condition

A majority of the steam system in the building is original to the building. As steam based piping and equipment age they begin to corrode due to changing steam quality conditions over the years. Although the system appears to be well maintained, most of the piping and terminal heating equipment is in fair to poor condition and has long exceeded its life expectancy.

The majority of the added systems are fairly new to the building and are in good condition. The system in the west basement space has been noted as being short on capacity for the usage of the space. The system capacity was limited by available electrical capacity.

Recommendations

To accommodate the new building requirements, the entire steam and HVAC systems should be removed from the building. Due to the historical nature of the building some of the original radiators may be kept in place for decoration purposes only. For heating and cooling it is recommended that a new water source heat pump system or variable refrigerant volume (VRV) system be installed. These types of mechanical systems align with MSU's current energy conservation vision. These systems are also very flexible in regards to facilitating installation in an existing building because of the smaller piping and compact equipment. Heat injection and rejection may be able to be accomplished by utilizing existing wells located near the project site. The wells were drilled in 1999 as part of

Figure 106: Typical water source VRV system.

planning efforts for the Epicenter project. Using the well water from the wells to reject or inject heat into the water source heat pump or VRV system minimizes the need for fossil fuel or electric based heat transfer systems and in turn increases overall system efficiencies substantially. Although the wells will handle the majority of the heat injection requirements, a steam injection heat source might be required as a back-up. The steam entrance is currently located at the southeastern corner of the building. In the event that space is reassigned to a different usage, a new steam entrance can be established in any area along the south side of the building. A dual core heat recovery ventilator system will provide ventilation. This type of system typically recaptures 90% of the otherwise lost building energy exhausted from the building.

Plumbing

Description

The plumbing system throughout the building consists of the typical domestic cold and hot water and waste and vent piping. Both domestic water and waste mains enter on the west side of the building near the existing Pool Room. Hot water is generated at the steam entrance by the southeastern mechanical room by use of a steam tube and shell heat exchanger and an approximately 1,000-gallon horizontal storage tank. The water piping consists of some copper, galvanized, and steel piping. Waste and vent piping consist of cast iron, steel, and PVC piping.

Condition

Overall the plumbing systems are original to the building and have exceeded their life expectancy. As plumbing systems age water hardness and quality can plug or corrode piping and ultimately lead to piping failure. There are several areas of pipe replacement of the years and these areas are in good to fair condition. The domestic hot water systems are inefficient in regards to energy as storing nearly 1,000 gallons for minimal hot water usage can be energy intensive. The existing plumbing fixtures in most cases are original to

Figure 107: Existing hot water storage tank in the southeast lower level of Romney Gym.

the building as well and many do not meet current ADA guidelines.

Recommendation

It is recommended that the entire plumbing system be removed from the building. New, updated plumbing piping and fixtures should be installed and appropriate pipe routing will be required. It may be cost effective to utilize the existing waste entrance piping as this piping is well below the lower slab of the building. This piping would need to be investigated with a camera to verify that it is in good enough condition to be reused. It is also recommended that an appropriately sized energy efficient domestic hot water system be installed.

Assessment – Electrical

Electrical Service and Distribution

Description

The electrical service originates at a pad-mounted transformer located west of the building. This transformer feeds a 400 amp, 208/120 volt service disconnect switch and main distribution panel that are located near the pool chlorination room. The main distribution panel feeds branch circuit panelboards that are located in various rooms within the building.

Condition

Although the electrical service and main distribution panel are both in good condition, this equipment does not have enough capacity to serve the new building functions and air conditioning equipment loads. In addition to the small service size, the branch panelboards are in poor condition. Two of these panels are the screw-in fuse type and appear to have been installed during the original construction of the building.

The capacity of the air conditioning system installed recently in the Human Performance Lab in the western half of the lower level was limited by the amount of electricity available.

Recommendations

To accommodate the new building functions, a complete replacement of the entire service and distribution system is recommended.

Branch Circuits and Wiring Devices

Description

The majority of the branch circuit wiring is concealed in conduit and the majority of the conductors are copper. The switches and receptacles appear to be of the grounding type (3-prong receptacles).

Figure 108: Panelboard A.

Condition

Overall, the branch circuits and wiring devices are in fair/poor condition. The facility does not have an adequate quantity of receptacles.

Recommendations

Complete replacement of the branch circuits and wiring devices is recommended.

Lighting

Description

The lighting within the facility primarily consists of fluorescent fixtures that utilize T12 lamps and T8 lamps. The Main Gym has high-bay style fixtures that utilize metal halide lamps. Few original light fixtures remain. The schoolhouse fixtures at the ceiling of the entry marquise appear to be original; the globes atop the marquis – while replacements of the originals – are not dissimilar.

Condition

Overall the lighting throughout the facility is in very poor condition and has very poor energy efficiency. The T12 lamps are obsolete and no longer manufactured. Many of the fixtures do not fit the historic character of the facility.

Recommendation

The lighting should be replaced in its entirety with new high efficient lighting and control strategies that incorporate occupancy sensor controls and daylight harvesting. Upgrading the lighting can reduce the energy

Figure 109: The Main Gym has high-bay style light fixtures with metal halide lamps.

consumption by over 30%. An upgraded lighting system will also be eligible for a $0.65 per square foot lighting rebate from NorthWestern Energy.

Voice and Data System

Description

The facility is served with both copper and fiber cables that terminate in the basement near the pool chlorination room. Horizontal cables are CAT 5 that terminate on rack mounted patch panels that are located in a rack in the basement.

Condition

Overall, the voice data system is in poor condition.

Recommendation

The copper and fiber service cables can be reused. It is recommended that all other equipment and cables be replaced with new to provide the proper band width and connectivity.

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Code Analysis

General

Romney Gym is an existing historic building. As such, it is not required to comply with all the code requirements that a new building must. However, it is imperative that the building be made as safe as possible, within the parameters of its historic structure and character, its use, and its specific location on a university campus.

The code analysis for this project was limited in scope, as the final use of the building has not yet been determined. Requirements for critical space-demanding components – such as exit stairs and restrooms – will vary depending upon use. Early discussions with building officials should be held once schematic design is begun.

Summary of Primary Requirements

The following general parameters have been based upon the *2009 International Building Code*, with the uses – Assembly and Business – as noted.[12] These parameters were used to allocate space in the conceptual plans provided herein.

1. Occupancy Type:
   a. Assembly use in most public spaces.
   b. Business use for remainder of spaces.
2. Atrium:
   a. Fire and smoke alarms required.
   b. Smoke control required.
   c. One-hour separation from adjacent spaces.
3. Main Gym balcony:
   a. Size increase to match original – balcony becomes treated as a fourth floor.
   b. Occupancy load not added to 3rd floor.
4. 3rd floor as overriding factor for people loads that effect:
   a. Exiting
      i. 987 occupants – 3 stairs required.
      ii. 296" total stair width required.
   b. Restrooms
      i. Male: 4 toilets, 2 lavatories
      ii. Female: 6 toilets, 3 lavatories
5. Fire protection: Building is required to be fitted with an automatic sprinkler system and associated fire alarm.
6. Elevator: Required to provide accessibility to all levels (with option of lift from 3rd to 4th floor).
7. If roof trusses are exposed to 3rd floor below, they are required to be treated with 1-hour fire protection.

[12] Although the *2009 International Existing Building Code* could be applied to this project, the renovation would be at such an extensive level that much of the International Building Code clauses would prevail.

Applicable Code Components

1. Use and Occupancy Classification – Chapter 3
    a. Assembly – Other assembly not classified elsewhere – A3 Information Commons
    b. Assembly – Other assembly not classified elsewhere – A3 Human Performance Lab
    c. Business – Educational facilities above 12th grade – B remainder of spaces
2. Special requirements – Chapter 4
    a. Atriums – 404
        i. Atrium shall have only approved decorations per IFC.
        ii. No sprinklers required at the ceiling of the atrium if exceeds 55 ft in height above the floor
        iii. Provide fire alarm, smoke control (when taller than 2 stories).
        iv. Atriums spaces shall be separated from adjacent spaces by a 1 hour fire barrier or a closely spaced sprinkler system
        v. Standby power is required for the smoke control system.
        vi. Walls & ceilings to have Class B or better rated finishes.
        vii. Maximum travel distance 200 ft thru atrium to an exit
3. General Building Heights and Areas – Chapter 5
    a. Allowable Building Height And Areas – Table 503
        i. A3 - Type IIA – 3 story, 15,500 sf
        ii. B - Type IIA – 5 story 37,500 sf
        iii. If Type I Unlimited
    b. Mezzanines – Section 505
        i. Considered portion of floor below if less than 1/3 the floor area
        ii. Existing balcony at gym: 3080 sf x 3 = 9240 (gym has 9248 sf, so current balcony is a mezzanine – the occupancy load gets included with the gym below – for restroom counts and egress width.
        iii. Expanded balcony at gym: 4940 sf, so treated as a separate floor level, for egress widths. Still include it with gym for restroom counts – unless restrooms are included at 4th floor.
    c. Building Area Modifications Section 506 if needed.
    d. Use/Occupancy Separations – 508.4
    e. Assembly to Business – 1 hour when fully sprinkled 2 hour not sprinkled
    f. Special provisions 509 allow building area and height modifications(if required)

4. Construction Height - Chapter 6
    a. Type of Construction - Table 601
        i. Type I or Type II – non-combustible Type IIA sprinkled?
    b. Fire protection for primary structural frame: 1 hour.
    c. Fire protection for roof construction: 1 hour – EXCEPT for Groups F-1, H, M, and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. EXISTING CONDITION: Gym balcony is 8′ below bottom of roof truss. Gym floor is 23′-3″ below bottom of roof truss.
5. Fire and Smoke Protection Features Chapter 7
    a. 704.5 protection of trusses – must be tested to prove
6. Fire Protection Systems – Chapter 9
    a. Occupancy Group A, with the area and occupancy counts of Romney Gym, is required to have an automatic sprinkler system throughout the floor area with Group A occupancy, and in all floors from this area to the nearest level of exit discharge. Thus the entire building is required to have an automatic sprinkler system.
    b. A fire alarm is required for Group A use with more than 300 occupants, as is the case for Romney Gym.
7. Means of Egress – Chapter 10
    a. Occupant load Table 1004.1.1
        i. Assembly
            1. Chairs only 7 sf/person net
            2. Standing Space 5 sf/person net
            3. Tables and chairs 15 sf/person net
        ii. Business
            1. 100 sf/person gross
    b. Mezzanine levels 1004.6
        i. The occupant load from a mezzanine shall be included in the floor below
    c. Egress width - 1005
        i. Occupant load times 0.2″ /person
        ii. Occupant load times 0.3″ /person at stairs
    d. Accessible Means of Egress – 1007
        i. One required (exception for existing buildings)
        ii. Elevators as an accessible means of egress shall have standby power.
    e. Stairways – 1009
        i. Minimum width 44″
        ii. Minimum head room 80″

iii. Maximum riser height 7″
iv. Minimum riser height 4″
v. Minimum tread width 11″
vi. Maximum rise of a single flight 12′

f. Handrails – 1012
   i. 34″-38″ above the nosing
g. Exit door arrangement
   i. When two or more exits are required the distance between exits shall be not less than ½ the distance of the diagonal.
h. Number of Exits – 1021
   i. Minimum number of exist for Occupant Load – Table 1021.1
      1. 1-500 occupants - 2 exits per story
      2. 501-1000 occupants - 3 exits per story
      3. More than 1001 occupants – 4 exits per story
   ii. 3rd floor and balcony, current width, Assembly occupancy: 998
i. Exit Enclosures – 1022
   i. Exit enclosures shall be 1 hour if connecting less than three stories
   ii. Exit enclosures shall be 2 hour if connecting four or more stories
   iii. Basements are included mezzanines are not included
j. Exit Discharge – 1027
   i. 50% of the exits shall discharge to grade or provide direct access to grade.

8. MT Administrative Code Annotated
   a. Minimum Number of Plumbing Facilities 24-301351
      i. Assembly – Halls
         1. Male 1 per 125
         2. Female 1 per 75
         3. Lavatories 1 per 2 water closets
         4. Drinking Fountains 1 per 1,000
      ii. Business– Confirmed with Local Code Officials 12/07/2012, but they're open to discussion
         1. Male 1 per 25
         2. Female 1 per 25
         3. Lavatories 1 per 2 water closets

PIONEERING ENVIRONMENTS