West Branch of the **Bozeman Public Library**

Rebecca Hennings Benjamin Moore: Future of Design Challenge Bozeman, MT



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Concept mel evelop esearch &

Mission Statement

To create a branch library that will serve the Bozeman community through educational development and sustainable design, which will support the people and the environment for years to come.

AIA COTE Framework for Design Excellence utilized.

Context

& Growth

Challenges



Urban sprawl





Car dependency

Opportunities



Increased housing stock & diversity



Strain on resources







Strain on infrastructure









Age groups living in poverty





Study Area Determinants



GHS

MES

1:750,000



Weighted Importance



Residential Structures

Number of Residences & their Importance



Esri, HERE, USGS, Bozeman School District 7, Gallatin County, City of Bozeman, US Census Bureau, Rebecca Hennings



Code

Relevant Restrictions

Space:	SQ. Footage	Max. Occupancy
Library Space		
General Stack / Common Areas	2000	20
Kitchen Teaching Lab	900	18
Maker Space	900	18
Greenhouse Teaching Lab	900	18
General Classrooms	900	18
Young Adult Section	1500	30
Childrens Section	2000	40
Community Spaces		
Meeting Room	1500	150
Meeting Room	2700	180
Meeting/Conference Room	900	60
Retail Space	300	5
Support Spaces		
Sorting/Distribution/Works Areas	1200	8
Offices	1200	6
Staff Meeting Room	300	2
Break Room	200	14
Custodial Office	100	1
Custodial Closet	50	1
Storage in Support Space	400	4
Bookmobile Parking/Storage	1500	8
Restrooms / Mech. / Circulation	4450	N/A
Total:	23900	586

State and Local Agency Information:

Reviewing Authority: Bozeman City Commission / City Planning Applicable Building Code: 2021 International Building Code (IBC) Applicable Zoning Code: City Municipal Code Applicable Handicapped Code: ICC A117.1-2017 Standard for Accessible and **Usable Buildings and Facilities** Applicable Fire Code: 2021 International Fire Code Applicable Energy Code: 2021 International Energy Conservation Code (IECC) **General Project Information:**

New Building - no existing buildings on site (N/A)Zoning: PLI (Public Lands and Institutions District) *Bozeman Muni Code Maximum Height – N/A Maximum Number of Stories – N/A Setbacks – N/A Floor Area Ratio (FAR) – N/A

Parking Information:

Required Parking Spots: 99 Applied 20% Reduction Reduced by 5 for 1,750 sqft of landscaping Applied 10% for 20 bike parking: 64 ADA Compliant Spots: 4 Van Accessible Spots: 1

Egress Information:

Egress Width: 36" - 44" Max Allowable Travel Distance: 75' Dead End Corridor: 20'

Material

	Concrete	Steel Frame	Light Wood	CLT	Masonry	Steel/Wood Hybrid
Cost						
Travel Distance						
Embodied Carbon						
Constructability						
Recycling/Reuse						
Flexibility						
Spanning Capability						
Expose structure w/ high fire rating						
Minimize columns/bearing walls				1		
Minimize floor thickness						
Allow changes in building over time						
Avoid shear/diagonal bracing						









Terracotta cladding

HempWool insulation



Steel & DLT construction



Steel, glulam, & DLT construction







Program Adjacencies

& Qualities



Key Sketch Core Concept

Transparency

Opacity



Parti Diagram





130

Stack

Wrap



Raise

Iteration 1







Site Plan Potential for Expansion

















Structure

Grid



Section B





Massing sw



Perspective 2nd Floor Balcony



Iteration 2







Retail General Stacks Young Adult Stacks Greenhouse Conference Room Staff Meeting Room Children's Stacks Custodial Closet Sorting Room Break Room Storage Offices





6	Conference Room
14	Reading Space
15	Kitchen
16	Makerspace
17	Classroom
18	Large Meeting Room







Medium Meeting Room



Elevation

West









Section



Section Locations





Section B



Detail Wall



Roof Assembly Green roof medium

Vapor barrier Sloped PlantPanel insulation 9 ply CLT deck Glulam beam

Exterior Wall Assembly Gypsum board R20 HempWool insulation in 2x6 cavity OSB sheathing Vapor barrier R6 continuous PlantPanel insulation Weather barrier Air gap Terracotta cladding

Interior Wall Assembly Gypsum board R13 HempWool insulation in 2x4 cavity Gypsum board

Perspective 2nd Floor Balcony





Final Design







Floor 1 Plan



Mechanical Basement Retail Restroom **Reading Area General Stacks Children's Stacks Janitors Closet** Break Room Storage **Small Meeting Room** Office **YA Stacks** Headroom Greenhouse Staff Meeting Room Sorting & Distribution

Floor 2 Plan



3	Restroom
4	Reading Area
10	Small Meeting Room
17	Teaching Kitchen
18	Makerspace
19	Classroom
20	Large Meeting Room



3 21 22 Restroom Medium Meeting Room Occupiable Roof

Egress





Level 2

Level 3











Location





Level 2



Level 3





Underfloor air

Lowered ceiling

Bioswale

Radiant heating/cooling

Second Floor Kitchen

Perspective



Location



Level 1

Level 2



Level 3

4

Section В



Underfloor air

Radiant heating/cooling

Bioswale

First Floor Stacks

Perspective









Roof Assembly PVC membrane

Vapor barrier Sloped XPS insulation DLT deck Glulam beam

Exterior Wall Assembly Gypsum board R20 HempWool insulation in 2x6 cavity OSB sheathing Vapor barrier R13 continuous XPS insulation Weather barrier Air gap Terracotta cladding

Interior Wall Assembly Gypsum board R13 HempWool insulation in 2x4 cavity Gypsum board

Foundation Assembly Concrete slab

5' continuous perimeter footing Continuous XPS insulation Gravel French drain



Wall Assembly



XPS not susceptible to moisture issues, protects HempWool

Detail



Roof Assembly PVC membrane

PVC membrane Vapor barrier Sloped XPS insulation DLT deck Glulam beam

Transpired Solar Collector Assembly 9 ply CLT shear wall Vapor barrier

9 ply CLT shear wall Vapor barrier R13 continuous XPS insulation Weather barrier Air plenum Black perforated aluminum

Foundation Assembly Concrete slab

Concrete slab 5' continuous perimeter footing Continuous XPS insulation Gravel French drain



Structure

Plan



Continuous perimeter wall footing

Shallow isolated footings @ columns

Slab on grade system

9' x 9' shallow spread footings

Energy Generation



Material Finishes

Specifications



Manufacturer **Benjamin Moore Regal Select** Product Eggshell Finish Color Name, Number Light Pewter, 1464 A light, professional color that Selection Reason can act as a background for the

Manufacturer Product **Finish** Color Name, Number Brick Red **Selection Reason**

Manufacturer Product **Finish** Color Name, Number Carmine Red **Selection Reason**

Manufacturer Product **Finish** Color Name, Number Selection Reason

together Shildan Group Large Format Longoton Natural **Chestnut Brown** Earthy color that grounds the building in place

colorful books and wayfinding.

Natural tone that pays homage

to the history of brick in the

Large Format Longoton

Deep red color that ties the

other two terracotta tones

Large Format Longoton

Shildan Group

city's buildings

Shildan Group

Natural

Natural

Wayfinding Colors



Product Finish **Color Name, N Selection Reas**

Manufacturer Product **Finish Color Name, N Selection Reas**

Manufacturer Product Finish Color Name, N **Selection Reas**

Manufacturer **Product Finish** Color Name, N **Selection Reas**

	Regal Select selection: CHPS, LEED v4, MPI, Low VOC
umber son	Benjamin Moore Regal Select Flat Blue Nova, 825 Calm, yet bold, color that can be used in and around reading spaces
umber son	Benjamin Moore Regal Select Flat Topaz, 070 Eye-catching color that connects to the exterior materials to highlight the education spaces
umber son	Benjamin Moore Regal Select Flat York Harbor Yellow, 2154-40 Playful color to draw people into the community meeting rooms and spaces
umber son	Benjamin Moore Regal Select Flat Antique Pewter, 1560 Muted, yet interesting, color that lends an air of professionalism to the staff spaces

First Floor Stacks

Perspective



Second Floor Kitchen

Perspective







Reflection

There is great need for spaces that invite people to try new things and develop their own skills & strength as people. The transparency and opacity provided by the structure allows for a degree of privacy & safety to be experienced as patrons explore new skills, while allowing others to see the possibilities of the library. The large atrium space for the stacks are contrasted by the more intimate reading spaces. Both of these areas share a visual connection to the education spaces, though remain physically separated by the atrium volume. There are a multitude of ways for people to interact with the space and explore the offerings of the library.

There is also the responsibility for designers to create in a way that allows for all people to enjoy the space for years to come. Passive design & efficient active systems such as solar gain, shading, radiant heating & cooling, ground source heat pumps, PV arrays, & more, are utilized to reduce the operational loads of the building. Additionally, the use of natural, sustainable, & locally sourced materials will stand the test of time and reduce the impact on the environment. Engineered lumber, terracotta clay cladding, and sustainable interior finishes are highlighted to expose the public to the commitment to sustainability through design.