

GRINNELL COLLEGE FORUM ADA EVALUATION

February 11, 2011

RDG Planning & Design 2712 Stange Road Ames, IA 50010





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Grinnell College

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project introduction

Provided by Grinnell College:

Purpose

To review the Grinnell College Forum building, identify the areas that are not in compliance with ADA, propose a conceptual solution with pre—design cost estimates for correcting all or at least most of the ADA non—compliance items, and provide a written report; prior to the February 11, 2011, Board Meeting.

Background/History

The Forum was designed by Architect, Walter Netsch of Skidmore, Owings & Merrill out of Chicago, and was completed by the General Contractor, Ringland-Johnson-Crowley out of Des Moines, December of 1965. The gross square footage of the building is 32,970, the footprint of the building is 70' x 210', and the initial cost was \$980,000. The Forum was designed primarily for student use, with two large lounges, a game room, and a coffee house. For years the Forum was described as 'the College's living room'. It was featured in several architectural journals and was selected as the "College Building of the Month" in 1966 by "College and University Business" for what at the time was considered an innovative design for incorporating, such features as the many tiered levels in the building and the expansive use of curtainwall. Approximately 15 years after the Forum was completed, its first major renovation was to add concrete ramps to the west "beach" patio area of the building, (which do not comply with the maximum run and landing requirements for ramps in the ADA), and to add a restroom to the North Lounge and modify existing restrooms in a first attempt to make the building more accessible. Additional attempts at making the building accessible, have included modifying the concrete ramps, (which, while better, still don't comply), adding an operable door on the east side of the building about three years ago, adding another door on the west side of the building and into the Health Center about two years ago.

Another way to make the building less of an ADA concern, was to try to reassign most of the space to less public functions in recent years. North Lounge was converted to office space, the Coffee Shop was converted to a computer lab, and South Lounge was to be phased out with the completion of the new, fully accessible, multi-purpose room in the Joe Rosenfield Center, (but is still used frequently).

Scope/Deliverables

- Review the Forum Building.
- · Identify primary items not in compliance with the current ADA.
- Prioritize these items.
- Provide a conceptual solution to address all or most of the discrepancies.
- Provide an estimate cost for the remediation work.
- Evaluate and provide an estimate for any building systems that need updating.











Executive Summary

The Forum is an early example of an architectural planning guideline known as "Field Theory": of which Architect Walter Netsch was the leading proponent. This theory was a proportional system based on matrices of overlapping geometric forms such as squares, hexagons, and octagons—the resulting matrix was used to organize architectural concepts, room and wall locations and circulation patterns. Although this system provided a predictable organizational tool for plan layout, critics argue that the buildings are visually confusing and difficult to navigate, (Waldheim & Ruedi,2005, pg. 276, 278). Field Theory fell out of favor in the late 60's and early 70's.

The building's conception was prior to federal regulations for building accessibility which are now common practice. Various modifications made over time still do not meet current ADA guidelines.

Generally, the building is a two-story, poured in place concrete, structure. However, there are a total of eight distinct levels within the floor plan connected by a series of short run stairs, rendering the majority of the building area inaccessible. There is no elevator in the building. Over time, several remodeling efforts to repurpose the building have been unable to address the major accessibility deficiencies of the building.

Although not a "Field Theory" building, the Burling Library was also designed by SOM. It does not utilize the multiple levels for the floor plan, and brief field observations indicate that it would be much easier to remodel for ADA compliance.

Process / Limitations

The purpose of this assessment is to review the existing conditions of the building in accordance with the Americans with Disabilities Act Accessibility Guidelines of 2010 and Universal Design principles. These guidelines are intended to provide access for all users and incorporate the American National Standards Institute (ANSI) guidelines for accessibility and the International Building Code (IBC) requirements.

The original construction documents, remodeling drawings, and field documentation were used to document and analyze the Forum building. The focus of this assessment is on the building and the adjacent entrances only. An evaluation of the parking lot and adjacent sidewalk compliances are not included in this report. It should be noted that this report is also not a building code review, although some obvious code discrepancies will be noted.

As a brief overview, the Forum has several accessibility issues which compromise the use of the building:

- The only wheelchair accessible entrance into the building is the South East lower level entrance for the Student Health Services.
- Existing exterior ramps are currently non-compliant for accessible routes to the building.





- The many levels are connected by non-compliant stairs, rails and small landings which cause a
 major circulation disconnect for many users. There is no accessible route which connects all
 primary levels in the building. Only approximately 15% of the building area can be considered
 accessible by current standards.
- The geometry, details and dimensions of the central stairs, along with the lighting characteristics of
 the space, and small landing areas create a hazardous pedestrian condition. This is evidenced by a
 number of reports of falls and tripping incidents. The building is now often closed during public
 events to avoid this issue.
- Primary toilets are inaccessible due to entrance stairs leading to the toilet rooms. Only one of the additional 5 single–occupant toilets is fully accessible by current design standards.
- Several wall locations and door configurations are currently non–compliant due to dimensions, hardware, and floor areas for maneuverability.

These, and other considerations are identified in greater detail later in this report.

This report includes a remodeling strategy to acheive accessibility compliance. The strategy includes the interior demolition and re—build of the two central core areas for new vertical circulation, site modification to provide grade level entrances, and incidental interior ramp construction for access to the "terrace" areas on the upper level. This concept is illustrated with diagrams later in the report.







The following components do not comply with the Americans with Disabilities Act Accessibilities Guideline of 2010. The locations for these non–complaint items are keyed to the following floor plan diagrams with corresponding items below. These items are prioritized in accordance with the *ADA Checklist for Existing Facilities version 2.1* from the highest to the lowest.

Priority 1 – Accessible Approaches and Entrances into the Building

1. The building does not comply with the requirements to have 60% of all public entrances to be accessible.

ADAAG: 2010 206

2. The building also does not comply with the requirements to have at least one accessible entrance to each tenant space of a building.

ADAAG: 2010 206

- 3. Vestibule Entrances Lower Level Northeast & Upper Level, Main West Entries:
 - Require a 7' minimum distance between the vestibule doors.
 ADAAG: 1998 4.13 & 2010 404
- 4. Lower Level Southeast Entry: This is the only fully compliant accessible entrance for the building. Accessibility may be limited when this entrance is used for service delivery, however this is acceptable.

 ADAAG: 1998 4.1 & 2010 206
- 5. West Ramps: These ramps are non-compliant.
 - a. Handrails are required on both sides of these ramps.
 - ADAAG: 1998 4.8 & 2010 405, 505
 - b. Handrails do not have the 12" minimum extension at the bottom of the ramps.

ADAAG: 4.8 & 2010 505

c. It was observed that the north and south ramps have a 1" and 2" vertical transition from the top of the ramp landing to the terrace levels. No transition is allowed at these locations.

ADAAG: 1998 4.5 & 2010 303

d. The top landings are also to be 60" long. The current landings vary from 36" to 48" in length.

ADAAG: 1998 4.8 & 2010 405

- e. It is also noted that location over 30" in height require guardrails that will not allow a 4" sphere to pass per building code.
- 6. Terrace West Entries: The original doors do not provide adequate clearance to function as accessible entrances. Side approach to pull doors with closures require 54" clear perpendicular to the door.

ADAAG: 1998 4.13 & 2010 404

The new door that was added is not accessible as an entry door as the ramps to it are non-compliant.

ADAAG: 1998 4.13 & 2010 404





Priority 2 – Accessible Interior Routes & Services

- 7. Lower Level (Horizontal): The only accessible entrance for the building is the South East Entrance. This limits the building accessibility to the South 1/3 of this level. The corridor between the two lobbies does not have adequate push/pull clearances, which cuts off accessibility to the rest of the building.
 - a. Accessible routes should connect all accessible building entrances to all accessible spaces and features within the building.

ADAAG: 1998 4.1, 4.3 & 2010 206

b. Accessible routes for all occupant work areas.

ADAAG: 1998 4.1 & 2010 203

8. Upper Level (Horizontal)

None of the entries on this level are truly accessible, due to the limited size of the vestibule & the multiple stairs just inside the Lobby. Which means that there is no accessible route to any of the functions on this level.

9. Corridors (Lower Level)

 Corridors to provide wheelchair turn around spaces for minimum of a 60" diameter.

ADAAG: 1998 4.2 & 2010 304

Vertical Access

There are no elevators in the building to provide any accessible vertical connection. The existing stairs are non—compliant and impede the vertical connection of the main two levels. All interior and exterior stairs are to connect levels that are not served by an alternate, accessible vertical access, must meet ADAAG.

ADAAG: 1998 4.1 & 2010 210

 a. The stair treads throughout the whole building are less than the required 11" depth. The riser height vary 3/8", which is acceptable per building code.

ADAAG: 1998 4.9 & 2010 504

b. The black 6" wide stair tread nosings do not provide enough visual contrast to the individual steps which create dangerous conditions. (See appendix for pictures). It is recommended that the tread nosing be a depth of 1 to 2 inches. The leading edge of treads should contrast in color with the rest of the treads to increase visibility.

ADAAG: 2010 504

- c. Handrails are required at all stairs and should extend the full length of each stair flight, including around columns or other structural elements. The interior terrace landing on the main level should have handrails along the walls at each side minimally. ADAAG: 1998 4.9 & 2010 505
- d. Handrails are required on both sides of stairways.

ADAAG: 1998 4.9 & 2010 505

e. Handrails shall extend a minimum of one tread depth beyond the bottom step.

ADAAG: 1998 4.9 & 2010 505



- f. Handrails shall extend a minimum of 12" beyond the top step. ADAAG: 1998 4.9 & 2010 505
- g. Handrails should return back to the wall or return down to the posts.

ADAAG: 1998 4.9 & 2010 505

h. Handrail grasping surfaces exceed the non–circular perimeter measurement of 6 1/4" maximum and a cross–section of 2 1/4" maximum.

ADAAG: 2010 505

- i. Handrails shall also not protrude more than 4.5" from walls. ADAAG: 2010 307, 405
- j The top of the handrails shall be at a consistant height of 34" to 38" from the top of the tread nosing. Existing heights between 25" to 32" were observed.

ADAAG: 1998 4.9 & 2010 505

- k. The stairway configurations where the stairs turn 90° and handrails run 45° along these cause users to walk down the stairs at a 45° angle. These conditions are also extremely dangerous for use. (See appendix for pictures). ADA does not address this specific condition, but this does not comply with new building codes.
- I. The mechanical rooms on the lowest part of the building are not required to be accessible.

 ADAAG: 1998 4.1 & 2010 203.

11. Doors

The priority for accessible doors should be first at the building entrances; second; public corridors to restrooms and suites, and third the remaining user doors within the suites.

a. Double doors with independent operated leaves require at least one leaf have a minimum of 32" clear when open.

ADAAG: 1998 4.13 & 2010 404

b. Single doors to have 32" clear when open.

ADAAG: 1998 4.13 & 2010 404

c. Front approach to pull doors require a minimum of 18" beyond the latch side and 60" clear perpendicular to the door for the full width of the door and the latch clearance.

ADAAG: 1998 4.3 & 2010 404

- d. Front approach to push doors with closures require a minimum of 18" beyond the latch side and 48" clear perpendicular to the door for the full width of the door and the latch clearance.
 ADAAG: 1998 4.13 & 2010 404
- e. Front approach to push doors without closures require 48" clear perpendicular to the door for the full width of the door.

 ADAAG: 1998 4.13 & 2010 404
- f. Side approach to pull doors require 54" wide clear perpendicular to the door when approaching from the hinge side of the door and 42" are clear beyond the latch side.

ADAAG: 1998 4.13 & 2010 404





- g. Side approach to push doors without a closure require 42" wide clear perpendicular to the door when approaching from the hinge side of the door and 22" are clear beyond the latch side. ADAAG: 1998 4.13 & 2010 404
- Side approach to push doors with a closure require 48" wide clear perpendicular to the door when approaching from the hinge side of the door and 22" are clear beyond the latch side.
 ADAAG: 1998 4.13 & 2010 404
- Door hardware to have an easy to grasp shape, operable with one hand, and does not require tight grasping or twisting of the wrist. Only a small number of latches that have been updated comply. Because of this, the locations are not noted on the plans.
 ADAAG: 1998 4.13, 4.27 & 2010 404, 309
- The force to push or pull open doors should not exceed 5 pounds (22.2N) of force.
 - ADAAG: 1998 4.13 & 2010 404
- k. Door closures on all interior doors should not exceed 5 pounds (22.2N) of force.
 - ADAAG: 1998 4.18 & 2010 309
- Door closures to be adjustable to allow closing to take a minimum of 5 second to move from an open position of 90° to a partially open position of 12°.
 - ADAAG: 2010 404
- m. It was noted that the existing panic bars do not extend the full width of the door. Though this is not an ADA issue, it may not meet current building code requirements.

12. Alarms

Include both visual and audible signals to alert people of emergencies.

These systems are required to meet NFPA 72 (National Fire Protection Association
Life Safety Code 72, Chapter 4). These systems have not been reviewed for compliance,
but field observation note the need to update or add to some areas of the building.

ADAAG: 2010 702

13. Signage

Direct people to accessible entrances and through accessible pathways.

Note these locations are not identified on the floor plans, but general observations indicate that the majority of signage requires updating to comply with the following:

- All accessible exits, passageways, exit discharge and stairways doors should be identified with accessible visual and tactile signs.
 ADAAG: 2010 216
- b. Provide signage to direct users to the nearest accessible entrance. ADAAG: 1998 4.1 & 2010 216
- Install directional signs containing visual characters to indicate the location and direction of accessible means of egress.
 ADAAG: 2010 216
- d. Install signs containing both visual and tactile characters at egress doors to identify them.





14. Obstructions:

a. 80" is required for clearance heights. Existing duct work in corridors was noted at 75" above the floor.

ADAAG: 1998 404 & 2010 307

15. Priority 3 - Toilets...

- a. Upper Level North Lounge Toilet
 - Entrance door is not compliant. Door swing can be altered to allow pull clearance.
 - ii. The door knob and lock are not compliant for accessible grasping.
 - iii. Signage with Braille is too close to the side wall and the door access. Signage can be relocated to other side of door to comply.
 - iiii. The toilet and the sink are too close to the side walls, spacing should be 16" to 18" from the center line.
 - v. The side grab bar beside the toilet is 36" long, 42" is required.
 - iv. The grab bar spacing is not compliant as well.

b. Lower Level – North Suite Toilet

- i. Not an accessible route to toilets.
- ii. Entrance door is not compliant due to wall configuration.
- iii. The layout will not allow for wheel chair turn around space.
- iv. None of the fixtures comply, nor are there grab bars installed.

c. Lower Level – Central Corridor Toilet

- i. Entrance door is not compliant due to corridor width.
- ii. The door knob and lock are not compliant for accessible grasping.
- iii. The signage and light switch exceed the recommended heights.
- iv. The side grab bar beside the toilet is 36" long, 42" is required.
- v. The grab bar spacing is not compliant as well.
- vi. The sink is 10" from side wall, spacing should be 16" to 18".
- d. Lower Level Heath Center Client toilet
- i. The sink is 12 ½" from side wall, spacing should be 16" to 18".
- ii. The side grab bar beside the toilet is 36" long, 42" is required.
- iii. The grab bar spacing is not compliant as well.

e. Lower Level – Health Center Employee Toilet

- i. Entrance door is not compliant.
- ii. The layout will not allow for wheel chair turn around requirements.
- iii. None of the fixtures comply, nor are there grab bars installed.

f. Lower Level – Men's & Women's Multiple–User Toilets

- i. Not an accessible route to toilets.
- ii. The facets do not meet the recommended grasping requirements.
- iii. The urinals exceed the recommended heights.
- iv. The lavatories sinks are lower than the recommended heights.





- g. Toilets should be available on each level if there is no accessible vertical connection. ADAAG: 1998 4.1 & 2010 213
- h. When alterations to a primary function area require you to provide an accessible route, ensure that toilets are located on that accessible route.

 ADAAG: 1998 4.1, 4.19 & 2010 202
- Accessible toilets shall have accessible privacy latches on doors to single—user toilet rooms.

ADAAG: 1998 4.1 & 2010 213

j. Accessible toilets to have all fixtures and accessories accessible.

ADAAG: 1998 4.1 & 2010 213

k. Toilets and sinks are to be installed so the centerline is between 16" to 18" from the nearest side wall or partition.

ADAAG: 1998 4.1 & 2010 213

- I. Grab bars are required at accessible toilets. These are to be installed33" to 36" high. The rear grab bars are to be a minimum of 36" long and extend 12" from the centerline of the toilet towards the side wall or partition. The side grab bars are to be a minimum of 42" long, extend a maximum 12" from the rear wall, and extend 54" minimum from the rear wall.
- m. Door hardware (including handles, pulls, locks and other operating devices) are to be an easily grasped shape, operable with one closed hand, and not require tight grasping, pinching, or twisting of the wrist.
 ADAAG: 1998 4.13, 4.27 & 2010 404, 309

16. Priority 4 - Other Accessible items...

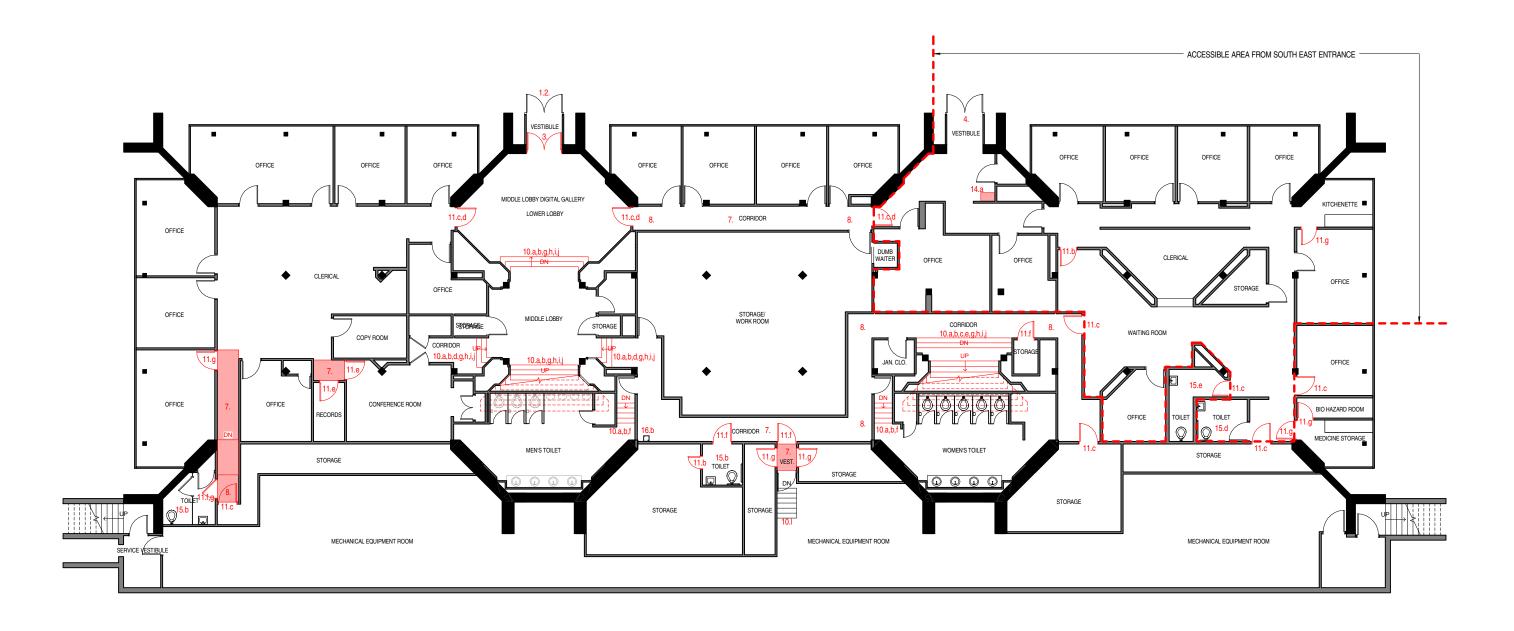
d. Provide accessible standing height drinking fountains with spout outlets between 38" to 43" high.

ADAAG: 2010 602

 Provide accessible sinks in room required such as break rooms. The existing sinks in these rooms are not accessible.

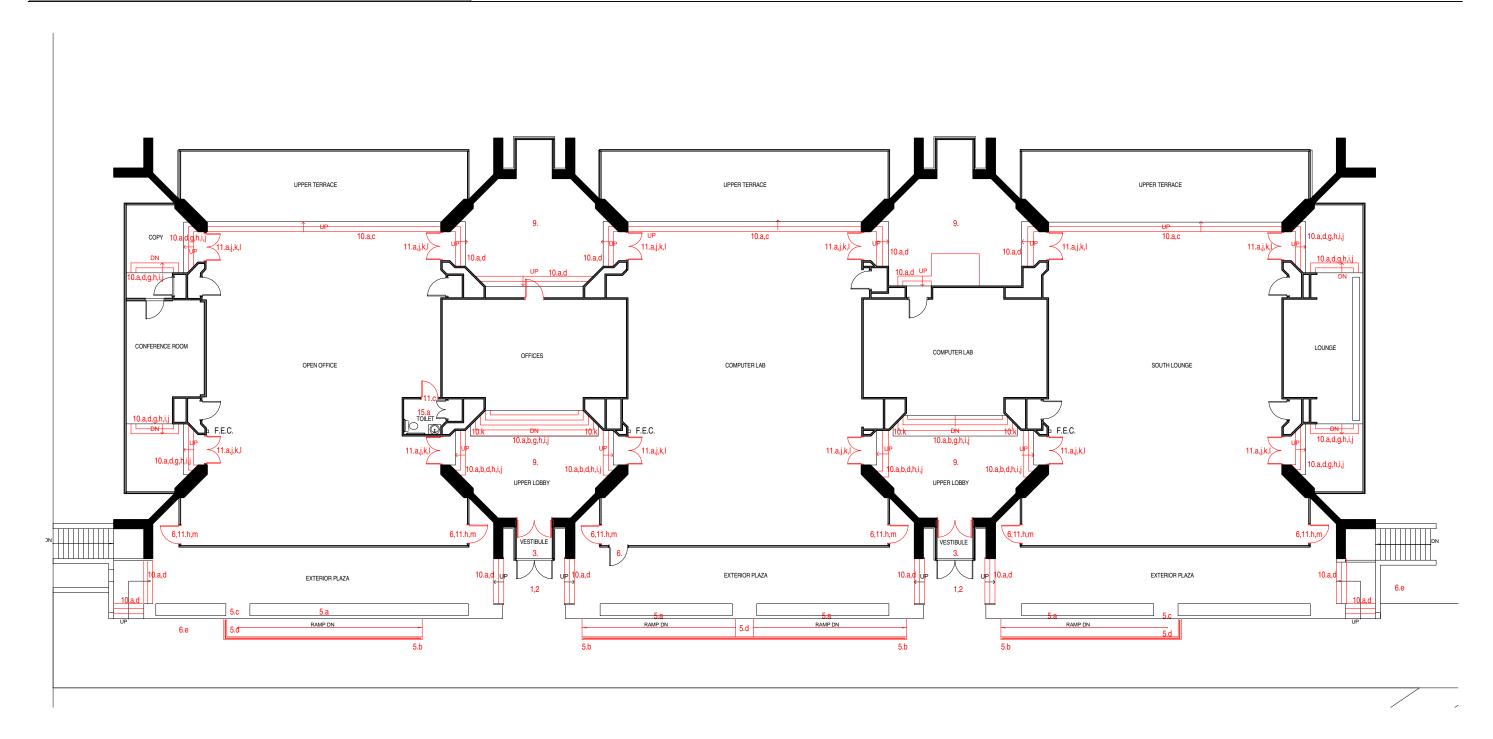
ADAAG: 1998 4.24 & 2010 606, 305



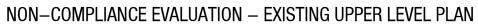






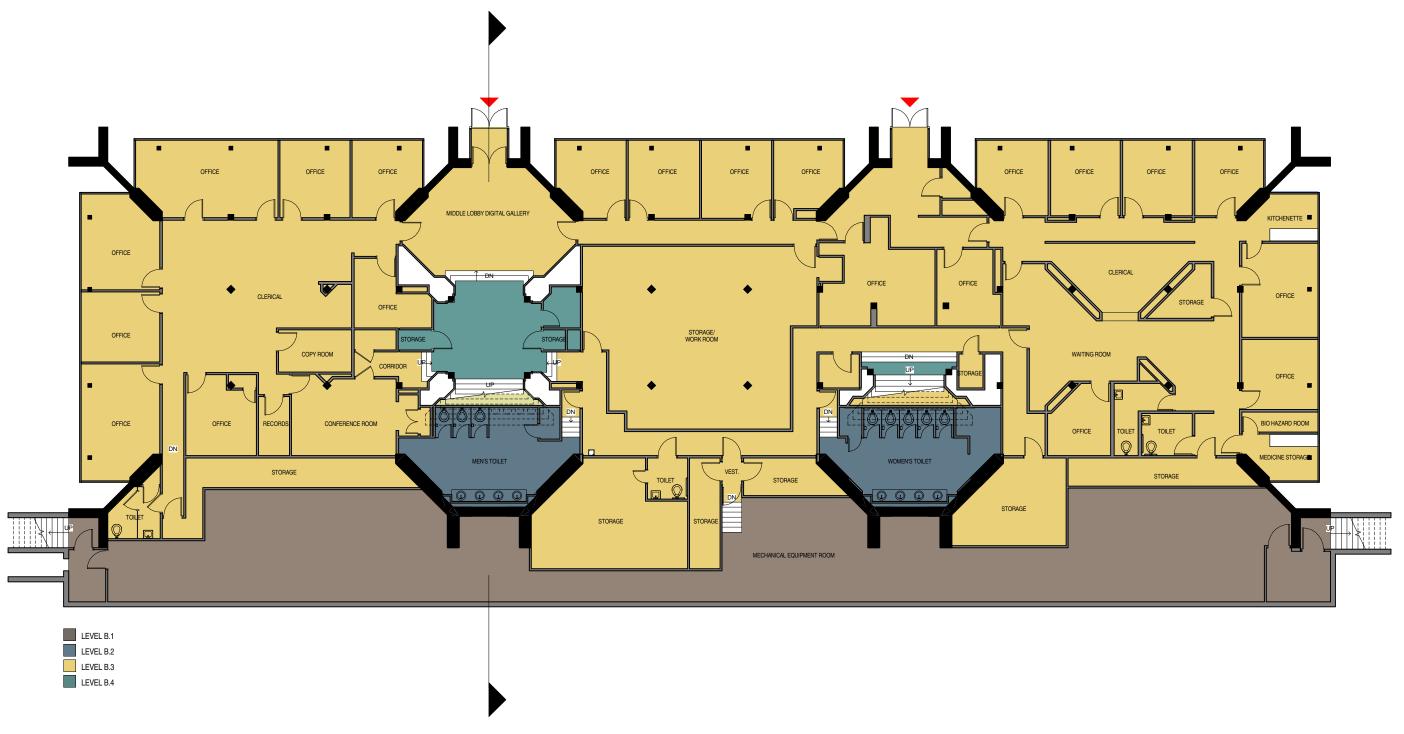














EXISTING LEVEL STUDY - LOWER LEVEL PLAN



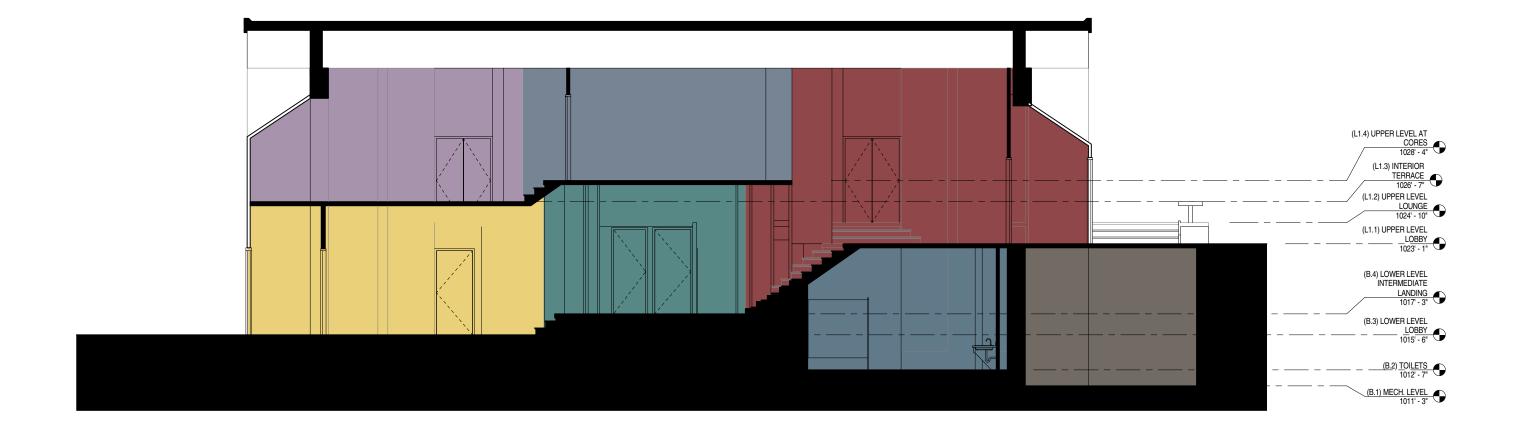


ADA ASSESSMENT COMPUTER LAB SOUTH LOUNGE EXTERIOR PLAZA EXTERIOR PLAZA EXTERIOR PLAZA LEVEL L1.1 LEVEL L1.2 LEVEL L1.3



EXISTING LEVEL STUDY — UPPER LEVEL PLAN

LEVEL L1.4







EXISTING ISOMETRIC







compliance concept

Concept Statement

Remodel the existing structure to comply with the Americans with Disabilities Act Accessible Guidline -2010.

The following diagrams illustrate a remodeling strategy to bring the building into ADA compliance. The concept is based upon the removal and re—build of the two central circulation core areas to provide complaint vertical circulation to each primary level of the building with new stairs and elevator(s). In addition, the site would be modified at the west side of the building with a ramped terrace to provide an at—grade entrance. Remaining incidental elevated areas on the upper level would be accessed by new ramp construction. This concept is put forth without a detailed structural analysis, mechanical/electrical evaluation or a detailed code study at this time, but it appears to be a viable strategy for acheiving accessibility goals.

A remodeling of this scope would likely be classified by the International Existing Building Code as a "Level III" modification, requiring upgrade to meet current building code standards, including mechanical, electrical, and plumbing systems.

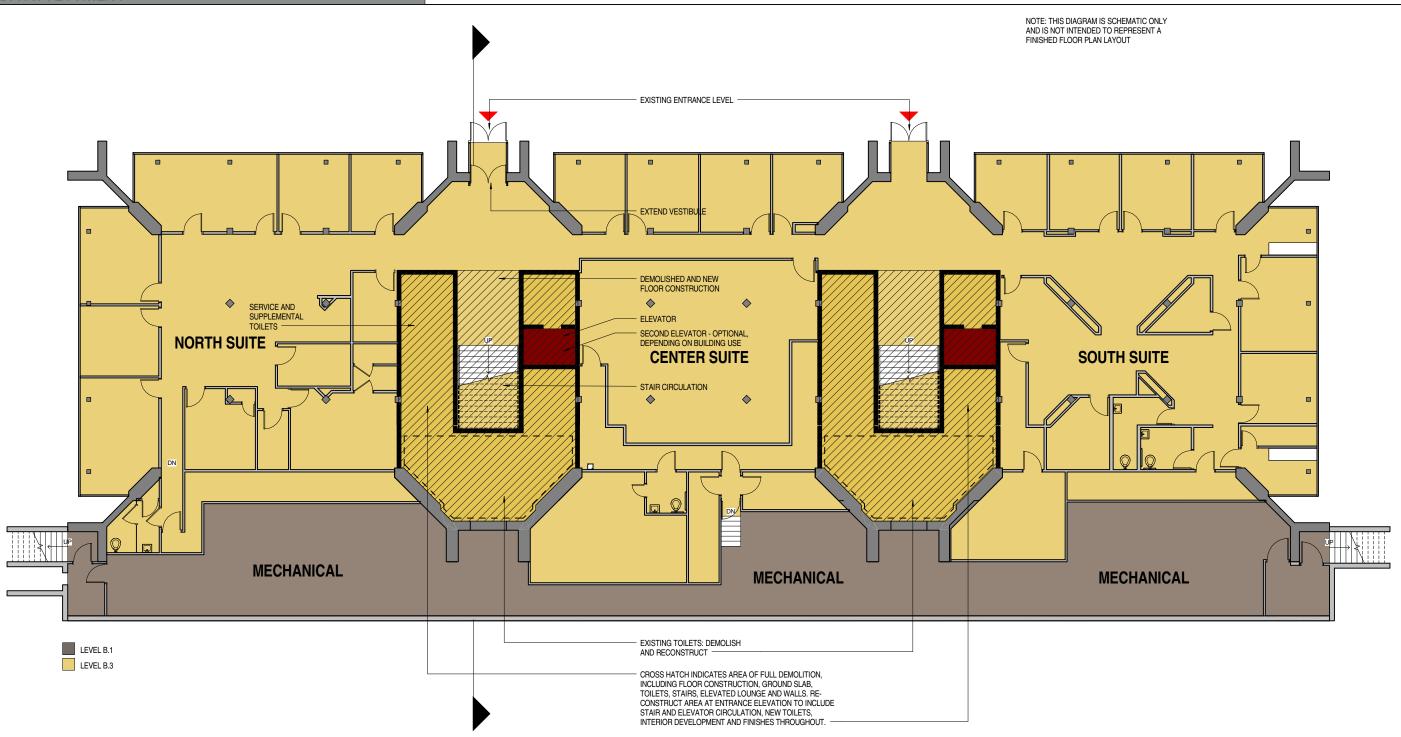
In addition, it would be appropriate at this time to evaluate other primary components in the building such as the roof/insulation system, and the single—pane glazing system.

A pre—design recommended cost allocation chart is provided in this report. The final cost—to—benefit evaluation will have to be considered by Grinnell College based on a detailed scope of work.





GRINNELL COLLEGE - FORUM BUILDING



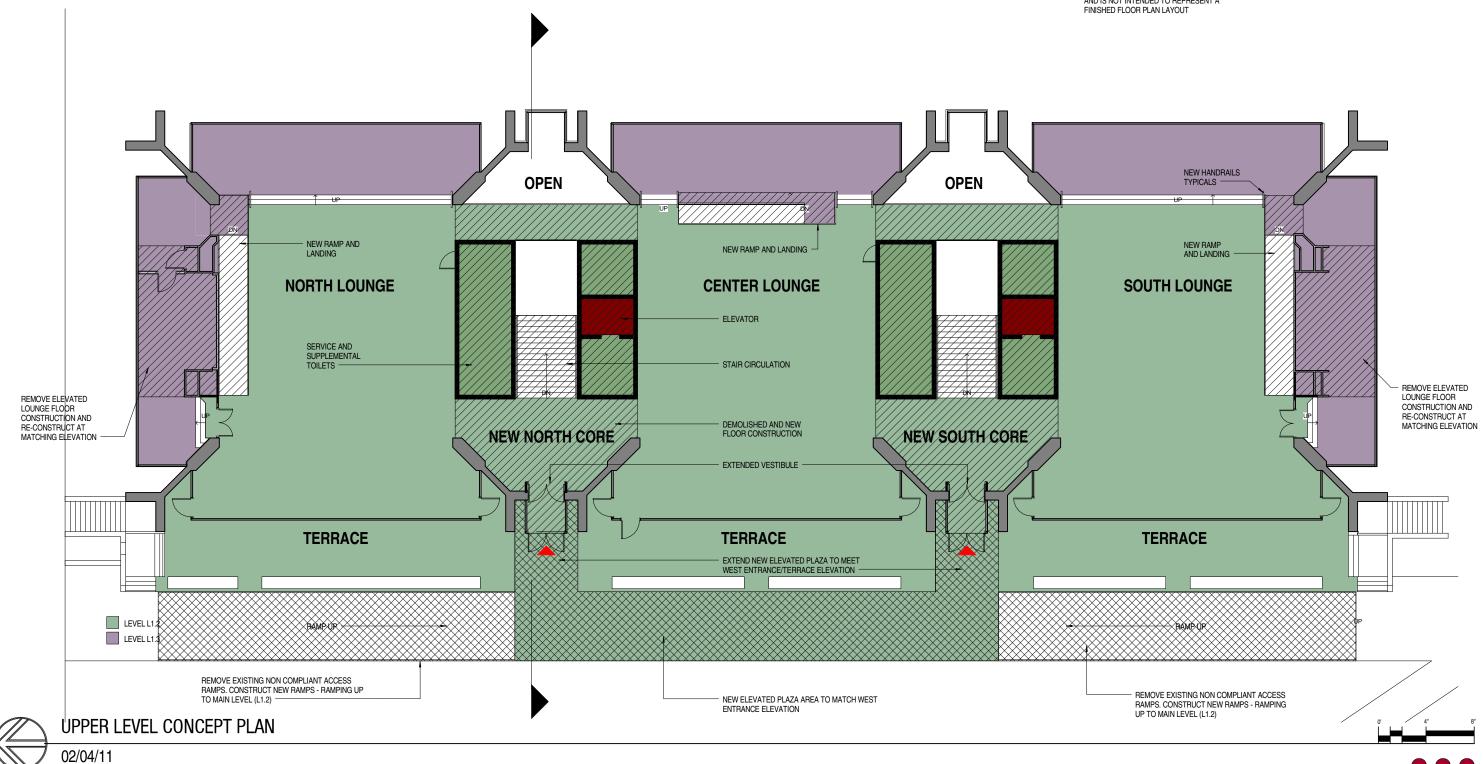


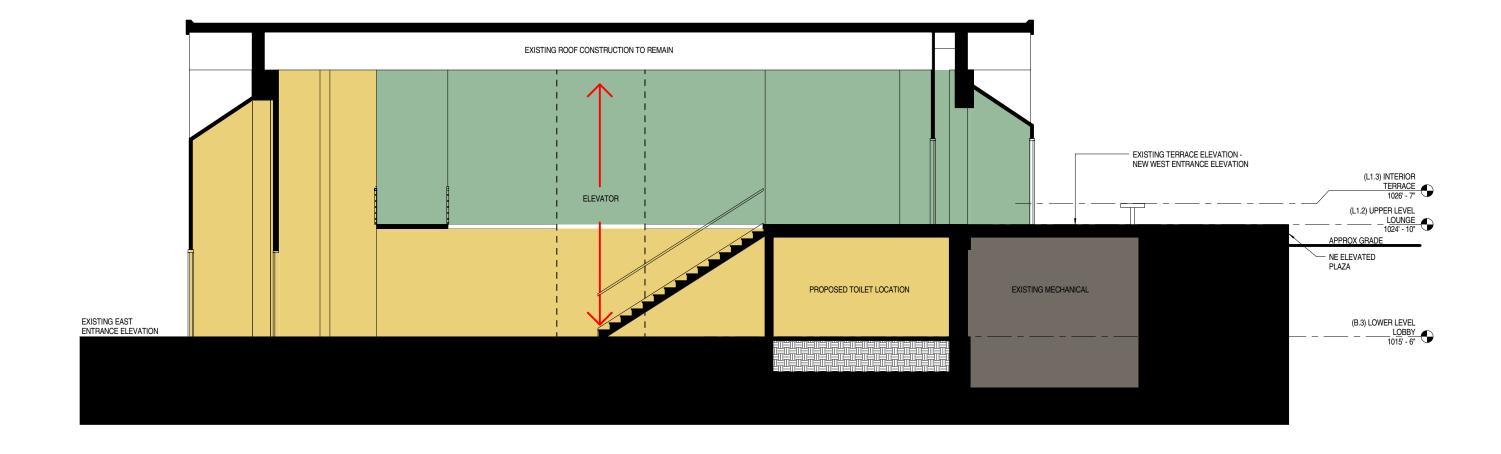


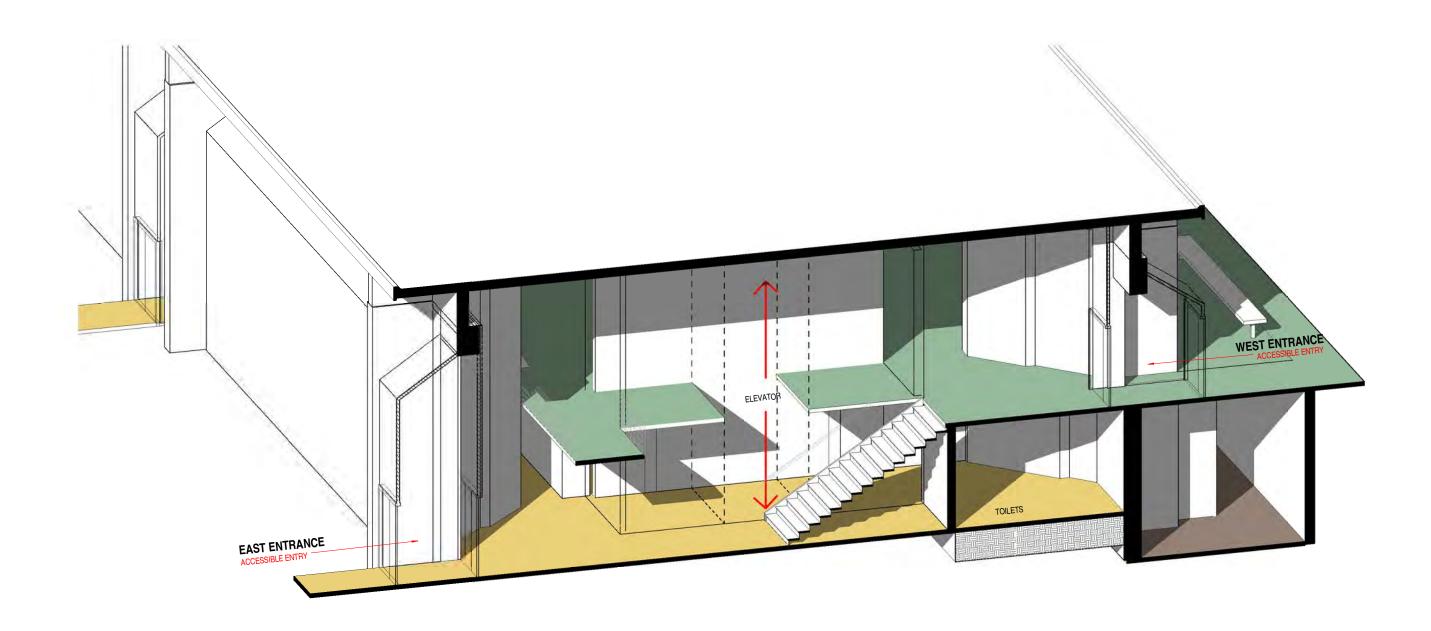


GRINNELL COLLEGE - FORUM BUILDING

NOTE: THIS DIAGRAM IS SCHEMATIC ONLY AND IS NOT INTENDED TO REPRESENT A FINISHED FLOOR PLAN LAYOUT







CONCEPT ISOMETRIC

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pre-design recommended allocation of costs

Liability

The following chart is based upon an interpolation of cost data from past projects and from the 2011 R.S. Means Building Construction Cost Data Manual. The cost projections may be refined as more concept details emerge and a final scope of work is developed.

A.	Accessil	bility – Site Work:				
	a.	Accessibility Plaza Development (3,000sf):				
		i. Demo of existing ramps/walks/improvements@ \$15/sf	\$	45,000		
		ii. Site preparation @ \$10/sf	\$	30,000		
		iii. New walks, ramps, plaza @ \$60/sf	\$	180,000		
В.	Accessi	bility – Interior Improvement:				
υ.	a.	Core Remodel (2 @ 3,500sf = 7,000sf):				
	u.	i. Interior demolition @ \$50/sf	\$	350,000		
		ii. Build-back @ \$125/sf	\$	875,000		
		iii. Interior Finishes @ \$80/sf	\$	560,000		
		iv. Elevator Equip. 2 @ \$75,000	\$	150,000		
	b.	Interior Terrace Remodel (2 @350sf = 700sf):	Ψ	100,000		
	D.	i. Interior demolition @ \$50/sf	\$	35,000		
		ii. Build-back @ \$100/sf	\$	70,000		
	C.	Interior Ramps & Landings to Terraces (400sf):	Ψ	70,000		
	0.	i. Ramp & landing construction @ \$100/sf	\$	40,000		
		Compliance Construction Total:	_	2,335,000		
		compliance construction rotal.	Ψ,	2,333,000		
C.	Associa	ted Improvements:				
	a.	Remaining Interior Re-finish & Remodel:				
		i. Upper level finishes/compliant items 10,000sf @ \$40/sf		400,000		
		ii. Lower level finishes/compliant items 10,000sf @ \$75/sf	\$	750,000		
	b.	Glazing Replacement (10,000sf):				
		i. Demolition of existing @ \$10/sf	\$	100,000		
		ii. New curtain wall @ \$80/sf	\$	800,000		
	C.	Roofing/Insulation Upgrade (15,000sf):				
		i. Demolition & replacement @ \$10/sf	\$	150,000		
	d.	Upgrade Plumbing for Remaining (22,000sf):				
		i. Demolition & replacement @ \$10/sf	\$	220,000		
	e.	Upgrade HVAC for Remainder (22,000sf):				
		i. Demolition & replacement @ \$75/sf	\$	1,650,000		
		ii. Renovation & upgrade mech. plaza @ \$40/sf (2,000sf)	\$	80,000		
	f.	Upgrade Electrical for Remainder (22,000sf):				
		i. Partial demo & upgrade @ \$25/sf	\$	550,000		
	g.	Install Fire Protection System (29,000sf):				
		i. Provide service, standpipes, sprinklers @ \$6/sf	_	174,000		
		Associated Construction Improvements:	\$	4,874,000		
D.	Total Co	ompliance & Improvement Construction Costs:	¢7	,209,000	=	\$250/sf
υ.		able New Construction Cost:	ΨI	,209,000	-	\$200-250/sf
	oumpan	abic New Constituction Cost.				ψ <u></u> 200-200/31
E.	Total Co	ompliance & Improvement Project Costs:				
	a.	Contingency @ 10%	\$	721,000		
	b.	Soft Costs (A/E fees, Testing, Printing, Permits, etc.) @ 15%		,190,000		
		, , ,		,120,000	=	\$315/sf
	Compar	able New Project Cost:	, -	, , -		\$250-315/sf
		,				

For comparison purposes, a current recommended cost for planning budgets for collegiate buildings of comparable size and quality is 250-315 \$/sq ft.









(1) Waldheim, Charles, & Reedi, Katerina (Eds.) (2005)

Chicago Architecture.. Histories, Revisions, Alterations. Chicago: University of Chicago

Press

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