



Purin Hall Renovation Feasibility Study

DFDM Project No. 17B1N
1-8-2018





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DFDM Project No. 17B1N
University of Wisconsin-Milwaukee**

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PREFACE

Summary of Feasibility/Pre-Design Process:

This Study provided an analysis of current physical needs, but also looked to a broad range of potential options that included repairs, replacement or change of use. The Study began with a team kickoff meeting to discuss & prioritize each stakeholder's goals for this study. An overall project approach and schedule was established and a statement of project goals was created. Past studies and master plans were reviewed. Building and zoning code restrictions were researched. A building condition review and report was created. Several options with associated work scope, cost, schedule and program yield were provided, refined, and prioritized. A recommendation for what to do with this building in the future was arrived at.

Acknowledgements

Participants in this Study included the following individuals:

Jon Jenson	DFDM
Maura Donnelly	UW System
Karen Wolfert	UWM-Campus Planning
Kelly Haag	UWM Housing
Dave Fisher	UWM Housing
Joseph Niswonger	UWM Housing
Jonathan Parker	Eppstein Uhen Architects
Fred Groth	Graef
Kris Cotharn	IMEG
Tim Paap	IMEG
Tom Middleton	Middleton Construction Consulting

Mission and Vision Statement

The overall goal of this study was to establish a plan for addressing short term and long-term maintenance needs at this facility. The plan not only addressed physical needs and their associated costs, but also looked at associated financial models. The study includes defining what needs to be fixed immediately, but also offers a broad array of options for what could be done with this facility/site. Factors such as life safety, program need, housing demand, enrollment projections, zoning compliance, return on investment, and complexity of implementation were considered. A concise scope, schedule, budget and finance statement was provided for UW Milwaukee's use to summarize potential options.



1. EXECUTIVE SUMMARY

1.1 General Project Description and Purpose:

Purin Hall is a unique residence hall – it is a small property across the street from UWM’s Kenwood Campus. Purin Hall was originally built as a developer grade apartment building in the 1950’s and spent its early life as a conventional market rate apartment building operated by a private owner. UWM acquired this property in the early 1970’s and has been using it as a residence hall. Its capacity is only 51 students. The last major renovation was completed in 1995. This is a low density, high maintenance property that is again in need of major repairs. This project provides building code review, facility condition assessments, and pre-design services to provide a Preliminary Design and Design Report in accordance with the DFD Consultant Policy & Procedure Manual. The building infrastructure, exterior envelope, and program spaces have been evaluated to identify deficiencies, develop design solution alternatives, and recommend appropriate corrective measures and the most cost-effective capital maintenance approach to pursue.

This study is intended to provide comprehensive recommendations, design solution alternatives, scope descriptions and budget estimates for facility renovation or replacement. An analysis of alternatives and implementation scenarios with corresponding budget estimates and schedules is provided to develop a future and feasible capital project request.

1.2 Specific Challenges or Objectives to be Resolved:

Purin Hall was built in 1955 by a private developer as a 17 unit apartment building. It is not of institutional quality, and many repairs are currently needed to keep the building operational. If the building is replaced by the State of Wisconsin, RM-5 zoning restricts density to no more than the existing 17 units. If the site is sold to another owner zoning restricts the number of units to 12.

1.3 Alignment with UW-Milwaukee Housing Strategic Plan:

Purin Hall was remodeled in 1995 to a configuration more consistent with UW-Milwaukee’s other suite style halls. At 370 gsf per bed its slightly less dense than typical suite style halls, and at 17 units and 68 occupants it is considerably smaller in size than UW-Milwaukee’s other facilities.

1.4 Summarized Analysis of Existing Conditions/Users/Operations.

The building has been maintained over the years, but areas of major concern are code required issues, life safety issues, and building deterioration that results in failure.

1. This wood frame building does not have automatic fire sprinklers.
2. None of the unit entry doors or exit stairwell doors are fire rated.
3. All of the steel lintels supporting brick are extremely corroded and most require replacement.
4. The elevator is reported to be extremely unreliable and prone to entrapment.
5. The louvers providing parking garage ventilation have been covered with plastic sheeting as a measure to reduce the chances of pipe freezing.



6. Grading around the building slopes toward the foundation walls which is causing deterioration of the foundation walls.

Less urgent but still important maintenance needs include the following:

- A. Windows were replaced in 1986 but they operate poorly and appear to allow water infiltration into the masonry wall which aggravates the lintel deterioration problem
- B. Cast Stone trim at windows is deteriorating.
- C. Kitchen cabinets in several units are damaged and need to be repaired or replaced.
- D. Flooring in several kitchens is extremely worn and is in need of replacement.
- E. Bathroom fixtures, finishes and sealants in all units are extremely worn and need to be replaced.
- F. The roof is due for replacement

Users

This facility houses upper division students during the academic year, and accommodates individuals and families during summer programs.

Operations

This facility is operated by UWM Housing.

1.5 Summary of Options Considered

1. Critical immediate repairs for continued use as a residence hall
2. Basic Repairs/5 year plan for continued use as a residence hall
3. Renovation for continued use as a residence hall
4. Replacement residence hall by State/UWM on current site, 17 units as allowed in the zoning code
5. Replacement residence hall by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits
6. Hypothetical larger site, new residence hall by State/UWM
7. Hypothetical larger site, private developer project, apartments over retail.
8. Private developer project on existing site, within existing zoning limitations, apartments over retail.
9. Conversion to office building by State/UWM
10. Demolition of the building, creation of a surface parking lot.



1.6 Recommendations

The recommendation resulting from this study was to address immediate urgent repair and life safety needs using cash funds. This provides a 5 year lifespan of use for surge housing while the Sanburg Hall renovations are completed. While several options were considered, none of the options resulted in a scenario that provided a significant and efficient number of beds as a residence hall for UWM. Developer options result in a very low density building and therefore result in a low return on investment, so the site does not have a significant market value if sold. In a sale of the land, the proceeds of the sale would not go to UWM Housing, nor UWM, so a sale option results in no net cash to UWM, but would result in the elimination of a cost center. Because the building has a significant amount of bearing walls it would not be efficient to convert to office use. A surface parking lot would yield 22 spaces.

1.7 Space Tabulation Summary (Existing vs. Proposed)

Existing (corresponds to Options 1 [\$505,000; 2018 bidding], 2 [\$1,937,000; 2018 bidding], and 3 [\$6,476,000; 2018 bidding]):

- 3 stories + one basement level parking
- 17 Units
- 58 Occupants
- 5,460 gsf footprint
- 21,504 gsf
- 370 gsf per bed
- 11 parking stalls.

Potential State of Wisconsin Replacement on existing site within zoning restrictions (corresponds to Option 4 [\$7,965,000; 2018 bidding]):

- 3 stories + one basement level parking
- 17 Units, 58 Occupants (4 occupants per unit)
- 14 parking stalls
- 6,533.5 gsf footprint max
- 22,910 gsf
- 337 gsf per bed



Potential State of Wisconsin Replacement on existing site with zoning variance for higher unit density (corresponds to Option 5 [\$11,234,000; 2018 bidding]):

- 5 stories + one basement level parking
- 31 Units, 124 Occupants (4 occupants per unit)
- 14 parking stalls
- 6,533.5 gsf footprint max
- 33,000 gsf
- 266 gsf per bed

Potential State of Wisconsin Replacement on potentially larger site within zoning restrictions (corresponds to Option 6 [\$24,573,000; 2018 bidding]):

- 4 stories + one basement level parking
- 34 Units, 136 Occupants (4 occupants per unit)
- 58 parking stalls
- 16,900 gsf footprint max
- 74,305 gsf
- 546 gsf per bed

Potential Private Developer apartment over retail project on potentially larger site within zoning restrictions (corresponds to Option 7 [\$22,365,000; 2018 bidding]):

- 4 stories + one basement level of parking
- 34 Units, 136 Occupants (4 occupants per unit)
- 58 parking stalls
- 16,900 gsf footprint max
- 74,305 gsf
- 546 gsf per bed

Density available to a buyer of the property (corresponds to Option 8 [\$7,041,000; 2018 bidding]):

- 5 stories + two basement levels of parking
- 12 apartment units
- 36 occupants (3 occupants max per dwelling unit)
- 6,533.5 gsf footprint max
- 33,000 gsf
- 1,200 nsf per unit avg.
- 4,200 nsf retail
- 8 residential parking stalls
- 15 retail parking stalls.



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Convert existing building to office use by State/UWM (corresponds to Option 9 [\$5,690,000; 2018 bidding]):

3 stories + one basement level parking

53 offices

5,460 gsf footprint

21,504 gsf

11 parking stalls.

Demolish existing building and build a surface parking lot [\$324,000; 2018 bidding]:

21 parking stalls.



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1.8 Budget Summary

17B1N UW Milwaukee Purin Hall Cost Notes, 1-8-18										
	Critical Immediate Repairs (5 year life)	Basic Repairs (5 - 10 year plan)	Renovation (20 year life)	Replacement by UWM (17 units as allowed by zoning code, 4 occupants per unit)	Replacement by UWM using zoning variance to increase # units within 60' height limit on existing site (5 stories, 30,000 sf, 31 units, 124 beds)	Hypothetical larger project site DFDM quality residence hall (3 stories, 74,305 sf, 34 units, 136 beds)	Hypothetical larger project developer quality apartments over retail (4 stories, 91,240 sf, 34 units, 102 beds)	Private Developer project within zoning limits, existing site, apartments over retail (3 stories, 26,000 sf, 12 units, 36 beds)	UWM remodel/change of use to Office Building (3 stories, 21,504 gsf, 53 offices, 406 gsf per occupant)	Convert site to a parking lot
UW Milwaukee Purin Residence Hall Budget Options	1	2	3	4	5	6	7	8	9	10
Cost/bed	\$7,840	\$29,404	\$99,185	\$117,120	\$90,596	\$180,680	\$219,265	\$195,579		
Project Budget per DFD Categories										
Construction	\$399,850	\$1,499,582	\$5,058,432	\$7,964,167	\$11,233,912	\$24,572,453	\$22,365,071	\$7,040,850	\$5,689,258	\$253,310
Abatement	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Design	\$35,987	\$134,962	\$455,259	\$716,775	\$1,011,052	\$2,211,521	\$2,012,856	\$3,520,425	\$2,844,629	\$22,798
Land Acquisition						\$750,000	\$950,000	\$120,000		
DFD Fee	\$18,033	\$66,422	\$223,011	\$322,156	\$454,254	\$993,131				\$11,586
Contingency, 10.0%	\$40,985	\$150,958	\$506,843	\$79,742	\$112,439	\$245,825	\$223,751	\$70,509	\$56,993	\$26,331
Equipment			\$127,500	\$170,000	\$210,000	\$240,000	\$40,000	\$40,000	\$260,000	
Other Fees		\$75,000	\$95,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	
TOTAL	\$504,855	\$1,936,924	\$6,476,045	\$9,512,840	\$13,281,657	\$29,272,930	\$25,851,678	\$11,051,784	\$9,110,879	\$324,025
Cost of project divided by project lifespan (simple cost per year)	\$100,971	\$193,692	\$323,802	\$237,821	\$332,041	\$731,823				
net revenue per year at \$4800 per bed	\$175,000	\$175,000	\$175,000	\$175,000	\$595,200	\$652,800				



1.9 Schedule Summary

1. Critical immediate repairs: Design 6 months, construction 4 months.
2. Basic Repairs/5 year plan: Design 8 months, construction 4 months.
3. Renovation: Design 10 months, construction 8 months.
4. Replacement by State/UWM on current site, 17 units as allowed in the zoning code: Design 12 months, construction 12 months.
5. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits: Design 12 months, construction 12 months.
6. Hypothetical larger site, new residence hall by State/UWM: Design 12 months, construction 14 months.
7. Hypothetical larger site, private developer project: Design 8 months, construction 12 months.
8. Private developer project on existing site, within existing zoning limitations: Design 8 months, construction 12 months.
9. Conversion to office building by State/UWM: Design 10 months, construction 8 months



2. GENERAL PROBLEM STATEMENT

2.1 Description of Problem, Originators and Drivers

Purin Hall is an existing asset that was acquired long ago before the current housing strategy was implemented. This is a very small building with poor quality of construction and systems, and is in need of a lot of repairs. The big question is what to do with it; Repair it, replace it, or demolish it?

2.2 Previous Planning Efforts

UWM Housing did an internal building condition assessment in 2014 and created a list of deficiencies to address, but there has been no comprehensive analysis of options for this hall going forward

2.3 Major Goals and Objectives

Figure out what to do with this property going forward; Repair, replace, sell?

2.4 Capital Budget or Schedule Considerations/Constraints

Consider how investing in this asset ranks as a priority versus other campus needs.

3. PEOPLE / FUNCTIONS / ACTIVITIES ANALYSIS

3.1 UW Milwaukee Housing Organizational Structure

Typical university housing structure within the university – run as a program revenue operation.

3.2 UW Milwaukee Housing Programs and Services.

Housing availability is very limited on campus, and generally serves first year and second year students.

3.3 Occupant / User Activities

3.3.1 Resident counts and analysis of demand

UWM has a high demand for student housing on or adjacent to campus.

3.3.3 Utilization – Resident/Staff Ratio, sf/bed ratio

At 51 beds this is the smallest residence hall by far at UWM. There is one RA that serves this property, which is about average for RA/resident ratio at UWM

3.4 Benchmarking / Trends Analysis

At 422 gsf per bed this hall falls on the high side of average sf per bed for a freshman/sophomore style hall. At 51 occupants this hall is significantly smaller than typical residence hall being built today.

4. PHYSICAL ENVIRONMENT ANALYSIS

History:

Purin Hall was originally built by a private developer in 1955 as an apartment building. It was comprised of 16 one-bedroom apartment units and one very large two-bedroom unit. Indoor parking for 13 vehicles was provided on the ground floor which is approximately 4 feet below grade. The building has a very small, non ADA compliant, unreliable elevator.

UW-Milwaukee acquired Purin Hall in 1963. It's most recent renovation occurred in 1996, which included replacement of bathroom fixtures and finishes, replacement of kitchen cabinets, and conversion of living rooms to bedrooms resulting in an all two-bedroom arrangement. The building currently houses approximately 50 students in a mix of one and two occupants per bedroom. The building does not comply with current accessibility standards.



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Use:

Purin Hall is operated by University Housing as a residence hall for upper division students during the fall and spring semesters. Purin Hall is also heavily used in the summer to house individuals and families attending a variety of summer programs.

Condition:

This building was of medium quality construction typical of 1955 construction techniques. Foundation walls are concrete block, exterior walls are uninsulated face brick and concrete block with header courses connecting the two. Steel lintels supporting brick and cast stone are in very poor condition. Much of the cast stone trim is deteriorating extensively. The replacement windows operate poorly. The first floor framing consists of concrete on “book tile” supported by very deep concrete encased steel beams. Upper floor interior framing, stair framing, and roof framing consists of wood joists bearing on wood studs. Interior finishes and fixtures are very worn. The building does not have fire sprinklers.

Abatement:

The User Agency reports that there is some asbestos in the building that is not yet abated.

Structural and Envelope Assessment of Purin Hall

Executive Summary

Substructure:

The substructure looks in fairly good shape for a building that is over 60 years old. Drainage around the exterior needs to be addressed i.e. adding drain tile to keep buried walls dry. The parking garage needs to have insulated ceiling added to prevent pipes from freezing, ventilation and slab-on-grade dropped if possible for increased headroom.

Shell:

For the superstructure, the floors look in generally good shape for a 60 year old building. We did observe some settlement that has occurred (1/4” to 1/2”).

The main issue is with the exterior façade. The steel lintels are failing from corrosion. Four steel lintels have already failed. No cavity exists between brick and 8” CMU backup so water is exiting at the steel lintels. This issue needs to be addressed soon and will likely require replacing the majority of the steel lintels

The quality of the initial installations of the various roof systems was fairly good. The roofs appear to have been maintained over the years. Performing the restoration, repairs and routine maintenance as noted above can help extend the lives of the various roof systems. As the roofs approach the ends of their service lives they can become less dependable and increasingly prone to leakage. The quality of interior finishes, along with the criticality of the contents, uses and occupancies should be considered in the decisions to maintain or replace these roof systems.

Description of Existing Structure:

Purin Hall was constructed in 1955 on the corner of Downer Avenue and Kenwood Boulevard. The building has three residential floors above ground and partially exposed lower level used primarily for underground parking, communal laundry, building mechanical systems, and a modest storage area. The exterior walls are 8" masonry block backup with 4" brick, 4" continuous limestone bands above and below windows and 4" stone between windows. No cavity space is shown on the existing drawings between exterior brick and 8" masonry block back up wall. 1st floor (ceiling of lower parking level) is composed of steel beams encased in concrete placed 11'-4" o/c. running north-south and 6" of clay tile topped with 5" concrete. The typical 2nd and 3rd floors are 2x10 wood joists spaced at 16" o/c and wood subfloor. Roof is 2x8 wood joists spaced at 16" o/c and separate 2x6 ceiling joists spaced at 16" o/c below roof joists with 4" of insulation. All floors have lath and plaster applied directly to wood floor joists. Roofing is shown on existing plans as 4 ply roofing but this roofing has been replaced at least once.

General Conditions and Observations:

This section indicates observations about conditions observed during building walk-thrus. See sections 6 – 11 for suggested changes.

A. Substructure

- A10 Foundations:

No footings or spread footings are visible. Foundation walls are 8" CMU block with some cracking observed on east elevation and water stains indicating that water has been present on the outside and water is entering at mortar joints. On east elevation, we observed that grade slopes to building. No perimeter drain tile or drainage system was installed around the building. It also appears that adjacent house gutter discharges out on grade (see Photo 1). We would recommend the drain tile to be added along the building on all four elevations especially along east elevations and adjacent property owner discharge his roof drain to storm outlet or away from your building.



Photo 1. Drain from adjacent building discharges out on grade

Some minor settlement and cracking was noticed on the foundation walls on the inside of parking garage and lower level. Visual observations of the exterior façade revealed some settlement on the south elevation – See stepped cracks at near south entrance and near roof in SE corner. See photos 2 through 5. These cracks need to be tuck pointed sometime in the near future (two years).



Photos 2-3. Stepped cracks in the exterior brick façade



Photos 4-5. Stepped cracks in the exterior brick

- A20 Basement Construction:

The parking garage has very low overhead clearance of 6'-0". We would recommend that an option to lower the slab on grade by 1 ft. be explored, so the minimum clearance is 7'-0" under beams. This would also allow room for putting in an insulated ceiling so the pipes do not freeze during winter, which is an on-going problem presently, see photo 6. Ventilation needs to be added to parking garage. Presently the louvers are covered with plastic to keep out the cold, see photo 7. This is a code issue and needs to be addressed.



Photo 6. Low ceiling clearance in the garage. Exposed pipes freeze during winter



Photo 7. Louvers covered with plastic

B. Shell

- B10 Superstructure:

We did observe some settlement on 1st floor, 2nd floor and 3rd floor (1/4" to 1/2"). The settlement is minor for this age of building and can be repaired. See photos 8 and 9.

The 1st floor looks in good shape for this old of a building. The 2nd and 3rd floors do show some noticeable deflection in the wood flooring when walking across it. For this age of building this is not unusual. This will be an issue for future floor tile areas.

We were not able to see joist bearings at exterior walls. Our concern would be moisture causing mold growth and dry rot typical of wood on masonry in older buildings.



Photo 8. Settlement on the 1st floor



Photo 9. Settlement at west elevation on 3rd floor

- B20 Exterior Enclosure

Visual observations of the exterior façade revealed some settlement on south elevation – see photos 2 through 5 stepped cracks at near south entrance and near roof in SE corner.

Exterior continuous limestone bands above and below windows are showing some hairline cracking. The hairline cracking is due to water being trapped behind limestone and freeze thaw damage has started to deteriorate & crack limestone. The cracked limestone is worse at windows especially below windows, see photo 5.

The most significant structural concern was with the steel lintels. The existing building façade was not constructed with weep holes so moisture permeating the brick veneer has no practical means of escaping the cavity between block and brick face. Water is running down back face of brick and exiting out at the steel lintels. The steel lintels are badly corroded and have rust jacked (rotated), see photos 10-11. Four steel lintels have failed and are no longer supporting the brick & limestone bands over window openings. See photo 9 showing failed steel lintel. Some racking of window units is noticeable making windows hard to operate along with fracturing of ceramic window sills. In garage, popping of glass block is evident from steel lintel failure.



Photos 10,11. Examples of rusted and rotated steel angle lintels

We also observed that bricks were turned 90 degrees every 6 courses. We therefore believe that both limestone bands and turned brick are toothed into 8" masonry back up. This would eliminate the need for steel brick ties. This needs to be verified in the field by removing a 48" x 32" section of brick in two locations to verify if brick and limestone are toothed in and to verify condition of steel angles, see photos 12-13.



Photos 12-13. Examples of brick rotated 90 degrees at the exterior façade

We did observe that no expansion joints were used on exterior building façade so little sealant was used except around windows.

We opened up exterior electrical boxes to review if insulation was placed in 8" masonry wall and no insulation was found.

Windows are single-hung aluminum units with integral storm windows. The storm windows appear to be seldom used and many are difficult to open. In a few locations, you can see that steel lintel angles have rotated enough or failed causing the window frames to pick up brick load.

Glass Block is cracked in several locations, likely due to stresses imposed by failing lintels.



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- B30 Roofing

An inspection / assessment of the three roofs was performed to determine their condition. This report was based on brief discussions with UWM staff and my observations on site.

The evaluations of existing construction details and roof conditions were based on material manufacturer's specifications, industry recommendations, field conditions and structural limitations. This inspection assessed the condition of the roof systems on this building along with the remaining service lives.

The upper flat roof and penthouse roofs were accessed as a part of this inspection. No destructive testing of the roof membranes was performed, and no components were removed. Minor leakage had been reported at a flashing on the main roof near the northeast corner of the penthouse.

- Roof Construction

Main Roof:

Gravel-surfaced asphalt built-up roof with composition flashings, two roof drains, single thru-wall scupper drain, pre-finished steel counter flashings and pre-finished steel copings.

Penthouse:

Adhered EPDM rubber roof and flashings with low-profile perimeter metal roof edge. Vinyl siding on sides of penthouse.

South Entrance Canopy:

Adhered EPDM rubber roof and flashings with low-profile perimeter metal roof edge.

- Observations & Commentary – Main Roof

No blisters, soft spots or splits were noted in the field area of the roof, see photo 14. The amount of gravel and embedment of the gravel in the flood coat was adequate. The field membrane could continue to perform for approximately another 5 years with routine monitoring and maintenance.

Some bare spots and prior patching was noted on the small elevated roof section, see photos 15-16. Bare spots should be covered with gravel set in an adhesive coating.



Photo 14. No blisters or soft spots in the field area



Photo 15. Example of bare spots and patching



Photo 16. Example of bare spots and patching

The parapet wall inner surfaces had an aluminum coated composition base flashing, tall pre-finished steel counter flashing and a narrow band of exposed concrete block, see photo 17.

The wall was capped with a pre-finished steel coping, see photo 18.



Photo 17. Inner parapet surface construction



Photo 18. Wall steel coping

Leakage had been reported near the northeast corner of the penthouse along the north parapet wall. Spot repairs should be performed in the short-term. This portion of the exposed base flashing was typical of the balance of the base flashings. Restoring these heavily-weathered surfaces with a liquid-applied flashing restoring product such as Johns Manville's Perma-Flash in the short-term can help these flashings last as long as the gravel-surfaced field areas of this roof.

The unusually-tall metal counter flashing and surface-mounted retained appeared sound and covered a large portion of this wall, see photo 19. The condition of the block wall behind the metal is not known. In the short-term, the line of sealant should be inspected routinely and replenished as needed, see photo 20. The defective mortar joints and spalling surface of the block wall should be restored in the short-term to prevent water from penetrating the wall and / or getting behind the flashing components.



Photo 19. Example of metal counter flashing



Photo 20. Example of line sealant and spalling surface

The metal copings anchored to wood blocking likely replaced deteriorated concrete or tile copings atop the parapet walls, see photos 21-22. The metal was fairly secure despite not having full length cleats. A fair amount of corrosion was present. A basic refinishing of the copings could help them perform until the roof system is eventually replaced.



Photo 21. Example of corrosion on metal coping



Photo 22. Example of wood blocking under metal coping

The exposed base flashings surrounding the various vent curbs were mildly deteriorated, see photo 23, and would need restoration similar to the parapet wall flashings to perform in the mid-term. In the absence of perforations from heavy corrosion, the various vents will likely continue to perform until the main roof gets replaced. The flashings surrounding the center chimney appeared sound with the exception of the flashing at the base of the louvered vent panel. The defect needs repair in the short-term. The flashing components around the base of the chimney in the southwest corner of the roof appeared sound. Defective mortar joints in the chimney need to be corrected in the short-term.

Some previous repairs had been performed on one of the two internal roof drains. The drains should be monitored and kept free of debris as a part of routine maintenance. The thru-wall drain and scupper box appeared sound. Debris should be kept from the scupper drain screen. One of the sickle-hook downspout brackets was loose and needed to be re-secured.

The base flashing around the penthouse was weathered similarly to the balance of the roof flashings. Some of the west-side vinyl siding panels were loose and needed to be re-anchored. The window-to-siding trim seal needed to be replenished to prevent water from getting behind the siding panels, see photo 24.



Photo 23. Example of flashing surrounding the curb



Photo 24. Example of window-to-siding trim seal

The adhered EPDM rubber membrane on the penthouse roof appeared sound. This roof has a remaining service life estimated to be approximately five years.

The adhered EPDM rubber roof on the south entrance porch canopy needs some minor touch-up but otherwise appears sound. This roof also has a remaining service life estimated to be approximately five years.



C Interiors

The kitchen and bathroom cabinetry installed during the 1995 remodeling is badly deteriorated and should be replaced. Original oak closet doors and cabinetry is in decent condition, but is difficult to keep operational due to lack of replacement parts

C1010 Partitions

Partitions are plaster over gypsum lath on wood studs.

Roof insulation includes fiberglass batts laid loosely between ceiling joists with no thermal barrier or separation of attic cavity into smaller zones or sprinkler protection as would be required by current codes.



C-1030 Doors and Windows

Interior doors are flush wood, original and showing significant wear and tear, including delamination of the surface veneer. The existing door widths do not meet ADA minimums. Existing unit entry doors and stairwell doors are not fire rated as would be required in the current code.

C20 Interior Finishes

Interior sealant joints are failing in most areas.

Floors:

Wood floors are in need of refinishing

Sheet vinyl floors installed in kitchens during the 1995 remodeling are badly deteriorated and in need of replacement.

Direct glue down carpet in corridors is badly worn and in need of replacement.

Carpet and sheet vinyl flooring in stairwells is badly worn and in need of replacement.

Walls:

Walls are constructed of plaster veneer over concrete block at exterior, and plaster veneer over gypsum lath at the interior. Bathroom walls are deteriorating due to moisture infiltration at the edges of shower tile

Ceilings:

Ceilings are constructed of plaster veneer over gypsum lath at the apartment units. They are generally in decent condition, except in bathrooms where damaged by leaking water.

There is a little bit of suspended ceiling in the ground floor corridor. It is in decent condition.



Trim:

Casing at doors in apartments is varnished oak and is in good condition. Wall base in apartments is pine and is in good condition at interior walls, but has been water damaged at exterior walls.

C1090 – Specialties

There are fire extinguishers located throughout the building.

The original building included a fireplace in the 3rd floor lounge unit. The fireplace remains today but does not appear to be in use.



Division 14 – Conveying Systems

This building has an elevator, but it is the original to the building and is reported to be unreliable. The original manufacturer is no longer in business, replacement parts are no longer available, doors are not automated, and the platform and hoistway are too small to be ADA compliant. The elevator should be replaced and the shaft widened to accommodate an ADA compliant elevator.



E Equipment and Furnishings

The parking garage has an older model garage door opener that does not have modern safety devices.

Campus reports that the building access control system and security cameras are newer and in good operating condition.

Appliances range in age and appearance. They appear to have been replaced where necessary as the units installed during the 1995 remodeling wear out.

Signage appears to be relatively new.

Bedrooms have bi-parting Vertical vinyl blinds. Kitchens have horizontal aluminum mini blinds.

D20 PLUMBING

D2010 Water Distribution

- Building is served by a domestic only 2" water service that enters the basement level in a storage room.
- Water piping is a combination of galvanized steel and copper. The copper is in good working condition but the galvanized steel piping is nearing the end of expected life and has had to have repairs in recent years.
- Two new high efficiency gas-fired sealed combustion water heaters are being installed this summer. Each heater has a 55 gallon storage capacity and a separate storage tank is being installed. The hot water is circulated through the building at 120F.
- There is not a water softener.



D2020 Sanitary Waste

- Sanitary piping is black steel and in fair working order.
- There is a drain in the parking garage but no oil separator.
- Piping routed in the parking garage is subject to freezing and some heat trace has been added to some of the pipes.
- There are no existing drawings indicating size or extent of underfloor piping. If reuse of this piping is explored, additional scoping is recommended to confirm size, configuration and condition. Building does not have any sewage ejector pumps and is served by gravity. No known issues with sanitary blockages in system and piping is original to the building.
- D2030Storm
- Roof drainage is a combination of piped roof drains, roof scuppers, and downspouts.



- Roof drainage seems to be in good working order, no pooling of water or water damage was observed on the roof.



D2040 Plumbing Fixtures

- Plumbing fixtures are original to the building and do not meet current water conservation requirements.
- Kitchen sinks do not have garbage disposals and are located at exterior walls and are subject to freezing in winter.



D30 HEATING, VENTILATION, AND AIRCONDITIONING

D3010 Heating Systems

- Heating equipment is gas-fired. Gas meter is located outside near the parking garage entrance on the south side of the building.
- Building is served by a single steam boiler that was installed in 2006. The boiler is in fair condition but not as efficient as newer sealed combustion condensing style boilers.
- There are no steam traps installed at terminal equipment, so system has frequent air issues that have to be addressed as an ongoing maintenance issue



D3020 Cooling Systems

- Building is currently not air conditioned. In the mid 1980's a furnace with cooling was installed in the upper floor suite but this unit is no longer operating.
- There are ceiling fans in every bedroom to help provide some cooling.



D3030 Ventilation

- For the basement parking garage, louvers are installed along the north and south side of the building to provide natural ventilation to this area. Since the parking garage does not have any heat, this area is subject to freezing in the winter, so plastic is used to cover the louvers and minimize cold air from entering the garage.
- For all apartments, natural ventilation by means of operable windows is used to provide ventilation.
- All kitchens have a wall or ceiling mounted exhaust fan near the range. These fans are controlled individually with a wall switch. The wall mounted fans terminate out the exterior walls of the building. The ceiling mounted fans on the upper floors appear to terminate on the roof with hoods.
- Each bathroom has an exhaust grille that appears to be connected to a hood and is not motorized.
- There is a laundry room in the basement that has 2 washers and 2 dryers. The dryers are vented directly out the exterior wall.





D3040 Distribution Systems

- Heating only convectors are located in each room of the apartments.
- The renovated common area and suite located in the upper floor has been renovated to newer wall fin-tube heaters.



D3050 Temperature Control

- The building is controlled by pneumatics with a few electronic damper controls serving the emergency generator and combustion air to the boiler room.
- There is a single thermostat located on the upper floor that serves the majority of the building. There is a single room convector heater on the first floor above the boiler room that has its own thermostat. There are frequent complaints concerning temperature control and windows are frequently opened during heating season to address lack of temperature control from building controls.



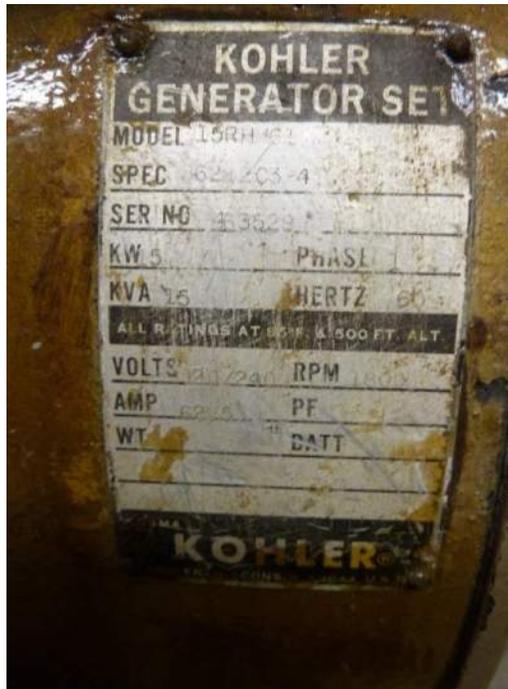


D40 FIRE PROTECTION

- D4010 Fire Suppression Sprinkler Systems
- The building has no fire protection.

D50 ELECTRICAL

- D5010 Building Power Generation D5010.1 Generator
- The emergency generator is 15KW, 120/240V, single phase, natural gas, and located in the lower level electrical room.
 - The generator is nearing the end of its useful life.
 -



D5010.2 Emergency Power Distribution

- The generator feeds an automatic transfer switch and 24 circuit load center which serves all emergency loads in the building.
- The ATS and load center are not original and are in good condition.
- As constructed the emergency load separation would not meet current code at the existing load center. NEC 700 emergency loads are fed from the same transfer switch and panel as NEC 702 optional loads (boilers, sump pump, etc.).
- As constructed the selective coordination arrangement would not meet current code at the existing overcurrent devices serving emergency loads.



D5020 Electrical Service and Distribution

- Two overhead services enter the building in the lower level electrical room. One service is 120/240V, single phase, 2 pole, 3 wire and feeds three 200A service disconnect switches. The other service is 120/240V, single phase, 2 pole, 3 wire and feeds the elevator.
- Metering is separated for each resident unit, the elevator, the emergency feeder, and “house” power.
- Each resident unit has a dedicated load center in a closet. All load centers on one floor are fed from one of the 200A service disconnects.
- All normal electrical distribution equipment is original and at the end of its useful life. Spare parts are not available for most equipment.
- Equipment grounding conductors are not present in branch circuits or feeders. This could result in poor grounding at panels and devices.
- Conductors in
- Load centers in resident units do not have required working clearance in front of them.





D5030 General Electrical Power

- The number of branch circuits in the resident units does not meet current code. This includes the microwave and refrigerator circuited to the same breaker or plugged into the same receptacle and causes circuit overloads.
- Receptacle spacing in resident units does not meet current code.
- Some 15A circuits have 20A receptacles circuited to them and do not meet current code.
- Some two pole breakers in load centers do not have code required breaker ties.
- Branch circuit breakers in resident units do not have arc fault protection, which does not meet current code.
- Receptacles in the resident units are not tamper-resistant, which does not meet current code.
- Elevator branch circuits and overcurrent protection do not meet current code.





D5040 Lighting

- Exterior lighting consists of HID wall mounted fixtures that are controlled by photo cell/time clock.
- Interior parking lighting consists of HID ceiling mounted fixtures.
- Resident unit lighting consists of mostly incandescent ceiling fixtures and ceiling fans, with ceiling mounted fluorescent fixtures in the kitchens.
- Interior corridor lighting consists of ceiling mounted incandescent lighting.
- Exit signs are incandescent type.
- Most light fixtures are original or in poor condition and are at the end of their useful lives.
- Footcandle levels for normal power egress path illumination in stairs and corridors do not appear to meet current code.
- Exterior HID fixtures in the egress paths will not come on within 10 seconds per current code.
- Most light fixtures within closets are mounted within the closet storage space and are not identified for that use.
- Footcandle levels at the elevator sills and at the elevator machine equipment do not meet current code.
- Automatic lighting control is not present in areas required by current energy code.
- Light fixtures and a timer switch are installed in one of the third floor bathrooms. The light fixtures and switch do not appear to be listed for this application.
- Lighting watts/square foot levels do not appear to meet current energy code.
- Light levels throughout the building appear to be below IES recommended minimum levels.











D60 COMMUNICATIONS

D6010 Data Comm Systems

- Existing Owner furnished equipment includes Wireless Access Points (WAPs) located in various rooms and spaces throughout the building and server/local area network (LAN) gear located in the telecom room.
- The LAN equipment is located in an unconditioned area in the lowest area of the building, it is located in shared space with electrical equipment (and a generator) and is not protected from dust, or other elements. The location of the equipment and the unconditioned space will contribute to the premature failure and demise of Owner's electronic network equipment.
- Existing pathways consist of exposed, surface mounted, 4" conduits for major cable distribution routes, chases to resident rooms and surface raceway for routing voice/data and/or coaxial cables to final location(s).
-



D6020 Telecom Room

- Location of telecom room undesirable, shares space with electrical equipment (including backup generator) and is exposed to dust and temperature extremes due to unconditioned space. Room also shows signs of water erosion on walls. Not recommended for support of new/upgraded technology equipment head end equipment.







D6030 Voice/Data Cabling Infrastructure

- 90 - 95% of existing cabling infrastructure consists of category 5 cable. Existing cabling should be replaced with Category 6 cabling at hard wired data outlets and Category 6A cabling for Wireless Access Points (WAPs).
- Category 6 cable is recommended for hard wired network connections.
- Category 6A cable is recommended for WAPs.
- Existing, incoming fiber optic cable not capable of supporting current bandwidth demands, or data rates. Cable will become obsolete with the evolution of 40G protocols and data rates.
- Existing, incoming, voice grade copper backbone cable is intact. However, most (if not all) voice cables connected to incoming service have been disconnected and removed from the cabling infrastructure, with exception to the emergency phone in the elevator and the emergency phone at the main entrance.

D6040 Voice Communications Systems

- Tenant visitor entry system includes master panel at main lobby and an individual intercom to each resident room for guest entry access. The system appears to be original to the building and does not work. Recommend replacement of intercom system.
- Emergency Phones (1) at Main Entrance and (1) in Elevator. Phones appear to be original to building, or are of considerable age and possibly nearing end of life. Replace.



D6050 A/V Systems

- TV in Common Area Lounge. No other AV or entertainment equipment found.



D70 ELECTRONIC SAFETY & SECURITY

D7010 Access Control & Intrusion Detection Systems

- Existing system is an Access Control System only. No intrusion detection component(s) found.
- System includes credential readers (CR) at each exterior entry door to the building and a CR at the interior garage entry door leading into the common corridor of the residence space.



D7030 Electronic Surveillance

- Building has (5) IP surveillance cameras (approximately 5 years of age or older). Cameras monitored off-site by UWM PD. Could not assess camera functionality or resolution due to off-site monitoring station. Cameras appear to be in fair condition and functioning.



D7050.10 Fire Alarm

- A Notifier addressable fire alarm panel with voice notification is located in the main vestibule.
- Smoke detectors are located in most common/public spaces of the building.
- Smoke alarms are also provided in resident units.
- Notification devices are provided throughout the building.
- Pull stations are located at exits.
- The fire alarm system was replaced and updated in a 2012 project. All equipment.
- Smoke detection and fire alarm interface for elevator recall and shutdown is not present per current code.
- No fire alarm devices are present in the attic space.





5. EXPECTED OR PLANNED CHANGES AND PROJECTIONS

5.1. Planned or Improved Utilization of Space, Distribution by room capacity, and Sizes:

Options 1 critical repairs, 2 short term repairs, and 3 renovations: 11 parking stalls, 17 units, 51 beds, 422 gsf per bed.

Option 4, replacement that matches the existing number of units as allowed by zoning: 14 parking stalls, 17 units, 68 beds, 337 gsf per bed.

Option 5, potential residence hall replacement within existing setbacks and height limits, but with zoning variance for additional units: 14 parking stalls, 31 units, 124 beds, 266 gsf per bed.

Option 6, hypothetical larger site, residence hall project within zoning setbacks, height limits, and unit density limits: 34 units, 136 beds, 546 gsf per bed.

Option 7, hypothetical larger site, developer project, apartments over retail, within zoning setback, height limits, and unit density limits: 4 stories, 34 units, 102 beds, 895 gsf per bed.

Option 8, developer project on existing site, within existing zoning setback, height, and unit density limits: 3 stories, 12 units, 36 beds, 833 gsf per bed.

Option 9, conversion to office use: 3 stories, 53 offices, 406 gsf per occupant.

6. SYNTHESIS, OPTIONS ANALYSIS

6.1 Distillation of Findings

While several options were considered, none of the options resulted in a scenario that provided a significant and efficient number of beds as a residence hall for UWM. Developer options result in a very low density and therefore result in a low return on investment, so the site does not have a significant market value if sold. In a sale of the land, the proceeds of the sale would not go to UWM Housing, nor UWM, so a sale option results in no net cash to UWM, but would result in the elimination of a cost center. Because the building has a significant amount of bearing walls it would not be particularly efficient to convert to office use. A surface parking lot would yield 22 spaces.

6.2 Evaluation Criteria/Principles

Evaluation Team Members all brought different perspectives to the study, and all participants kept open minds about potential solutions. Immediate life safety needs, first costs, long term costs, efficiencies, practicality, zoning headwinds, etc., were all considered.

6.3 Options Comparison / Decision Matrix (option details in the Appendix)

No clear best option emerged beyond taking care of immediate life safety issues. A complete renovation would cost 80% of new construction but would keep the inferior wood frame bearing walls, floors and roof framing. New construction on this site within zoning limits would only yield a property that has 68 beds. Any option that includes a more efficient yield would require a zoning variance, which would take a lot of political capital to be granted.

Project Solution Description

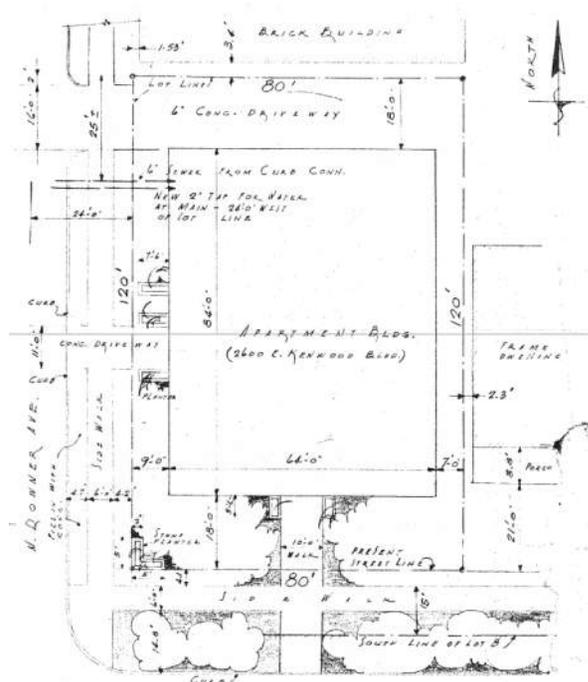
7. PROPOSED IMPLEMENTATION STRATEGIES

1. Critical immediate repairs for continued use as a residence hall
2. Basic Repairs/5 year plan for continued use as a residence hall
3. Renovation for continued use as a residence hall
4. Replacement residence hall by State/UWM on current site, 17 units as allowed in the zoning code
5. Replacement residence hall by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits
6. Hypothetical larger site, new residence hall by State/UWM
7. Hypothetical larger site, private developer project, apartments over retail.
8. Private developer project on existing site, within existing zoning limitations, apartments over retail.
9. Conversion to office building by State/UWM
10. Demolition of the building, creation of a surface parking lot.

8. BUILDING and SITE PLANNING CONCEPTS

8.1 Conceptual Site Plan, Building Organization Framework Diagram / Test Fit

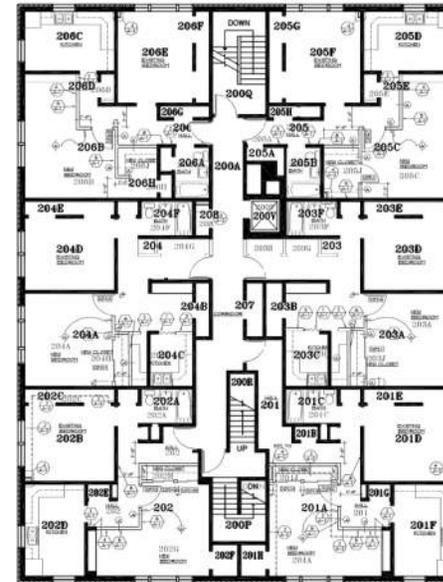
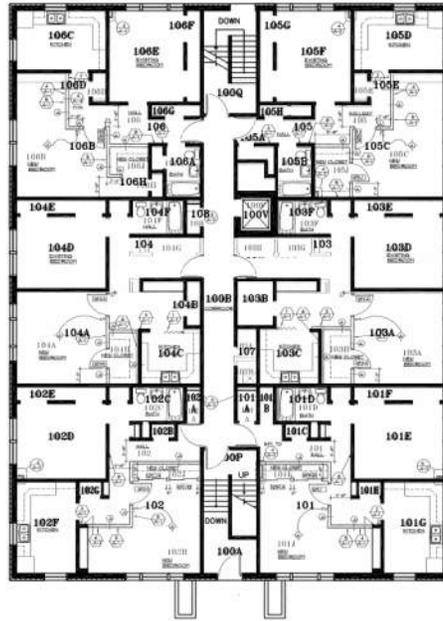
1. Critical immediate repairs: Existing Site and Building configuration is unchanged
2. Basic Repairs/5 year plan: Existing Site and Building configuration is unchanged
3. Renovation: Existing Site and Building configuration is unchanged except for elevator replacement



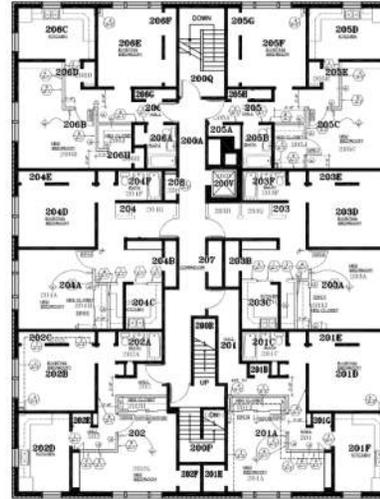
Purin Hall, Existing Site Plan



Purin Hall, Existing Ground Floor Plan



Purin Hall, Existing First Floor Plan Purin Hall, Existing Second Floor Plan

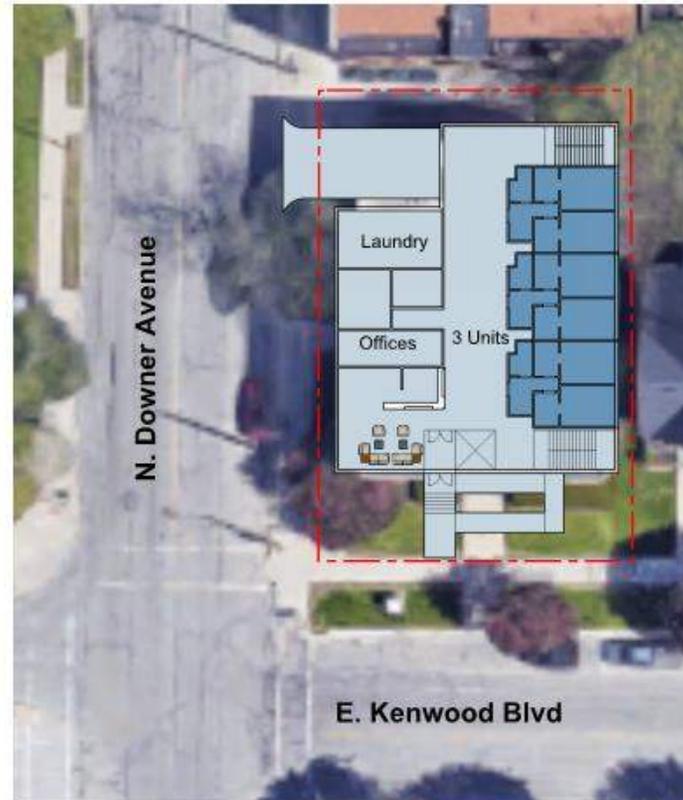


Purin Hall, Existing Third Floor Plan

- 4. Replacement by State/UWM on current site, 17 units, 68 beds as allowed in the zoning code (larger drawings provided in appendix)



Purin Hall Option 4 Lower Level and Site Plan



Purin Hall Option 4 First Floor Plan



Purin Hall Option 4 Second and Third Floor Plan



Purin Hall Option 4 Block Massing Diagram

- 5. Replacement by State/UWM on current site, seek zoning variance to increase to 31 units 124 beds within volume of allowed setbacks and height limits



Purin Hall Option 5 Lower Level and Site Plan



Purin Hall Option 5 First Floor Plan



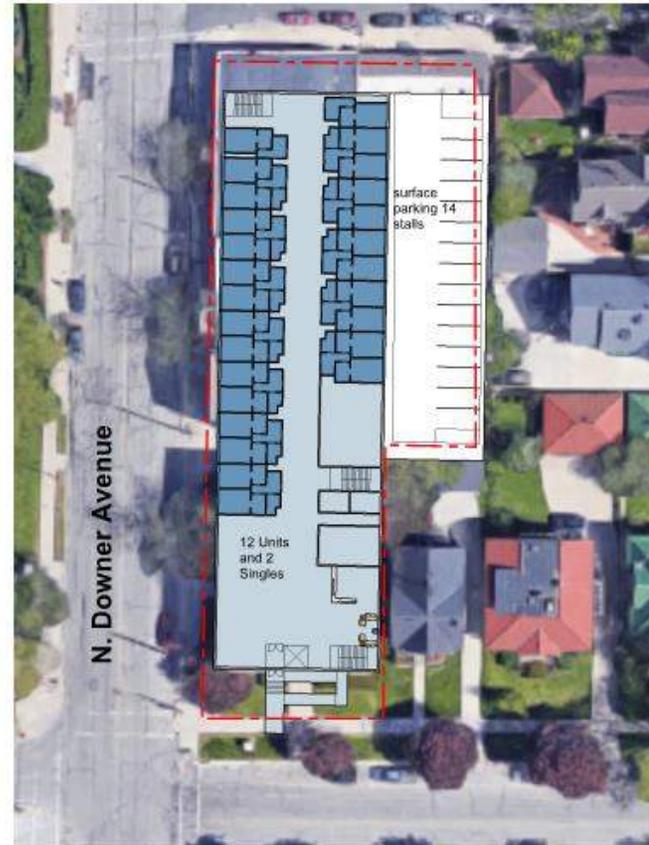
Purin Hall Option 5 Second thru Fifth Floor Plan



Purin Hall Option 5 Block Massing Diagram



Purin Hall Option 5 Lower Level and Site Plan



Purin Hall Option 5 First Floor Plan

- 6. Hypothetical larger site, new 34 unit 136 bed residence hall by State/UWM (larger drawings provided in appendix)



Purin Hall Option 6 Second thru Fourth Floor Plan



Purin Hall Option 6 Block Massing Diagram

7. Conversion to a parking lot



Purin Hall Option 10 Parking Lot Plan



8.5 Building / Systems Description

8.5.1 Architectural and Structural Systems

1. Critical immediate repairs

04 00 00 Masonry: Replace 4 failed lintels: remove and replace brick and cast stone, add flashing as needed to fix lintels.

05 50 00 Metals: Replace 4 failed lintels.

07 00 00 Thermal & Moisture Protection: Properly firestop all wall and floor penetrations.

2. Basic Repairs/5 year plan

04 00 00 Masonry: Remove and replace brick and cast stone, add flashing as needed to fix the rest of the lintels.

05 05 00 Metals: Replace the rest of the lintels.

07 00 00 Thermal & Moisture Protection: Properly firestop all wall and floor penetrations

08 00 00 Openings: Replace unit entry doors and stairwell doors with fire rated units (self-closing solid core wood doors, hollow metal frames).

09 00 00 Finishes: Replace all sheet flooring (new LVT) and carpet (new carpet tile), refinish wood floors, replace all ceramic floor and wall tile in bathrooms, repaint all surfaces.

10 00 00 Specialties: Replace all toilet room accessories with commercial grade units.

14 00 00 Conveying Equipment: New 2500# side opening machineromless elevator in expanded hoistway.

3. Renovation

02 00 00 Existing Conditions: Remediation of ACM, selective demolition for renovation.

04 00 00 Masonry: Remove and replace brick and cast stone, add flashing as needed to fix the rest of the lintels.

05 05 00 Metals: Replace the rest of the lintels.

06 00 00 Woods, Plastics, & Composites: Woods, Plastics, & Composites: Replace all kitchen and bath cabinets (plastic laminate, architectural grade), and countertops (quartz).

07 00 00 Thermal & Moisture Protection: Properly firestop all wall and floor penetrations. Replace roof with 60 mil EPDM fully adhered membrane, prefinished aluminum flashings/copings.

08 00 00 Openings: Replace unit entry doors and stairwell doors with fire rated units (self-closing solid core wood doors, hollow metal frames). Replace exterior windows with anodized thermally efficient AW grade single hung windows. Replace existing entrances with anodized aluminum thermally efficient units. Replace louvers with anodized aluminum units.



09 00 00 Finishes: Replace all sheet flooring (new LVT) and carpet (new carpet tile), refinish wood floors, replace all ceramic floor and wall tile in bathrooms, repaint all surfaces.

10 00 00 Specialties: Replace all toilet room accessories with commercial grade units.

11 00 00 Equipment: Micro-wave/hood, stove, and refrigerator in kitchen areas.

14 00 00 Conveying Equipment: New 2500# side opening machineromless elevator in expanded hoistway.

4. Replacement by State/UWM on current site, 17 units as allowed in the zoning code. Unit configuration to be similar to those at Riverview and Cambridge Commons, which have 2 bedroom 4 occupant units with internal bathroom.

02 00 00 Existing Conditions: Complete ACM remediation and complete building demolition including removal of all foundation elements.

03 00 00 Concrete: Concrete footings and foundations. Precast concrete plank floor and roof structure bearing on CMU.

04 00 00 Masonry: New brick and block exterior bearing walls constructed per DFDM standards. CMU bearing walls at corridors. CMU stair and elevator shafts.

05 05 00 Metals: New concrete filled metal pan stairs, steel railings, and steel lintels.

06 00 00 Woods, Plastics, & Composites: Plastic laminate, architectural grade bathroom vanity cabinets, kitchen cabinets at lounges, quartz countertops.

07 00 00 Thermal & Moisture Protection: Fluid applied membrane basement wall waterproofing, 60 mil EPDM fully adhered membrane roof, prefinished aluminum flashings/copings.

08 00 00 Openings: Interior doors to be solid core wood with hollow metal frames. Windows to be anodized aluminum AW grade, thermally broken with insulating glass.

09 00 00 Finishes: Interior partitions other than CMU bearing walls will be 5/8" gyp board on metal studs with acoustical insulation. Ceilings/soffits within bedrooms shall be gyp board. Ceilings in public areas shall be ACT. Flooring in bedrooms and hallways to be carpet tile, bathrooms to be ceramic tile, area adjacent to floor lounge kitchens to be LVT. Showers to be ceramic tile. Walls and ceilings will be painted.

10 00 00 Specialties: Commercial grade toilet room accessories, mailboxes, and metal louver blinds.

11 00 00 Equipment: Microwaves and refrigerators at floor lounges.

14 00 00 Conveying Equipment: 3500# side opening machineromless elevator.



5. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits. Unit configuration to be similar to those at Riverview and Cambridge Commons, which have 2 bedroom 4 occupant units with internal bathroom.
 - 02 00 00 Existing Conditions: Complete ACM remediation and complete building demolition including removal of all foundation elements.
 - 03 00 00 Concrete: Concrete footings and foundations. Precast concrete plank floor and roof structure bearing on CMU.
 - 04 00 00 Masonry: New brick and block exterior bearing walls constructed per DFDM standards. CMU bearing walls at corridors. CMU stair and elevator shafts.
 - 05 05 00 Metals: New concrete filled metal pan stairs, steel railings, and steel lintels.
 - 06 00 00 Woods, Plastics, & Composites: Plastic laminate, architectural grade bathroom vanity cabinets, kitchen cabinets at lounges, quartz countertops.
 - 07 00 00 Thermal & Moisture Protection: Fluid applied membrane basement wall waterproofing, 60 mil EPDM fully adhered membrane roof, prefinished aluminum flashings/copings.
 - 08 00 00 Openings: Interior doors to be solid core wood with hollow metal frames. Windows to be anodized aluminum AW grade, thermally broken with insulating glass.
 - 09 00 00 Finishes: Interior partitions other than CMU bearing walls will be 5/8" gyp board on metal studs with acoustical insulation. Ceilings/soffits within bedrooms shall be gyp board. Ceilings in public areas shall be ACT. Flooring in bedrooms and hallways to be carpet tile, bathrooms to be ceramic tile, area adjacent to floor lounge kitchens to be LVT. Showers to be ceramic tile. Walls and ceilings will be painted.
 - 10 00 00 Specialties: Commercial grade toilet room accessories, mailboxes, and metal louver blinds.
 - 11 00 00 Equipment: Microwaves and refrigerators at floor lounges.
 - 14 00 00 Conveying Equipment: 3500# side opening machineromless elevator.

6. Hypothetical larger site, new residence hall by State/UWM. Unit configuration to be similar to those at Riverview and Cambridge Commons, which have 2 bedroom 4 occupant units with internal bathroom.
 - 02 00 00 Existing Conditions: Complete ACM remediation and complete building demolition including removal of all foundation elements.
 - 03 00 00 Concrete: Concrete footings and foundations. Precast concrete plank floor and roof structure bearing on CMU.



- 04 00 00 Masonry: New brick and block exterior bearing walls constructed per DFDM standards. CMU bearing walls at corridors. CMU stair and elevator shafts.
- 05 05 00 Metals: New concrete filled metal pan stairs, steel railings, and steel lintels.
- 06 00 00 Woods, Plastics, & Composites: Plastic laminate, architectural grade bathroom vanity cabinets, kitchen cabinets at lounges, quartz countertops.
- 07 00 00 Thermal & Moisture Protection: Fluid applied membrane basement wall waterproofing, 60 mil EPDM fully adhered membrane roof, prefinished aluminum flashings/copings.
- 08 00 00 Openings: Interior doors to be solid core wood with hollow metal frames. Windows to be anodized aluminum AW grade, thermally broken with insulating glass.
- 09 00 00 Finishes: Interior partitions other than CMU bearing walls will be 5/8" gyp board on metal studs with acoustical insulation. Ceilings/soffits within bedrooms shall be gyp board. Ceilings in public areas shall be ACT. Flooring in bedrooms and hallways to be carpet tile, bathrooms to be ceramic tile, area adjacent to floor lounge kitchens to be LVT. Showers to be ceramic tile. Walls and ceilings will be painted.
- 10 00 00 Specialties: Commercial grade toilet room accessories, mailboxes, and metal louver blinds.
- 11 00 00 Equipment: Microwaves and refrigerators at floor lounges.
- 14 00 00 Conveying Equipment: 3500# side opening machineroomless elevator.

- 7. Hypothetical larger site, private developer project. 2 levels of underground parking, 1st floor retail, upper levels apartments.
 - 02 00 00 Existing Conditions: Complete ACM remediation and complete building demolition including removal of all foundation elements.
 - 03 00 00 Concrete: Concrete footings and foundations for two underground levels of parking. One supported level of parking constructed of post tensioned concrete. Precast concrete plank cap over parking.
 - 04 00 00 Masonry: New face brick exterior cladding at first floor only.
 - 06 00 00 Woods, Plastics, & Composites: Wood framed superstructure above first floor (2 x 6 wood stud bearing walls, wood floor and roof trusses, 2 x 4 wood stud partitions, wood floor and wall sheathing. Wood light commercial grade bathroom vanity cabinets, kitchen cabinets at lounges, quartz countertops.
 - 07 00 00 Thermal & Moisture Protection: Fluid applied membrane basement wall waterproofing. Cement board siding and trim. Asphalt shingle sloped roofing, prefinished aluminum gutters and downspouts.
 - 08 00 00 Openings: Interior doors to be solid core wood with hollow metal frames. Windows to be CW grade, thermally broken with insulating glass.



- 09 00 00 Finishes: First floor commercial tenant spaces to be shelled. For apartments, ceilings/soffits shall be gyp board. Flooring in bedrooms to be broadloom carpet. Flooring in public hallways to be carpet tile. Living rooms, kitchens and bathrooms to be LVT. Walls and ceilings will be painted.
 - 10 00 00 Specialties: Light commercial grade toilet room accessories, mailboxes, and metal louver blinds.
 - 11 00 00 Equipment: Microwave/hoods, stoves, refrigerators, dishwashers.
 - 14 00 00 Conveying Equipment: 2500# side opening machineroomless elevator.
8. Private developer project on existing site, within existing zoning limitations. 2 levels of underground parking, 1st floor retail, upper levels apartments.
- 02 00 00 Existing Conditions: Complete ACM remediation and complete building demolition including removal of all foundation elements.
 - 03 00 00 Concrete: Concrete footings and foundations for two underground levels of parking. One supported level of parking constructed of post tensioned concrete. Precast concrete plank cap over parking.
 - 04 00 00 Masonry: New face brick exterior cladding at first floor only.
 - 06 00 00 Woods, Plastics, & Composites: Wood framed superstructure above first floor (2 x 6 wood stud bearing walls, wood floor and roof trusses, 2 x 4 wood stud partitions, wood floor and wall sheathing. Wood light commercial grade bathroom vanity cabinets, kitchen cabinets at lounges, quartz countertops.
 - 07 00 00 Thermal & Moisture Protection: Fluid applied membrane basement wall waterproofing. Cement board siding and trim. Asphalt shingle sloped roofing, prefinished aluminum gutters and downspouts.
 - 08 00 00 Openings: Interior doors to be solid core wood with hollow metal frames. Windows to be CW grade, thermally broken with insulating glass.
 - 09 00 00 Finishes: First floor commercial tenant spaces to be shelled. For apartments, ceilings/soffits shall be gyp board. Flooring in bedrooms to be broadloom carpet. Flooring in public hallways to be carpet tile. Living rooms, kitchens and bathrooms to be LVT. Walls and ceilings will be painted.
 - 10 00 00 Specialties: Light commercial grade toilet room accessories, mailboxes, and metal louver blinds.
 - 11 00 00 Equipment: Microwave/hoods, stoves, refrigerators, dishwashers.
 - 14 00 00 Conveying Equipment: 2500# side opening machineroomless elevator.



9. Conversion to office building by State/UWM.
 - 02 00 00 Existing Conditions: Remediation of ACM, selective demolition for renovation.
 - 04 00 00 Masonry: Remove and replace brick and cast stone, add flashing as needed to fix the rest of the lintels.
 - 05 05 00 Metals: Replace the rest of the lintels.
 - 06 00 00 Woods, Plastics, & Composites: Woods, Plastics, & Composites: break area kitchen cabinets (plastic laminate, architectural grade), and countertops (quartz).
 - 07 00 00 Thermal & Moisture Protection: Replace roof with 60 mil EPDM fully adhered membrane, prefinished aluminum flashings/copings.
 - 08 00 00 Openings: Replace stairwell doors with fire rated units (self-closing solid core wood doors, hollow metal frames). Replace exterior windows with anodized thermally efficient AW grade single hung windows. Replace existing entrances with anodized aluminum thermally efficient units. Replace louvers with anodized aluminum units.
 - 09 00 00 Finishes: Replace all flooring with new carpet tile, provide new ceramic tile floor bathrooms, repaint all surfaces.
 - 10 00 00 Specialties: Solid Phenolic toilet partitions at new toilet rooms, new commercial grade toilet room accessories.
 - 11 00 00 Equipment: Microwave and refrigerator in break area.
 - 14 00 00 Conveying Equipment: New 2500# side opening machineromless elevator in expanded hoistway.

8.5.2 Mechanical Systems

1. Critical immediate repairs
 - 22 00 00 Plumbing: Replace galvanized steel plumbing piping.
 - 23 00 00 HVAC: New heating and ventilation system for parking level in compliance with Wisconsin Administrative Code.
2. Basic Repairs/5 year plan
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13.
 - 22 00 00 Plumbing: New combination fire protection and water service for the building along with upgrades listed under Critical Immediate repairs.
 - 23 00 00 HVAC: Upgrades listed under Critical Immediate repairs.



3. Renovation
 - 21 00 00 Fire Protection:
 - 22 00 00 Plumbing:
 - 23 00 00 HVAC:

4. Replacement by State/UWM on current site, 17 units as allowed in the zoning code
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13.
 - 22 00 00 Plumbing: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as all new plumbing piping, water softener, and plumbing fixtures.
 - 23 00 00 HVAC: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as new hydronic high efficiency boilers, pumps, and accessories and distribution piping. A new air-cooled chiller, pumps, accessories and distribution piping. New fan coil unit per unit and distribution with programmable thermostat.

5. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13.
 - 22 00 00 Plumbing: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as all new plumbing piping, water softener, and plumbing fixtures.
 - 23 00 00 HVAC: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as new hydronic high efficiency boilers, pumps, and accessories and distribution piping. A new air-cooled chiller, pumps, accessories and distribution piping. New fan coil unit per unit and distribution with programmable thermostat monitored via building control management system.

6. Hypothetical larger site, new residence hall by State/UWM
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13.
 - 22 00 00 Plumbing: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as all new plumbing piping, water softener, and plumbing fixtures.
 - 23 00 00 HVAC: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as new hydronic high efficiency boilers, pumps, and accessories and distribution piping. A new air-cooled chiller, pumps, accessories and distribution piping. New fan coil unit per unit and distribution with programmable thermostat monitored via building control management system.



7. Hypothetical larger site, private developer project
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13, piping material to be CPVC.
 - 22 00 00 Plumbing: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as all new plumbing piping, water softener, and plumbing fixtures. Piping material to be CPVC and PEX tubing.
 - 23 00 00 HVAC: New through wall, air-cooled heat pump per unit and ductwork distribution and wall mounted thermostat. Ventilation would be natural ventilation with operable windows, exhaust would be individual fans routed horizontally outside the sidewall of the building.
8. Private developer project on existing site, within existing zoning limitations
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13, piping material to be CPVC.
 - 22 00 00 Plumbing: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as all new plumbing piping, water softener, and plumbing fixtures. Piping material to be CPVC and PEX tubing.
 - 23 00 00 HVAC: New through wall, air -cooled heat pump per unit and ductwork distribution and wall mounted thermostat. Ventilation would be natural ventilation with operable windows, exhaust would be individual fans routed horizontally outside the sidewall of the building.
9. Conversion to office building by State/UWM
 - 21 00 00 Fire Protection: Provide sprinkler system per NFPA 13.
 - 22 00 00 Plumbing: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as all new plumbing piping, water softener, and plumbing fixtures.
 - 23 00 00 HVAC: Upgrades listed under Critical Immediate repairs and Basic Repairs as well as new hydronic high efficiency boilers, pumps, and accessories and distribution piping. A new air-cooled chiller, pumps, accessories and distribution piping. Distribution would be through chilled beams or central variable air volume air handling unit depending on ceiling height requirements. Temperature control system would be an electronic building management system.



8.5.3 Electrical Systems

1. Critical immediate repairs
2. Basic Repairs/5 year plan
3. Renovation
4. Replacement by State/UWM on current site, 17 units as allowed in the zoning code
5. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits
6. Hypothetical larger site, new residence hall by State/UWM
7. Hypothetical larger site, private developer project
8. Private developer project on existing site, within existing zoning limitations
9. Conversion to office building by State/UW

8.5.4 Communications Systems

1. Critical immediate repairs – Not applicable
2. Basic Repairs/5 year plan – Upgrade existing communications cabling infrastructure and network devices, demo abandoned cable as required.
3. Renovation – Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.
4. Replacement by State/UWM on current site - Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.
5. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits - Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.



6. Hypothetical larger site, new residence hall by State/UWM - Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.
7. Hypothetical larger site, private developer project - Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.
8. Private developer project on existing site, within existing zoning limitations - Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.
9. Conversion to office building by State/UWM - Provide new standards compliant communications room, replace existing racks and existing network devices, provide new cabling pathways, upgrade communications cabling infrastructure, replace existing visitor entry system, upgrade/replace existing camera security system, replace/upgrade existing access control system.

8.5.4 Site/Utilities

1. Critical immediate repairs
 - 31 00 00 Earthwork: Fix the grading problems around the building.
 - 33 00 00 Utilities: Replace water lateral with lateral large enough to feed sprinkler system.
2. Basic Repairs/5 year plan
 - 31 00 00 Earthwork: Fix the grading problems around the building.
 - 33 00 00 Utilities: Replace water lateral with lateral large enough to feed sprinkler system.
3. Renovation
 - 31 00 00 Earthwork: Fix the grading problems around the building.
 - 32 00 00 Exterior Improvements: Replace existing concrete paving. Replace landscaping
 - 33 00 00 Utilities: Replace water lateral with lateral large enough to feed sprinkler system.



4. Replacement by State/UWM on current site, 17 units as allowed in the zoning code
 - 31 00 00 Earthwork: Excavation and grading as required for new work.
 - 32 00 00 Exterior Improvements: New concrete vehicular and pedestrian paving. New landscaping
 - 33 00 00 Utilities: New water, storm, sanitary, gas, and electrical utilities to serve the new building.

5. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits.
 - 31 00 00 Earthwork: Excavation and grading as required for new work.
 - 32 00 00 Exterior Improvements: New concrete vehicular and pedestrian paving. New landscaping
 - 33 00 00 Utilities: New water, storm, sanitary, gas, and electrical utilities to serve the new building.

6. Hypothetical larger site, new residence hall by State/UWM
 - 31 00 00 Earthwork: Excavation and grading as required for new work.
 - 32 00 00 Exterior Improvements: New concrete vehicular and pedestrian paving. New landscaping
 - 33 00 00 Utilities: New water, storm, sanitary, gas, and electrical utilities to serve the new building.

7. Hypothetical larger site, private developer project
 - 31 00 00 Earthwork: Excavation and grading as required for new work.
 - 32 00 00 Exterior Improvements: New asphalt vehicular paving and concrete pedestrian paving. New landscaping
 - 33 00 00 Utilities: New water, storm, sanitary, gas, and electrical utilities to serve the new building.

8. Private developer project on existing site, within existing zoning limitations
 - 31 00 00 Earthwork: Excavation and grading as required for new work.
 - 32 00 00 Exterior Improvements: New asphalt vehicular paving and concrete pedestrian paving. New landscaping
 - 33 00 00 Utilities: New water, storm, sanitary, gas, and electrical utilities to serve the new building.

9. Conversion to office building by State/UWM
 - 31 00 00 Earthwork: Fix the grading problems around the building.
 - 32 00 00 Exterior Improvements: Replace existing concrete paving. Replace landscaping



9. OTHER DESIGN CRITERIA

- 9.1 Alignment with UW-Milwaukee Housing Strategic Plan and UW-Milwaukee Master Plan: Purin Hall is an unusual facility in terms of size, configuration, construction type, and location for UWM and did not factor into major Campus Strategic Plans or Master Plans.
- 9.2 Special Design Requirements/Parameters: For the purposes of this study a residence hall unit configuration is like those used at UWM Riverview and UWM Cambridge Commons was used for the conceptual planning for the State/UWM replacement residence hall options. For the purposes of conceptual planning for developer projects a conventional 2 bedroom apartment unit was used.
- 9.3 Applicable Codes, Regulations, and Design Guidelines: For the purposes of this study all design options included compliance with the current City of Milwaukee Building Code (2009 IBC or IEBC with modifications) and the current City of Milwaukee Zoning Code except where zoning variances are noted. For reference, the renovation options that follow the IEBC (International Existing Building Code) fall into 3 Categories: Level 1, which basically states that any repairs done must be done in such a way that the repairs meet current code, but the overall building does not need to be brought up to the current code. Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment. New work needs to meet current code. Level 3 alterations apply where the work area of the alteration exceeds 50 percent of the aggregate area of the building. 20% of the cost of the alteration for Levels 1, 2 and 3 needs to be spent on providing accessibility on the site and in the building. The options that would be implemented by the State/UWM are assumed to comply with DFDM Policies, Procedures, and Guidelines.
- 9.4 DFDM Sustainable Facilities Standards: For the purposes of this study any option that was to be implemented by the State/UWM had pricing that assumed compliance with DFDM Sustainable Facilities Standards and no LEED, Green Globe or Well Building registration/certification. Developer project pricing did not include any green building attributes beyond current market standards.



Name: 17B1N UW-Milwaukee Purin Hall Renovation Feasibility Study

Date: 1-8-2018

10. BUDGET DETAIL

10.1 Total Project Cost (Capital Cost). See Appendix for Budget Detail

10.2 Total Cost of Occupancy (Operating Cost): See simple prorated cost of projects divided by project lifespan and simple net revenue per year illustrated on the spreadsheet below.

17B1N UW Milwaukee Purin Hall Cost Notes, 1-8-18												
	1 Critical Immediate Repairs (5 year life)	2 Basic Repairs (5 - 10 year plan)	3 Renovation (20 year life)	4 Replacement by UWM (17 units as allowed by zoning code, 4 occupants per unit)	5 Replacement by UWM using zoning variance to increase # units within 60' height limit on existing site (5 stories, 30,000 sf, 31 units, 124 beds)	6 Hypothetical larger project site DFDM quality residence hall (3 stories, 74,305 sf, 34 units, 136 beds)	7 Hypothetical larger project developer quality apartments over retail (4 stories, 91,240 sf, 34 units, 102 beds)	8 Private Developer project within zoning limits, existing site, apartments over retail (3 stories, 26,000 sf, 12 units, 36 beds)	9 UWM remodel/change of use to Office Building (3 stories, 21,504 gsf, 53 offices, 406 gsf per occupant)	10 Convert site to a parking lot		
UW Milwaukee Purin Residence Hall Budget Options												
Cost/bed	\$7,840	\$29,404	\$99,185	\$117,120	\$90,596	\$180,680	\$219,265	\$195,579				
Project Budget per DFD Categories												
Construction	\$399,850	\$1,499,582	\$5,058,432	\$7,964,167	\$11,233,912	\$24,572,453	\$22,365,071	\$7,040,850	\$5,689,258	\$253,310		
Abatement	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Design	\$35,987	\$134,962	\$455,259	\$716,775	\$1,011,052	\$2,211,521	\$2,012,856	\$3,520,425	\$2,844,629	\$22,798		
Land Acquisition						\$750,000	\$950,000	\$120,000				
DFD Fee	\$18,033	\$66,422	\$223,011	\$322,156	\$454,254	\$993,131						\$11,586
Contingency, 10.0%	\$40,985	\$150,958	\$506,843	\$79,742	\$112,439	\$245,825	\$223,751	\$70,509	\$56,993	\$26,331		
Equipment			\$127,500	\$170,000	\$210,000	\$240,000	\$40,000	\$40,000	\$260,000			
Other Fees		\$75,000	\$95,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000			
TOTAL	\$504,855	\$1,936,924	\$6,476,045	\$9,512,840	\$13,281,657	\$29,272,930	\$25,851,678	\$11,051,784	\$9,110,879	\$324,025		
Cost of project divided by project lifespan (simple cost per year)	\$100,971	\$193,692	\$323,802	\$237,821	\$332,041	\$731,823						
net revenue per year at \$4800 per bed	\$175,000	\$175,000	\$175,000	\$175,000	\$595,200	\$652,800						



11. SCHEDULE / PHASING DETAIL

- 10. Critical immediate repairs: Design 6 months, construction 4 months.
- 11. Basic Repairs/5 year plan: Design 8 months, construction 4 months.
- 12. Renovation: Design 10 months, construction 8 months.
- 13. Replacement by State/UWM on current site, 17 units as allowed in the zoning code: Design 12 months, construction 12 months.
- 14. Replacement by State/UWM on current site, seek zoning variance to increase number of units within allowed setbacks and height limits: Design 12 months, construction 12 months.
- 15. Hypothetical larger site, new residence hall by State/UWM: Design 12 months, construction 14 months.
- 16. Hypothetical larger site, private developer project: Design 8 months, construction 12 months.
- 17. Private developer project on existing site, within existing zoning limitations: Design 8 months, construction 12 months.
- 18. Conversion to office building by State/UWM: Design 10 months, construction 8 months

APPENDIX.....Bound Separately

Supporting data: Meeting Minutes, existing building drawings, renovation drawings, budget and scope worksheet.