Facilities Assessment

UNIVERSITY CATHOLIC COMMUNITY
ST. PAUL'S NEWMAN CENTER

1800 Grand Ave. Laramie, WY 82070

February 11, 2018

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A. Scope and Purpose of the Assessment

This assessment of the Architectural, Structural, Mechanical, Electrical and Civil aspects of the St. Paul's Newman Center (SPNC) building at 1800 Grand Ave., Laramie, WY is associated with the master planning of the entire city block bounded by Grand Ave on the north, 19th St. on the east, Garfield St. on the south, and 18th St. on the west.

The primary purpose of the assessment is to provide objective data on the viability of retaining some or all of the existing St. Paul's Newman Center building in case some or all of the building is incorporated into the final plans for using the SPNC block.

It has been previously determined that because of the high likelihood that the individual residences on the block will need to be demolished to accommodate major new construction, there is no need for assessment of those buildings other than a discussion of the timing of their demolition.

B. Overview

The Newman Center, built in 1956 – 1957, is an 11,175 SF single-story brick structure with 1,510 SF second-story apartment and an 830 SF basement. Main floor areas that are not over the small basement are above a fully accessible crawlspace. A three-story, 37-foot-tall bell tower adjacent to the main north entry provides a distinctive and recognizable element for the entire building but the tower's impact is diminished by the adjacent approximately 50- foot-tall evergreen tree that largely obscures it.

C. Usability Assessment *(see current floor plans in Appendix)*

Nave:

In 1995 the Nave underwent a major change of orientation from long and narrow with the Sanctuary at the west end of the space, to short and wide with the Sanctuary centered on the south wall of the space. The purpose and effect of this change was to allow for a closer visual/ emotional connection of members of the congregation to the activities of the Sanctuary. To emphasize the change of direction and to help create a new focus for the congregation, a dormer and stained-glass window was added above the sanctuary.

With the large increase in attendance at SPNC, the Nave has become too crowded and the width of the reconfigured space is not ideal for engaging parishioners using either the west end seating or the overflow seating in the "fireplace room" to the east. Processional entry to the Nave is complicated by the circuitous path created by the pew layout

Narthex:

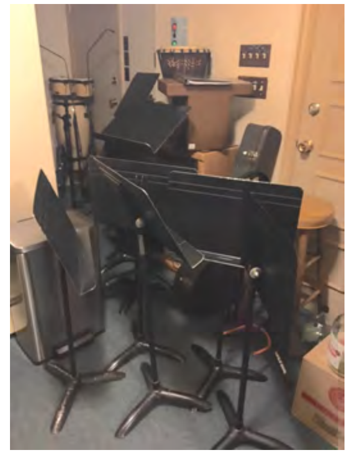
The Narthex features a gently curving ceiling that gives a distinctive and comfortable appearance appropriate for a welcoming area. Finishes are nicely refined, with brick walls, plaster walls, and a decorative terrazzo floor. However, this Narthex is seriously undersized, creating a bottleneck for the number of people needing to use it for both ingress/ egress and greeting/ visiting before and after services. It is important for this community-enhancing activity to take place, so the size of the Narthex is a serious problem.

Fireplace Room:

With the 1995 reconfiguration of the Nave, the large opening from the Fireplace Room was retained along with its hidden accordion doors. This room provides an important extension of the Nave during popular services, but leaves that portion of the congregation too distant from the sacred center of the service.

Sacristy:

The existing sacristy is a good location for a working sacristy in its proximity to the sanctuary, but it is currently a traffic mess in the time before mass, as the space is shared by servers, the priest, and musicians.



Current activities in the sacristy include vesting, musical instrument storage, vessels for mass, etc., and are simply too numerous and too chaotic for a space of only 106 SF.

Bishop Newell Hall:

Like the Narthex, the BNH's gently vaulted ceiling with acoustical panels provides a distinctive and comfortable ambience, and at 1,668 SF of size, can accommodate approximately 160 persons seated theater style; about 140 people at 5'-0" round tables; and about 115 persons seated at tables classroom style. The addition some years ago of an office in the NE corner of the space reduced the size and decreased the functionality for large meetings, but it still functions fairly well for its current capacities.

Administrative Offices:

Most of the existing offices are at the NE corner of the building, and include 3 interchangeable offices of 198 SF, 108 SF, and 137 SF; one open office of 529 SF suitable for three or four staff; and Fr. Rob's office of 186 SF. All but the 108 SF corner office and the Open office are suitable for counseling and other functions requiring privacy and sufficient space for counseling or discussion.

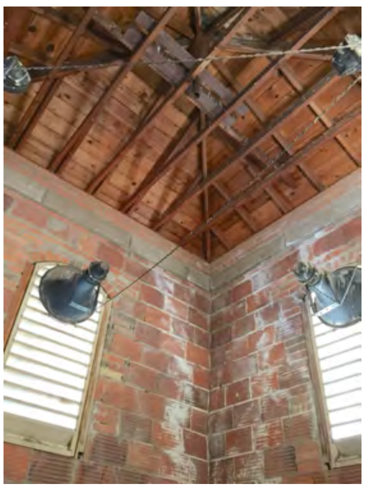
The Music office is located on the north of the building adjacent to the main entry portico. At 154 SF it is too small to contain the Musical Director, desk, musical instruments, written music, and books. In its SW corner this room formerly had a ship's ladder attached to the wall to provide access to the room above it which is the middle of the belfry, or bell tower. Access to the room above is now only by separate ladder.

Belfry (Bell Tower):

Because the Belfry is an iconic element of St. Paul's Newman Center, we have included additional detail in our report beyond the detail included for other elements of the building,

The base of the three-story Belfry is formed by the west two-thirds of the Music Room, from which one gains access through a floor/ ceiling hatch to the second and third story rooms that make up the rest of the tower.

The middle room is partially finished with gypsum board on the wood-furred walls, a rough floor of wood sheathing, exposed foil-faced insulation, and no trim around the single windows located on each of the west, north, and east walls. The room is unheated and unused. The wall calendar is open to September 1971.



The top room in the Belfry has exposed structural clay tile interior walls faced on the outside with the same stone as used on the north main entry portico. The painted wood louvers of the belfry are positioned directly above the windows of the floor below, presenting a simple and pleasing composition. Loudspeakers that project the sound of bells have been hung from the ceiling, directed outward through the louvers.

The ceiling of the belfry consists of several exposed wood trusses running north-south which support the north and south portions of the hipped Belfry roof as well as additional roof members coming in from the east and west that support the east and west hips. This roof does not have any long spans, but is nevertheless relatively delicate. The steel support structure for a bell would only work for a relatively small bell.

Storage:
There is a severe lack of storage spaces in the Newman Center that is largely due to the building's limited basement size. Besides the small storage closets distributed around the building, the only general storage area is the 233 SF storage room in the basement that also houses the IT equipment rack that serves as the central IT hub for the building. The 167 SF chair/ table storage room adjacent to Bishop Newell Hall is the largest dedicated storage space, and with its pair of 3' doors it works well for that function.

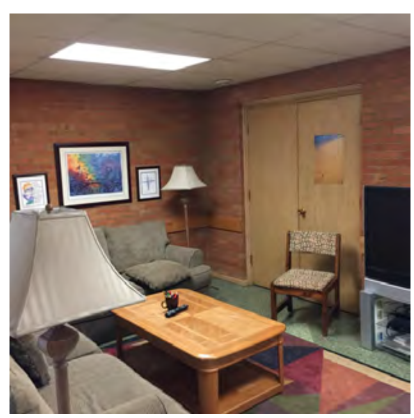
ADA and Universal Access:
It is quite common for a building built in the 1950's to be inaccessible or at least quite challenging for people with disabilities. Every entry to the Newman Center has at least one step, but this has been corrected at the north main entry with a well-designed ramp at the west entry arch of the portico. However, because this main entry and its ramp is on the north side of the building next to a gutter downspout that drains onto the concrete walk, which in turn slopes back toward the building, the potential for ice formation and an accident is high. The upside is that the gutter itself is likely usually frozen, so only limited water may reach the walkway during freezing weather.

All other approaches to the building are inaccessible to wheelchairs, and internally there is no accessible toilet facility. A relatively easy temporary solution to the toilet access problem would be the removal of the partition between the toilet and urinal in the men's room, and the installation of a wider door into the room. This would make the bathroom a single use facility, but it could serve both men and women.

There are numerous other impediments to accessibility throughout the building, including narrow doorways, kitchen and other cabinetry problems, turning radius problems, emergency exiting limitations, etc., but they are so endemic to the building that only major alterations of the entire facility would cure them.

Small meeting rooms:
Rooms for informal small group meeting are lacking with the exception of the TV room off of Bishop Newell Hall. At 200 SF, this room is suitable for about six to eight people and is often used by youths to watch TV/ Video.

The Library, at 344 SF can function as a mid-size meeting room and includes a table.



Kitchen:

The combined Kitchen and Pantry total size of 388 SF is tight for present uses and considerably too small and inefficient for the programmed uses of an expanded Newman Center.

The basic problem of the kitchen as it is laid out and as it is used within the overall building is that it is a main entry for staff and even many parishioners, because it is the shortest route from the main (east) parking lot to the warmth of the building. The enclosure of the porch on the south east corner of the building a few years ago was a major improvement to the cold air entering the kitchen, and the porch also offers additional non-temperature-sensitive storage for the kitchen.

One of the more problematic areas of the kitchen is the narrow de facto hallway immediately in front of the commercial mixer next to the refrigerator/ freezer unit. The conflict between people walking by and the person using the mixer creates potential danger for the person using the mixer. Also, though not particularly dangerous, the passageway from the porch door to the door to Bishop Newell Hall (BNH) makes work interruptions likely for people working at the kitchen counter along the south wall of the kitchen. As the primary food prep space in the kitchen, this is not a desirable situation.

A small pantry is located behind the refrigerator/ freezer. This was barely adequate years ago, and is far too small for planned programs in the future

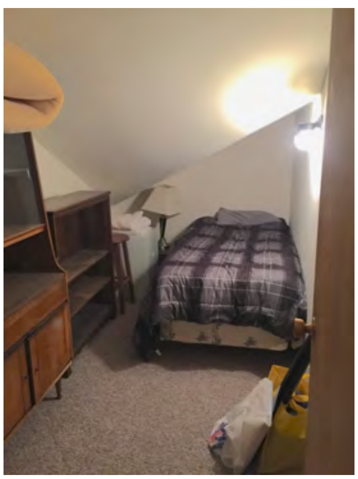
The kitchen size and layout make it difficult to fully convert it to use by a person in a wheelchair, although it might be possible to eliminate some under-counter cabinetry to create a dedicated wheelchair accessible workspace in some location on the south or west sides of the space.

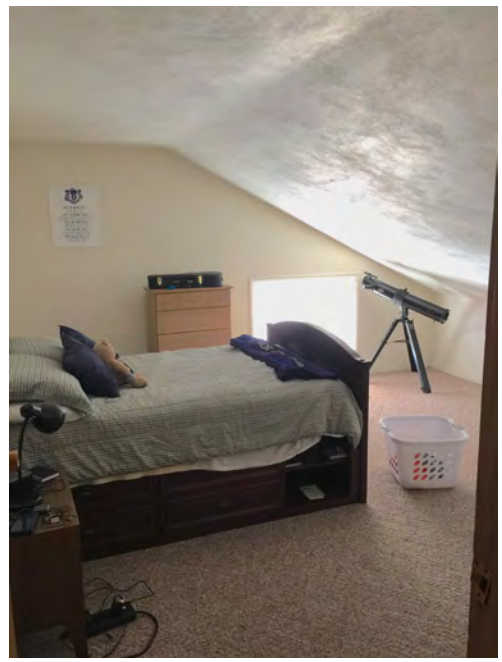
The servery opening from the kitchen to BNH is a reasonable proportion for the size of the kitchen, but is too small to function as a serving surface without the addition of tables in front of it. The addition of a roller shutter to close off the opening would improve the appearance of the east wall of BNH and would slightly reduce the noise coming from the kitchen into BNH when both spaces are in operation.

Mechanical and Electrical problems with the kitchen are discussed in the M & E sections of this report.

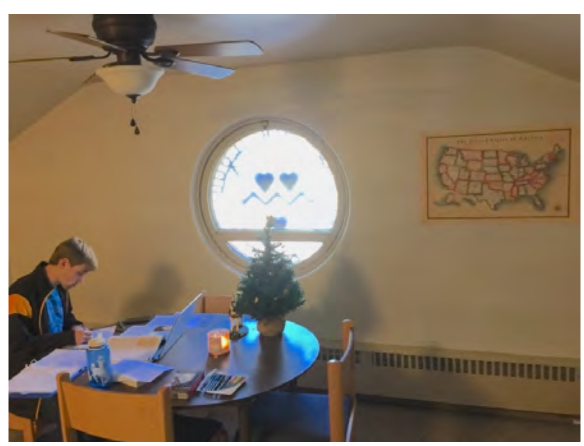
Student Apartment:

On the second floor, above the Library and a portion of the Fireplace Room, is an apartment with two rooms used as bedrooms, but neither is up to safety standards for exiting, or in fact for even calling them bedrooms. The larger of the two rooms could be upgraded by enlarging and repositioning the existing window, but the smaller is wholly inadequate due to the lack of headroom and any window at all. Fortunately, the smaller room does not appear to normally be used.





The small bathroom appears adequate for its intended uses, and the kitchen and dining/ study area on the north end of the apartment are adequate as well. As with all other spaces in the building, the apartment relies on operable windows for cooling, light, and ventilation, but as is visible from two of these photos, the operable portions of these windows are too small to be effective.



D. Architectural Assessment

Crawlspace:
The crawlspace extends under the entire building except for an area in the center of the building that contains basement mechanical and storage rooms. Distances from the crawlspace floor to the floor structure above vary from approximately 3'- 6" at the far west end of the building where the dirt floor slopes down to the west, to an average of 3'- 0" in most areas, to approximately 1'- 8" in the most confined areas under beams and pipes.

Access to the crawlspace is accomplished through one 3' x 1'-10"' opening in the north wall of the basement storage room in the center of the building.

The crawlspace is in excellent condition. The dirt floor consists of fine powdery dirt and sand of a reddish color, very dry in all areas where inspection was made. There is no evidence of recent water intrusion, and only one area on the north wall below the NW corner of the Meeting Hall where there is evidence of efflorescence in the brick and associated staining from water that was likely introduced from the outside, perhaps by sprinklers or roof downspouts.

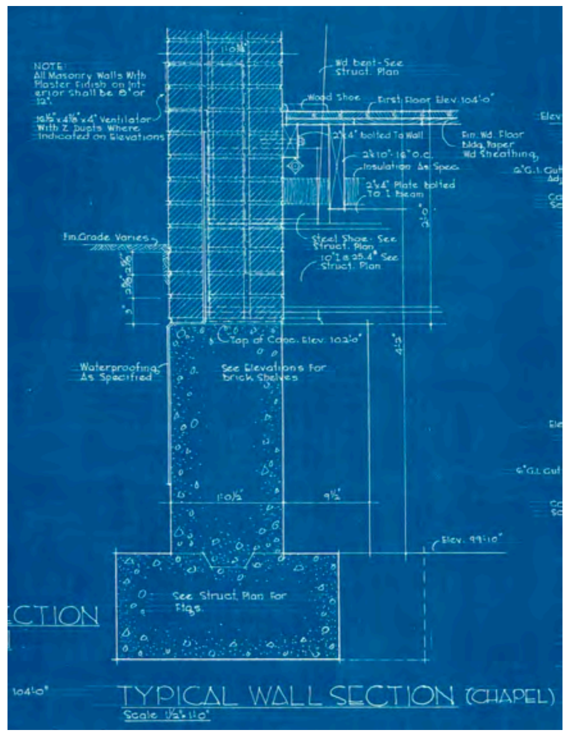
Besides the use of the crawlspace as the basis for the floor/ foundation system and space to run piping, the crawlspace at the southeast end of the building houses a small condenser unit for the walk-in cooler which was relocated a few years ago to attenuate its noise from its previous location in the kitchen. The heat generated by the unit is minimal, but an asset in warming the crawlspace in the winter and is not so great as to cause undue warming of the crawlspace or the unit in the summer.

The presence and condition of the crawlspace enhance the ability to upgrade the floor structural system where needed; to upgrade the heating, cooling, and ventilation of the existing building; and - most importantly – to enhance the ability to make temporary improvements to specific areas of the building which may need to be retained if phasing were to be considered for new construction.

Floors:
The floors throughout the building are in excellent condition. Most of the floors consist of 1 x 6 boards laid perpendicular to 2x Douglas Fir joists, some topped with ¾" hardwood flooring, some with plywood overlain with terrazzo flooring.

In the center of the building, from the south wall of the Library to the south wall of the Hallway outside the restrooms, the floor is made of 6" thick cast-in-place concrete, likely as a fireproofing requirement above the boiler room in the basement below.

As is noted in the Structural section of this report, some of the floor joists are either not deep enough or are not spaced frequently enough to meet 2018 structural code requirements, but the fact that these joists are in excellent condition and have been serving their purpose for more than 60 years indicates there is no present problem with them. In any remodeling using them, however, they would need to be brought up to current codes.



Walls and their Insulation:
The building's walls are, with very few exceptions, in very good condition. All exterior walls are 12" thick and of solid brick and mortar. The construction consists of three wythes (three individual brick thicknesses) consisting of 4" (nominal) bricks with mortar joints between each.

This construction method, common in the 1950's, yielded a massive wall "built to last." In later years, however, the lack of any insulating airspace whatsoever, becomes a liability because of the low R-value of brick. Assuming two wythes of "face" brick, and one wythe of "common" brick (between the outer two layers), the R-value of these exterior walls is approximately R 1.7 because of the lack of internal air space and no place for any air-entrapping insulation. The R-value of the 12" thick concrete beams over the larger openings in exterior walls is similarly low at approximately R 2.0.

It is feasible to add insulation on the inside of the brick walls by furring them out with, say, 2x2 wood furring strips, then applying spray foam between the strips, and covering it all with standard 5/8" gypsum board. There is no accommodation for electrical or IT wiring within the solid brick walls, so some could be added within the furring strips. This would make the walls about an R 12, which is not up to current standards, but would clearly be a major improvement.

There is one brick wall of only 8" thickness, the south side of the hallway outside the restrooms. This is a dividing wall, likely fire-protected, for the stairway on its south side that goes up to the second-floor apartment.

The balance of the walls of the original construction are interior brick walls, also constructed of 3 brick wythes. They are typically structural and do not need to provide insulation.

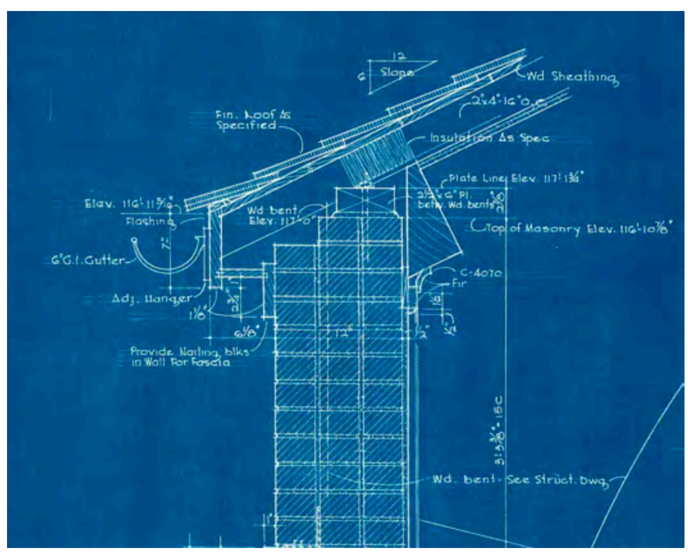
Interior walls of the newer construction are of either wood or metal studs, sheathed in either gypsum board or plaster.

Roofs and their Insulation:

Throughout the building, the roof consists of red clay tile overlaying 1 x 8 (nominal) wood sheathing. The wood sheathing is perpendicular to the trusses that support it, rather than the more typical diagonal direction. All principle (central) roof slopes are 6 in 12, changing to 4 ½ in 12 at some the edges of the building.

Most of the roofs are on several types of wood trusses, except for the roof over the Nave, which is on wood purlins suspended between glue-laminated beams.

Except for the roof over the Nave (which has no attic), roofs are uninsulated, which is acceptable because the attic floors (top of the ceilings below) were originally somewhat insulated. It was not common for attics to be insulated in the 1950's, so this was an upgrade to common construction. In the years since, the attic floors have had about 9" of blown-in insulation installed. The additional insulation is important to reducing heat loss in the building, but because the attic has free flow of air from the outside, and in the case of the attic above Bishop Newell Hall, the ceiling along the north and south sides are quite sloped, the insulation blows around creating areas of greater and lesser insulation thickness, and therefore greater and lesser areas of heat loss. The insulation material is likely blown-in cellulose with an R-value of about R3.7 per inch, which at 9" comes to about R33.3.



The roof of the nave was specifically constructed so as to have some space for insulation; consequently, it appears from the original blueprints by Architect John K. Monroe, that there is a 3 ½" layer of insulation in place. Because there is no ready access to view the insulation, one guess as to its composition is that it could be Balsam Wood batts with an R-value of perhaps R 2.75 per inch, for a possible total value of R 9.6. If true, this would be considered high insulation value for a 1950s building, but still three or four times less than desirable by today's standards and expectations of energy conservation.

The roof over both south and north sides of the east end of the building shows dips (low areas) at regular intervals likely between the roof trusses. Internal inspection of the trusses shows no damage or sagging, so it likely that the dips in the roof tile are the result of sagging of the 1x 8 wood sheathing, perhaps because those particular boards were weaker than the others or possibly spliced in a single line creating a weak plane.

The roof valley immediately to the south of the Belfry's south wall has an unexplained curve to it that suggests some framing problems with the original roof. The curve is more likely to accumulate leaves and other debris that could cause water or ice backups that could lead to leaks,

Finishes:
Floor finishes are wood, carpet, ceramic tile, linoleum, and terrazzo. Walls are exposed face brick, or plaster on lath in the original construction; and gypsum wallboard over studs in the newer construction. Ceilings are plaster on lath, sometimes suspended metal lath. Ceilings in the Meeting Hall have independent acoustical absorption panels applied at regular intervals. Ceilings in the Nave have glued-on acoustical tiles applied to the entire surface between the beams.

Perimeter and Site Drainage:

It is a testament to the quality of the soil underneath the footings of the Newman Center that there has been almost no foundation settlement, because water draining from the roof is collected by the roof gutters and directed via downspouts to within a few inches of the foundation wall. In locations where the ground around the building slopes away from the building, this water has the chance to flow away from the building, but in many situations, such as along much of the north building wall facing Grand Ave., the ground actually slopes *toward* the building, exacerbating the potential for the water to cause problems for the foundation. However, the foundation evidences extremely little movement after decades of this condition, and the crawl space is a dry as could ever be desired.

If the all or part of the building were to be retained, it would still be desirable to make the relatively simple adjustments to the ground around the building and to the downspout system to move the water away from the building.

E. Structural Assessment:

Existing Systems:

The existing Nave roof structure consists of Douglas Fir 6x10 glu-lam purlins and 6x12 glu-lam ridge hanging from Douglas Fir No. 1 glu-lam Tudor arches 11" wide. Existing structural drawings dated May 9, 1956, indicate that the glu-lams were graded as West Coast Douglas Fir, No. 1 or better, conforming to the 1953 W.C.LA. Concealed hangers were required to carry 60 pounds per square foot combined live and dead loads; this total load meets current snow load requirements. Small roof sections adjacent to the existing Nave and Narthex are framed with structural rafters of varying sizes, 2x6, 2x8, or 2x10, at 16-inch centers. The rafters in the northwest roof have been notched for bearing on the supporting ledger; no splits are present at the notch.

Roof areas over the apartment and Bishop Newell Hall are framed with Douglas Fir Larch trusses with a spliced bottom chord or collared rafters, both with additional 2x6 ceiling joists. The Tower roof is constructed of 2x8 rafters with a concrete collar beam. Existing drawings indicate the wood framing members were graded as W.C.L.I.B. Douglas Fir Larch Construction paragraph 123c or Industrial paragraph 153b.

Existing drawings indicate exterior walls are constructed of unreinforced three-wythe brick walls with steel lintel supports over openings. Other masonry walls consist of unreinforced two-wythe brick walls.

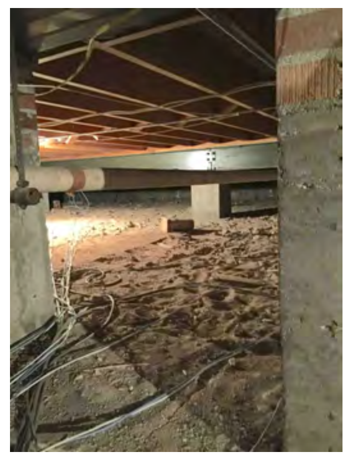
Existing drawings indicate the apartment floor is framed with notched Douglas Fir Larch 2x10 joists at 16-inch centers bearing over wrapped W18x50 steel beams at approximately 5'-6" centers. Renovation drawings from 1995 indicate steel beam sizes as W18x60. A W21x44 steel beam was installed to create an opening between the Fireplace Room and Nave during the 1995 renovation.

Existing floors generally consist of Douglas Fir Larch 2x10 joists at 16" centers. Where terrazzo floor finishes are present in Bishop Newell Hall, floor joists are spaced at 12" centers. Existing W10x25.4 steel beams support joists in the Office wing, Bishop Newell Hall, Fireplace Room, and Nave. A 6" thick concrete structural slab is specified only over basement areas below the existing restrooms and Library. A terrazzo finish is also present in these locations.

The ledger at the corridor connecting the Nave and Bishop Newell Hall appears to have limited fasteners to the foundation wall. The fasteners are performing well under existing loads, but they may not have the capacity for current code requirements if usage or live loads change.

Existing drawings indicate the Engineer of Record used a soil bearing pressure of 2,500 pounds per square inch with footings to bear on undisturbed sands and gravels. Existing drawings also confirm that the concrete design compressive strength was 3000 pounds per square inch. Details required reinforcing bar numbers and placements which would meet current building codes. Typically, exterior foundation walls are shorter, creating a fairly tight interior crawlspace area with 24-inch-wide footings around the building perimeter. Deep foundation walls approximately 10 feet high are present at the basement electrical and mechanical areas. Interior steel floor beams are supported by 16 inch-square piers over 24 inch-square footings.

Existing Structural Conditions:



Structural members visible in attics and crawlspaces are in very good condition with no visible splits, limited coring or notching for electrical and mechanical systems, limited or small knots at wood framing members, and wood grain generally parallel to slope of framing members. The existing brick masonry walls show no signs of cracking. Unreinforced masonry walls are typical for similar buildings constructed at this same time period. While there are a few cracks in the finishes, these are limited as well, indicating limited or even movements of the foundation system. Fine cracks in the plaster are present at the ceiling above the Kitchen. There is one crack on each of the east and west exterior bearing walls on either side of the fireplace; there are no cracks or signs of disturbance at the foundation under these same walls. The terrazzo floor finish is cracked a few locations, both at wood framed floors and structural concrete slabs; the material is generally flat across the crack and does not create tripping hazards. The existing concrete foundation is in very good condition where observed in both the crawlspaces and existing mechanical and electrical basement areas. The concrete is smooth and sound with no large cracks and limited mechanical and electrical openings.

The site is not well graded to slope to drain water away from the foundation. Negative drainage and irrigated lawn area is present on the north side of the Nave. The exterior slab under the ramp at the Grand Ave entry slopes towards the foundation at the existing downspout. Existing downspouts stop directly adjacent to foundation walls. Existing concrete slabs on the north side of the building have moved from adjacent tree root growth.

Structural Conclusions:

The existing building structure is in very good condition. It was well designed and constructed for its time and has been well maintained in the years hence. Signs of good workmanship and materials are evident throughout: the smooth and durable concrete walls; the grain of the wood members; the lack of holes and notches placed in structural members to accommodate mechanical, plumbing, and electrical. The existing building could continue to be utilized without changing space usage and occupancies. Although the masonry walls are noncombustible, the use of combustible materials for the primary roof and floor structure without use of a fire protection system is concerning.

Since the building's structural capacities are close to meeting current code live load requirements, any major addition would need to be separate from the existing structural systems. A geotechnical engineer should be engaged to evaluate the existing soils and make recommendations for new foundation systems. While changes in use or occupancy may not require reinforcement of existing structural systems, new fire protection systems would need to be installed to meet current code standards.

Should the building continue to be utilized, grading should be corrected to drain water away from the building foundation with a non-planted buffer adjacent to foundation walls. Downspouts should be extended to prevent water from pooling next to foundation walls.

F. Mechanical Assessment:

Project Overview

The purpose of the Mechanical assessment was to provide an independent review of the existing Heating, Ventilating, and Air Conditioning (HVAC) and plumbing systems to assist in master planning, programming, and conceptual design for the modifications to, or replacement of, the existing facilities to meet the needs of the parish community. The assessment was not an in-depth investigation into every piece of equipment but rather a broad overview of the system and its functionality and potential for future use. The approach to the mechanical assessment was as follows:

- Meet with the building maintenance staff to get their feedback on how the building is operated and identify particular equipment or systems issues as it relates to functionality, comfort, maintainability, or energy efficiency.
- Review of the as-built drawings to understand the existing building envelope (i.e. wall and roof insulation, and window types).
- Walk throughout the building and visibly observe the condition of the existing HVAC and plumbing systems.
- Provide recommendations for master planning as it pertains to the existing mechanical systems.

HVAC System Description:

The building is heated throughout with hot water baseboard heat installed around the perimeter of the building. The heating hot water is provided by two atmospheric gas-fired cast iron boilers located in the basement boiler room. The boilers, boiler room piping, expansion tank, and zone pumps appear to have been replaced in 2008. The boiler piping in the boiler room is copper and the piping from the boiler room to the baseboard heaters appears to be black steel schedule piping. The piping in the crawl space and the baseboard heaters appear to be original to the building. The two Burnham model #8H Boilers now in use were replaced in 2008.

The boilers are equipped with seven zone pumps each piped to different areas/zones in the building through the crawl space. From the crawl space the pipes turn up through the floor with supply and return to the perimeter baseboard heaters. It appears that each zone pump is controlled by a space heating thermostat which will automatically start the pump to flow water through that Zone's baseboard heaters when the temperature drops below the heating set point.

Heating Water System Zone Pumps: 2 Taco Zone Pump Controllers & 1 Tekmar Boiler Controller.

The Nave and Bishop Newell Hall have large exhaust fans located in the attic which can manually be turned on in the summer to bring in fresh outside air through the building operable windows and then exhaust the air back out. This was a common design scheme in churches to provide cooling/ventilation in the summer. The drawback is that the building has no fresh air ventilation during the winter when the operable windows are closed. In addition, the air that is brought in during the summer is not filtered.

There is a central bathroom exhaust fan located in the attic serving the central men's and women's restrooms. There is also an exhaust fan in the attic serving the janitor closet near the offices east of the Church Hall.

The kitchen has a stainless-steel hood located above the 10-burner gas range/oven. The hood is a Type II hood and does not have grease filters or a fire suppression system. The hood exhaust duct is connected to a utility type exhaust fan located in the attic which is then exhausted outdoors through a sidewall louver. Code does not allow a Type II Hood over a 10-burner gas range.

Plumbing System Description:
The building plumbing systems serve the central men's and women's restrooms, the kitchen sinks, the sacristy sinks, and the kitchen and restroom in the upper level apartment. The waste & vent piping is hub & spigot cast iron pipe, and the domestic water piping is copper. The water service appears to come from 18th Street and comes into the crawl space near the northwest corner of the building. It then runs through the crawl space into the central boiler room where it connects to the domestic water heater system. The domestic water heater is an atmospheric gas-fired tank type heater and is equipped with a domestic hot water recirculation pump.

The central men's restroom has a flush valve, floor mounted, water closet, a flush valve wall mounted urinal, and a single wall hung lavatory. The central women's restroom has two flush valves, floor mounted, water closets and a single wall hung lavatory. The upper level apartment restroom has a floor mounted, tank type water closet, and a wall-mounted lavatory. None of the restrooms or their fixtures meet current ADA requirements.

The Sacristy has a counter mounted 2-compartment sink directly connected to the sewer system. There is also a single wall hung "Sacrarium" or "Pascina" sink which is designed to be used when purifying the sacred vessels used during Mass. Typically this sink is piped directly to the earth and not to the sewer system. According the maintenance supervisor, this sink is no longer functional.

The main kitchen has a counter mounted 3-compartment sink which is equipped with a garbage disposer and is directly connected to the sewer system with no grease interceptor.

The natural gas meter is located on the south side of the building just outside the boiler room. The natural gas is piped into the boiler room and is connected to the boilers and the domestic water heater. The natural gas piping appears to be schedule 40 black steel.

Analysis/Recommendations:
The main purpose for this assessment is to understand the current capabilities of the mechanical systems and determine how they may be used for future expansion and/or renovation of the current facilities.

HVAC Systems Long Term Recommendations:
The current hot water heating system appears to be working well with no visible signs of leaks and there were no specific complaints from occupants about comfort. However, the majority of the

piping, baseboard heaters, exhaust fans, ductwork, controls etc. appear to be original to the building and are well past their normal expected life, with the exception of the cast iron boilers which were replaced in 2008. The boilers should reasonably be expected to have another 20 years of life if properly maintained. However, the boilers are rated at 80% efficiency and do not have modulating controls. New boilers are rated at least to 87% efficiency and if designed to be used in a low water temperature water system (< 135° F), can achieve efficiencies in the mid-90s. New boilers also have better modulating controls that allow them to turn down at least to a ratio of 5:1 which provides better temperature control and reduces boiler cycling.

The current summer ventilation system as described above does not provide adequate ventilation in the winter, which is required for occupant comfort, wellness, and by Code. Also, while the system does provide fresh air in the summer, it does so only by manual control of the fans and the operable windows. The air coming in through the windows is not filtered or tempered in any way.

Future master planning for the building may take different shapes which may include but is not limited to:

- A major renovation of the existing building maintaining its current use and purpose.
- Modifying the existing building for a new purpose such as a new Narthex, classroom space, etc.
- Keeping only part of the existing building and building a new addition to the existing building.

For master planning purposes of any of these scenarios, it is recommended that the existing HVAC systems be replaced in their entirety. Trying to re-use any part of the existing systems that are already past their expected life would increase the maintenance costs moving forward and replacement costs of these systems would be much more expensive than if done during the major renovation projects.

Any new HVAC system that would be designed for the future building renovation and/or expansion would need to go hand-in-hand with improvements to the current building envelope as there is little to no effective insulation in the walls or roof. An improved building envelope will not only provide better comfort and energy efficiency, but will allow for the new HVAC system to be sized smaller, reducing first costs.

The current kitchen hood does not meet Code as it is only a Type II hood with no fire suppression. For future master planning of the kitchen, a new UL listed Type I hood grease hood, grease ductwork, and grease exhaust fan will be required over the cooking equipment. Per Code, tempered make-up air must be provided for the kitchen exhaust and most commonly this is achieved by using a direct fired gas make-up air unit with evaporative cooling. The make-up air unit would be interlocked with the kitchen hood exhaust fan so that they run together.

Plumbing Systems Long Term Recommendations:
Due to the age of the existing plumbing piping, future master planning for any major renovation or expansion should include complete replacement of the water, waste, and vent piping. It is recommended that all new water piping be Type L copper, and all new waste and vent piping be solid core schedule 40 PVC except for piping located in a return air plenum which is recommended to be no-hub cast iron. We do not recommend cellular core PVC for any piping.

New plumbing fixtures should meet ADA requirements and utilize new low flow technologies and be rated for at least to 1.28 gallons per flush (GPF) for water closets, 0.125 GPF for urinals, and 0.5 GPM for lavatories.

The plumbing for the kitchen should be replaced with a commercial kitchen design approach using plumbing fixtures that to current health and food safety standards would be required. This would include but be limited to stainless steel, NSF 61 certified fixtures which would include 3-compartment sinks, prep sinks, and hand sinks. The 3-compartment sink and prep sinks would be required to be indirectly connected to the plumbing sewer system through sanitary floor sinks. A new grease interceptor would be required to capture any grease waste from the kitchen. Typical installations use a 1,000-gallon concrete precast grease interceptor installed outdoors. Newer alternative outdoor hydro-mechanical grease interceptors made of high density polyethylene should be evaluated as they require a smaller footprint and have better corrosion resistance than concrete.

Mechanical Systems Conclusions:
The existing mechanical HVAC systems serving the building appear to be in good working condition and are serving the building as currently configured. However, the systems have limited capabilities and are past their normal expected life. Long range master planning for a renovation or expansion should include replacement for the existing HVAC systems for modern systems that provide proper heating and ventilation and possibly air conditioning depending on the Owner’s requirements. The new systems will be required to meet the requirements of the currently adopted International Energy Conservation Code by the City of Laramie. As part of conforming to this Code, a more sophisticated temperature control system will be required which will not only improve comfort but also increase energy efficiency of the building.

If the existing building is kept for the future, the building envelope should be improved by increasing the insulation in the walls and roof, and replacing the windows with insulated low solar heat gain windows.

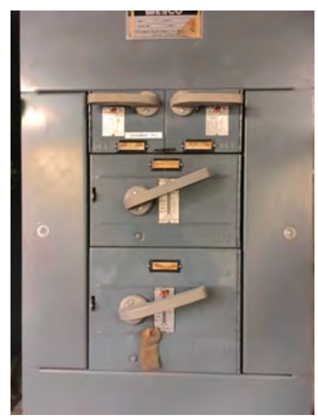
The existing plumbing systems in the building appear to be in good working order but are past their normal expected life and will not be adequate for any long-term renovation or expansion to the building. The existing water, waste, and vent piping, plumbing fixtures, and water heater should be replaced and restroom facilities should be upgraded to current ADA standards and low water flow technologies.

G. Electrical Assessment:

Electrical System Description:

The existing electrical service is a 120/240-volt, 1-phase, 400-amp, overhead-feed from the south side of the alley. The conductors enter a weather head, then into conduit traveling down the outside of the building, where they enter the basement electrical room. Original plans suggest 3 # 350 in 3" conduit. There are Current Transformers (CTs) at the weather head. The metering wiring from the CTs enters another weather head, then into conduit, to a meter on the outside of the building.

The electrical service equipment in the basement consists of a former CT can; main 400-amp 120/240-volt, fused disconnect; a distribution panel (MDP) with fused switches; former Panel A, used as a splice box; and a newer breaker panelboard labeled "P-1." The MDP has the following switches: 60-amp for Panel P-1, 60-amp for the kitchen Panel C, 100-amp for the sacristy Panel D, 200-amp for Panel B.

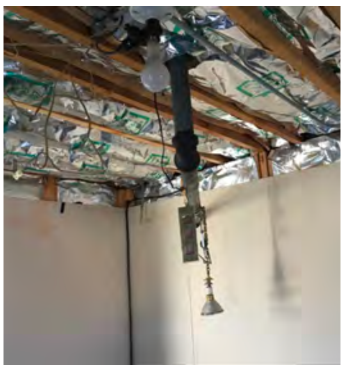


The electrical panel information is as follows: Panel MDP, located in the basement electric room is a Weyco fused panel by Young Electric; Panel P-1, located in the basement electric room is an Eaton, 24-space, 100-amp breaker panel. Panel B, located at the top of the stairs to the basement is a 40-space, push-button breaker panel. Panel C, located in the kitchen is an 18-space, push-button breaker panel Panel D, located in the old sacristy, is a 20- space, push-button breaker panel. There is a small 8-space panel, located in a closet next to the kitchen - we will call it "Panel F" - that feeds some kitchen outlets. As there is no breaker feed from another panel, it appears that Panel F's feed is made by a tap in another panel, possibly Panel C.

Except for Panel P-1 and Panel F, the service and distribution panels are dated, and should be replaced. The service to the building should be upgraded to a 3-phase service if air conditioning is ever considered for the building.

Lighting Description:

Other than the lights in the nave and the nave spillover space, as well as the pendant lights in the kitchen, there is not any special lighting that would be of any value for a remodel. Most of the lighting is fluorescent and incandescent, with a few fixtures that have LED lamp replacements such as in BNH. The lighting level is adequate throughout the church. Emergency exit signs, and exit lighting, are located to meet code egress requirements. There are a few exceptions at some of the secondary doors. Lighting controls are standard snap switches, and there are no dimming controls. The lighting and controls do not meet the current energy code standards. Most of the wiring to the lighting is code compliant, although there are a few exceptions.

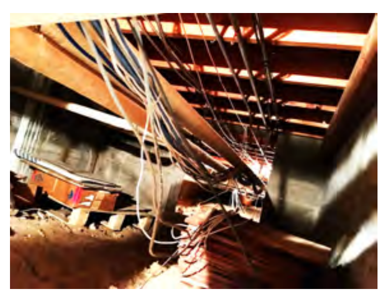


Power Description:

As far as can be determined, the power wiring in the building is code compliant with a grounded system, including grounded-type receptacles. All exposed circuits that could be observed were either in a conduit system or wiremold raceway. There are a few areas where the conduit is not properly supported. As in most older buildings, there is the need for more receptacle locations. There has been some tripping of breakers. This suggests there are not enough circuits available for occupant use in the building. The kitchen area had been upgraded with additional receptacles wired to Panel F.

Tele/Data and Cable Description:

The telephone and cable service is located overhead from the south side of the alley, running down the outside wall, and then entering the basement. The telephone and cable punch-down locations are in the crawl space, north of the basement boiler and electrical rooms; however, this location is not very convenient for access to the service location. The original building had telephone runs only; however, over the years, additional cables for telephone, data and cable have been added throughout the building. There are locations where cables have been abandoned but not removed;



there is now a system of cables with unidentified origins or endings. The cables have been run to locations via the crawl space, and they are not supported correctly. The church is currently having issues with their telephone system. It is not known if the problem is the telephone system or the cabling.

Fire Protection Description:

The building does not have a fire alarm system, even though this is a requirement when building occupancy is over 300 people. The apartment on the second floor is required to have smoke detectors with alarms. Although there is a smoke detector in the common space, there is insufficient coverage at the stairs and bedrooms.

Sound System Description:

The church has a working sound system. The sound equipment is located in the sacristy in the southwest corner of the church. The loudspeaker system in the belfry is controlled from the Music Office at the base of the tower, and provides a rather realistic bell sound.

Electrical/ IT Systems Conclusions:

The electrical system in the church is in generally good condition, except as noted in this narrative. Should there be a major renovation, the electrical service and distribution, lighting, power, tele/data, and cable systems should be replaced. In areas where a space will not be disturbed, there may be an opportunity to reuse some of the existing electrical circuits; however, new lighting controls throughout would be required, and lights should be specified with LED lamps when possible. In addition, a fire alarm system should be installed to meet current building codes. Finally, the sound system would need to be replaced to meet the requirements of a new structure.

H. Civil Assessment:

Utilities:

Sanitary Sewer:

An 8-inch diameter sanitary sewer is located in the alley. The approximate slope is 0.48% falling from east to west. If the alley is abandoned, it is possible to relocate the sanitary sewer line by two methods.

- The first option would be to divert the sewerage to a parallel line in the alley between Garfield and Custer. The new line would run south down 18th Street. This option would require installing about 300 ft. of new sewer line and two new manholes. This approach would provide good slope for the diversion line due to the natural slope of the terrain.
- The second option would be to route the sewer from the manhole on 19th Street over to Garfield Street, then west along Garfield Street and then back north to its present location in 18th Street. This would require installing approximately 650 ft. of new sewer line and probably four new manholes. The additional length of the rerouted sewer would flatten the slope of the line very close to the minimum slope for an 8-inch sanitary sewer. In order to maintain a slope steeper than the minimum required, the overall length would have

to be minimized. This could be accomplished by placing the new line in Garfield Street between the existing north sidewalk and north right-of-way line. As this is a non-typical location for sewers, it would require concurrence from the City and possibly a permanent easement to the City for maintenance.

Sewer connection for the SPNC will be at the manhole in 18th Street or just east of the manhole outside of 18th Street. The new sewer connection will likely be 6 or 8-inch pipe. The exact size will be based on the final number and type of fixtures included in the new facility. No sewer capacity issues are known for the lines affected by this project. Either relocation option would need to be approved by the City Engineering and Public Works Department.

Water:
The existing waterlines are located in Grand Ave. (16 inch), Garfield Street (6 inch) and 18th Street (6 inch). Existing water taps are located on Garfield Street (6 locations) and 18th Street. The taps along Garfield street are ¾ inch residential. The tap off of 18th Street is 1.5 inch. This 1.5-inch service line may be adequate for a new facility, but will have to be analyzed when more design information is available. It is anticipated that a 6-inch line will be needed for the fire sprinkler system. This line could be tapped from 18th Street or Garfield.

There is an existing fire hydrant at the corner of 19th and Grand Ave. If a sprinkler system is installed in the new facility, code allows for significant reduction in the required flow from hydrants. With the allowable reduction, the existing fire hydrant should be adequate. Without the reduction, an additional hydrant would likely be needed. The 6-inch waterlines in Garfield and 18th would likely be inadequate for fire hydrant flows, necessitating tapping into the 16-inch line in Grand Ave. Obviously, this would be an expensive endeavor and should be avoided, if possible.

Domestic water and water for irrigation may require new taps. Most of the existing taps along Garfield Street will need to be "abandoned." "Abandoning" in this context means removing the service to the main. This will require excavating the street from the curb stop to the main and plugging the line at the main. One or more of these lines may be retained to provide irrigation flows.

Storm Sewer:
Existing storm sewer is located in 18th Street between Grand and Garfield and in 19th Street at the intersection with Garfield Street. The trunk lines are 15-inch PVC and the laterals are 12-inch PVC. Both systems flow south. Most of the storm sewer should be unaffected by the project.

Due to the current amount of hard surfaced area on the site, it is anticipated that post development drainage volumes and flow rates will change only slightly from existing. There may be some requirement for detention, but it should be minimal.

Franchise Utilities:
Natural Gas:
A natural gas line of unknown size runs through the length of the existing alley. This line will need to be relocated and an easement provided for its new route.

Electric:
Overhead electric power lines also run along the south side of the alley. There is also an overhead electric line along the west side of 19th Street between Grand Ave. and the alley. The alley line will need to be relocated. New lines in the City of Laramie are to be buried. The feasibility of this is still being investigated. An easement will need to be provided for its new route.

Telephone:
Telephone is located on poles in the alley. This line will need to be relocated and an easement provided for its new route.

TV:
TV/Communications lines are located in the alley and are buried. The line runs the length of the block. This line will need to be relocated and an easement provided for its new route.

I. Renovation / Demolition Cost Estimates:

We estimate that renovating the facility to current standards would cost between $4.5 and $5.5 million. This would not include any additions; just working within the existing building footprint.

Demolition of the entire SPNC building and all four houses, including all footings and foundations has been estimated by Brisco Demolition, a Cheyenne, WY demolition specialist, at $540,000. Removal and haul-off of site elements (parking lot, driveways, alley) has been estimated at $100,000.

J. Overall Conclusions:

The Newman Center building is structurally sound, well-maintained, and in excellent condition. It was well-designed by Architect John K. Monroe in 1956 and well-constructed by the Spiegelberg Company that same year. The building is also aesthetically pleasing and undoubtedly has a number of fans of its history and its spirit who would favor its retention on those grounds alone.

However, although the building was constructed of long-lasting materials that to this day generally do not show their age, the changes in building technology over the last six decades, and the expectations of building users in 2018, combine to make it problematic to retain the building as St. Paul's Newman Center moves into a new era.

Problem areas in building technology changes (not in any inadequacies of the building when it was built), include:

- lack of universal access at most building entrances;
- lack of ADA-required facilities within the building;
- inadequate R-value of the brick exterior walls;
- inadequate R-value and vapor barrier system between the ceilings and attic;
- an antiquated mechanical system lacking summer cooling, lacking year-round ventilation, and providing extremely inefficient heating;

- an antiquated electrical system in need of complete replacement;
- non-existent safety systems such as integrated fire alarm, fire annunciator systems, and fire suppression systems.

Compounding many of these inadequacies is the need to adhere to local and national building codes when any significant alterations are made to a building. This means that when significant changes are made to just one element of the building, it is likely that local jurisdictions having authority would require that entire systems (such as electrical or HVAC) be upgraded, thereby extending the upgrades to effectively affect the entire building.

Although the building's largest spaces: Nave, Bishop Newell Hall, and Fireplace Room are too small for their present uses, their sizes would be adequate for a number of the functions required in the new Master Plan; but their location on the site, and the multiple constraints of their antiquated building technologies make their re-use impractical and costly. Of equal concern, their retention would limit the best possibilities for using the site and restrict the desired uses and layouts of the many building elements required by the building Program developed by the congregation.

It is ironic that the solidity of the building when initially constructed works against its retention today, but between lack of flexibility, advances in building technology, and enormously changed requirements for the programs that the building must support, the SPNC building should be deeply appreciated but understood to functionally be at the end of its days. There are quite a number of components to the building that are salvageable for practical and/or emotional reasons, and these include: floor and roof joists, clay roof tile (on the roof and stacked in the crawl space), stone window surrounds, and certainly the building stone from the Belfry and Portico.

The best use for the existing building – and one for which it would be well suited – would be for temporary use following strategic remodeling, to allow portions of the structure to be temporarily repurposed to accommodate phased construction of the new facility. However, even this temporary work would be costly for the remodeling itself, then doubly costly in the disruption it would cause to the efficient flow of work for the construction of the new facility and the loss of "laydown" space on the block for storage of construction materials and the like.

Finally, it has been determined by the Parish and the master planning team that it would be better for the work of the Parish and the good (and safety) of the congregation to vacate the site during the entire period of construction. The new SPNC building, grounds, and parking will require every bit of the block encompassed by Grand Ave. and Garfield St., and 18th and 19th Streets.

End of Report

Addenda:

- Additional photos of possible interest to some readers are appended at the end of this report.
- Updated measured plans and views of the existing building are appended at the end of this report.

Notes:

Participants in this technical assessment were:

- Timothy Belton, AIA, Architect with Malone Belton Abel P.C., Sheridan, WY
- Roger Baalman, Architectural consultant and former Architect of the 1995 renovation, North Las Vegas, NV
- Erin Radosevich, P.E., Structural Engineer with Malone Belton Abel P.C., Laramie, WY
- Justin Montgomery, P.E. Mechanical Engineer with Design Point Engineering, Cheyenne, WY
- Mike Gust, P.E, Electrical Engineer with Gust Engineering, Cheyenne, WY
- William Gorman, P.E., Civil Engineer with Gorman Engineering, Laramie, WY

Additional Photos

South side Altar windows added in 1996

South side of building along alley

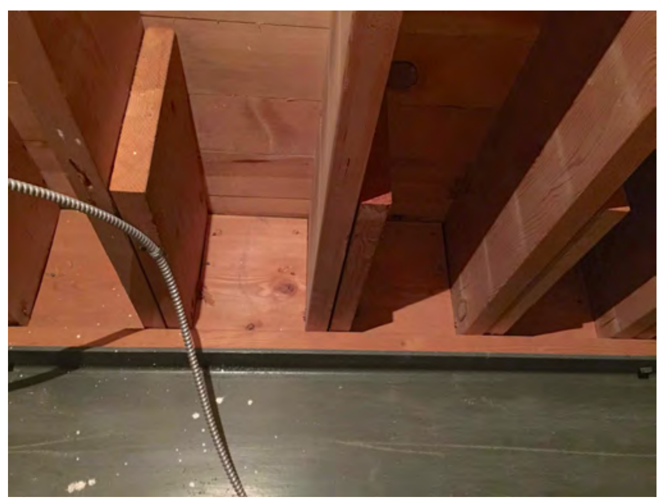
Irregular valley at south side of Belfry

Roof slopes above TV room & Library

Below Nave looking S just E of Fireplace room

Below BNH north ext. wall W end

Below Fireplace room looking SE toward top of basement wall opening



Doug Fir joists on steel beam below Nave

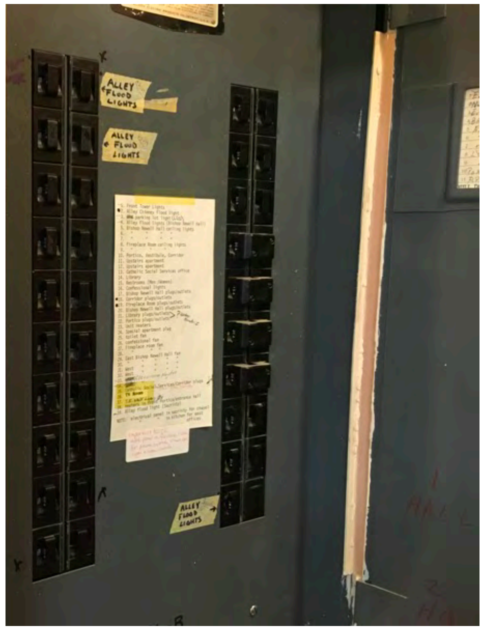
Attic above admin/ kitchen looking SE

Attic opening between admin area and BNH

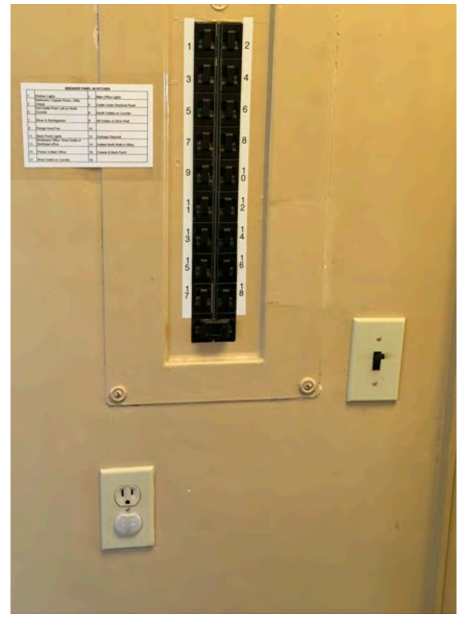
Mid-level Belfry room with access hatches above and below in SW corner

Attic insulation sloping over BNH ceiling

Panel P-1: Eaton, 24-space, push-button breaker panel

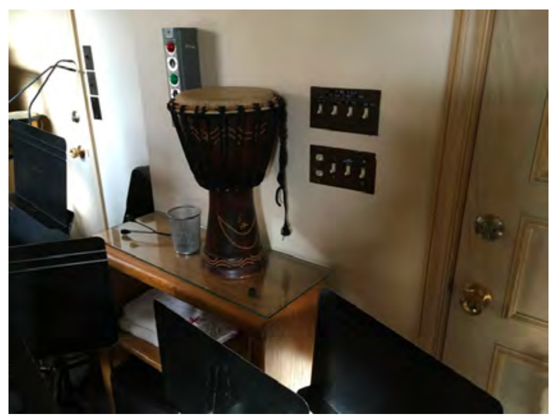


Panel B:40-space, push-button 100-amp breaker panel

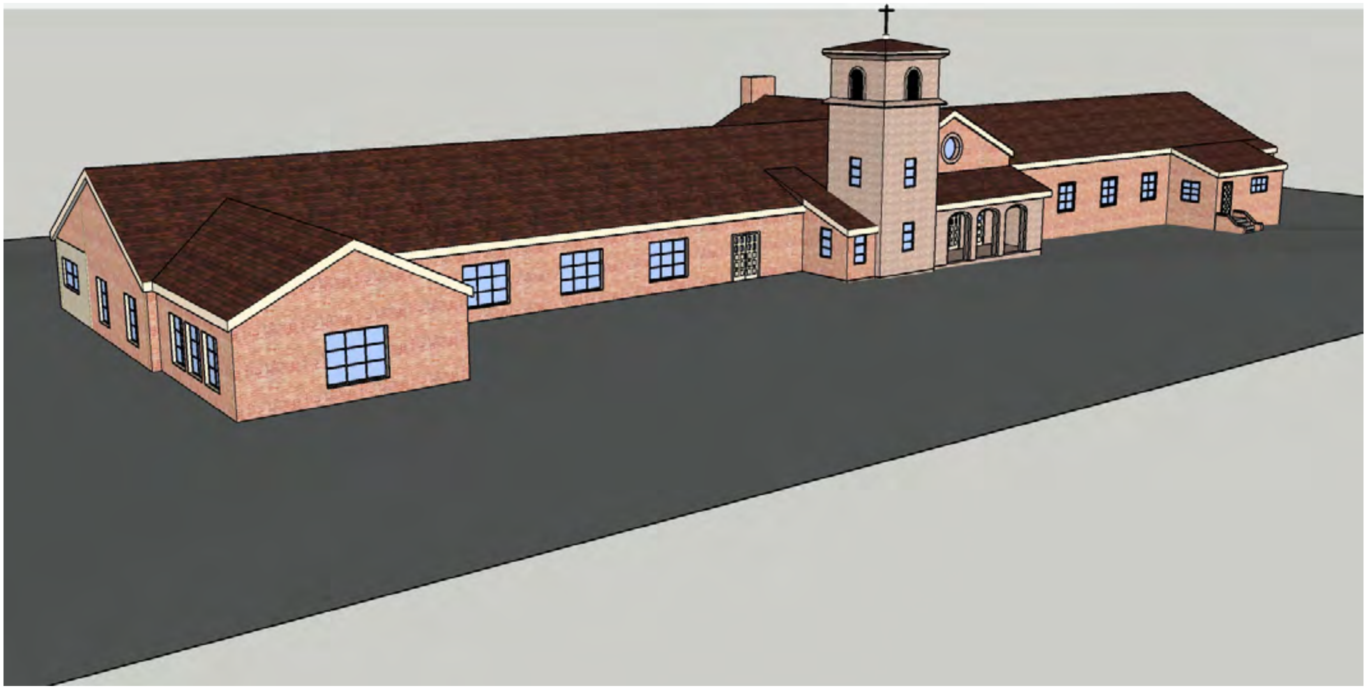


Panel C: 18-space, push-button breaker panel

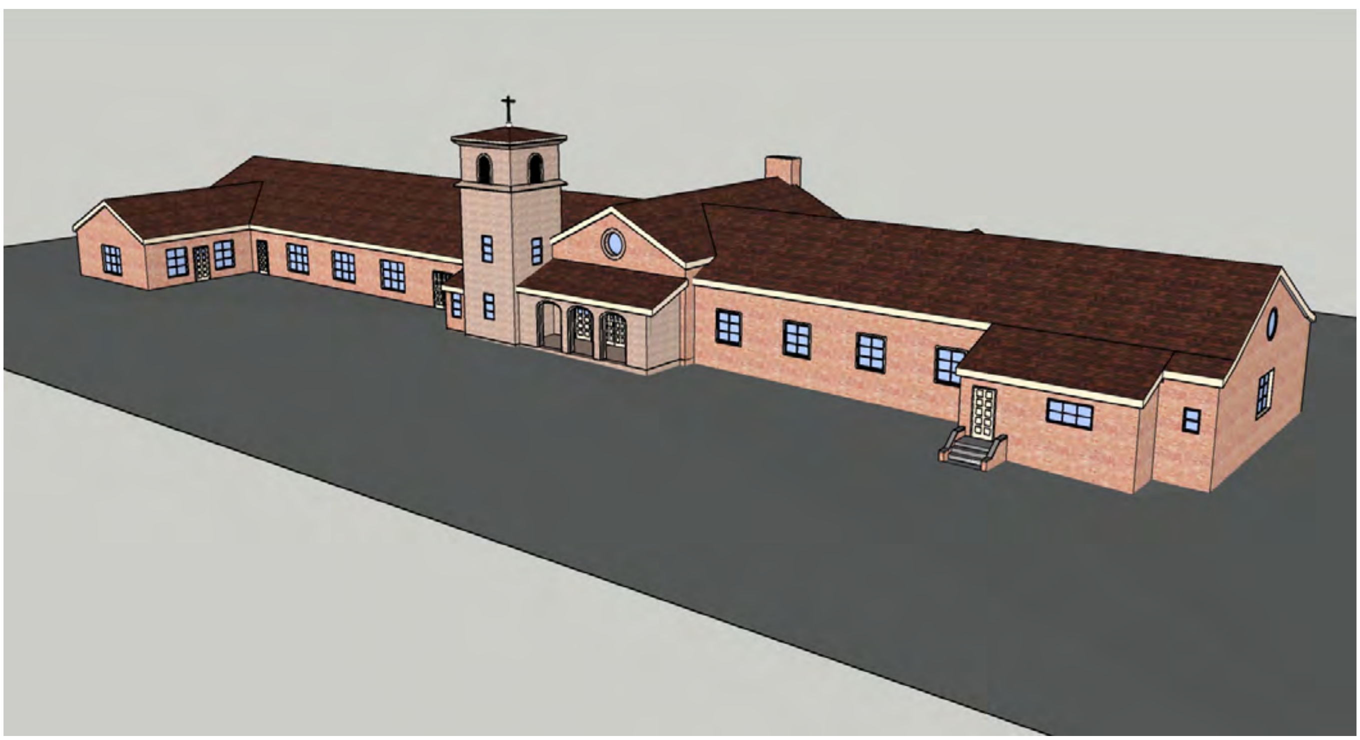
Panel D: 20- space, push-button breaker panel



Controls do not meet the current energy code standards

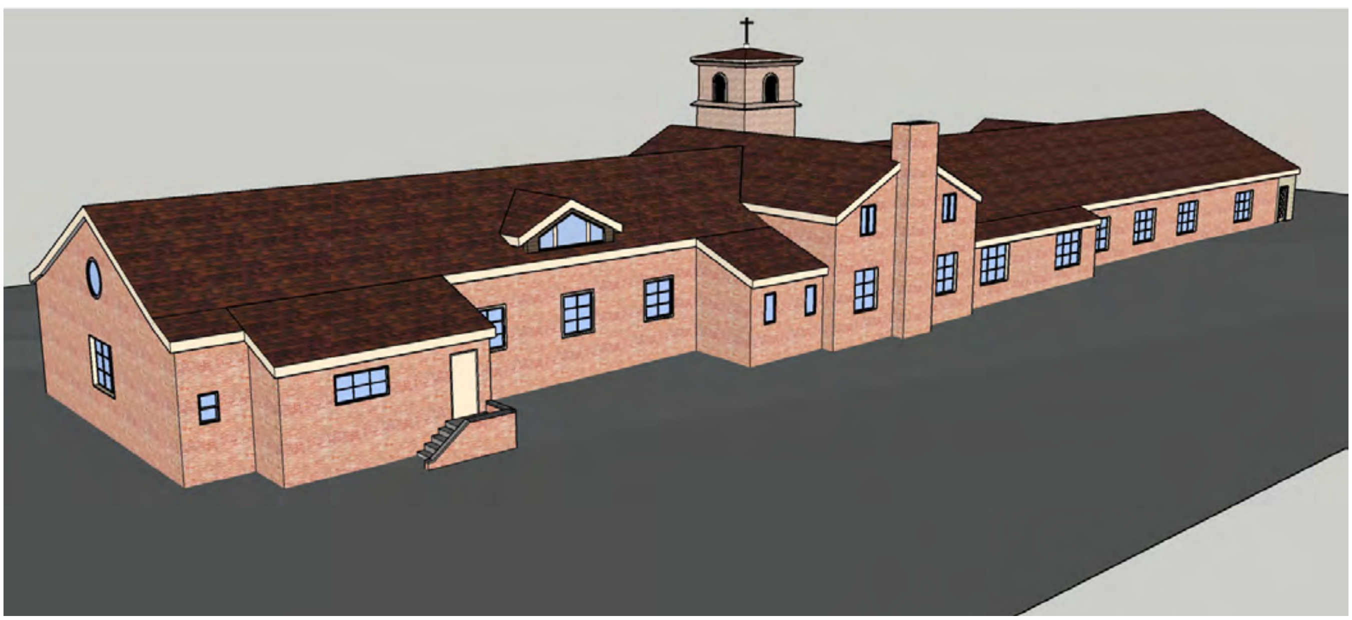


View from the northeast

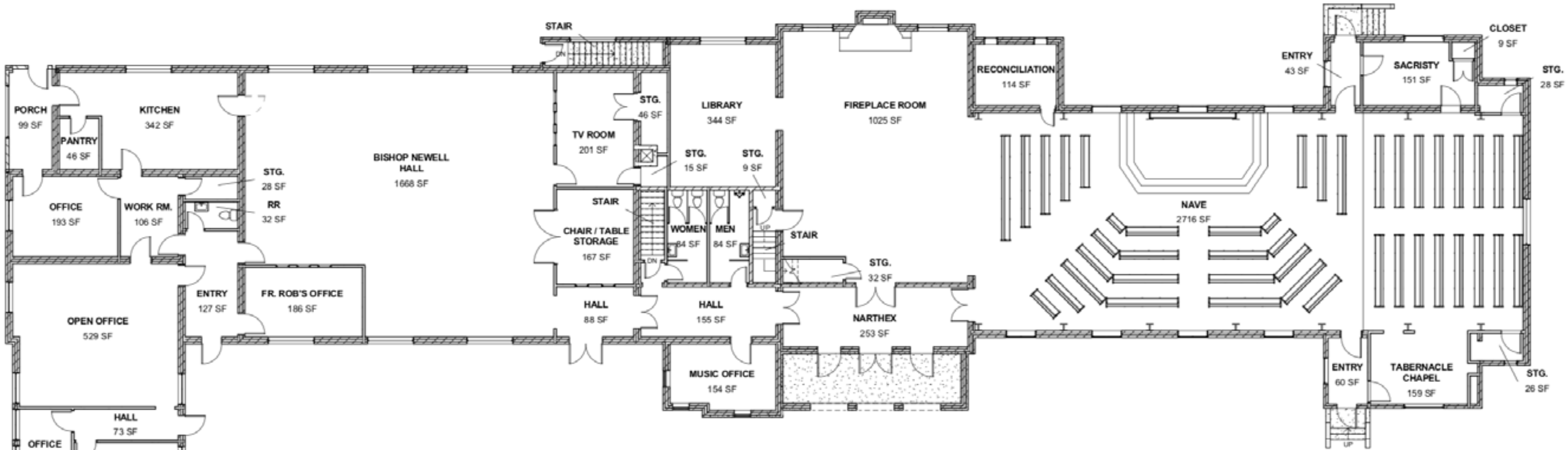


View from the northwest

View from the southeast



View from the southwest



1 FLOOR PLAN - LEVEL ONE - EXISTING

1/8" = 1'-0"

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MALONE BELTON ABEL

a professional corporation

ARCHITECTURE ENGINEERING PLANNING INTERIOR DESIGN

340 west dow street, sheridan, wyoming 82801, (307) 674-1476

DESIGN	TB
DRAWN	SK
CHECKED	TB
JOB No.	1721
DATE	01/31/2018

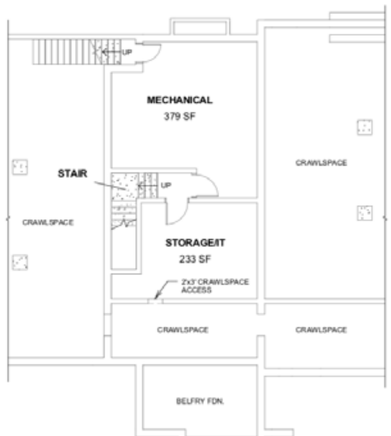
REVISIONS

NEWMAN CENTER REMODEL

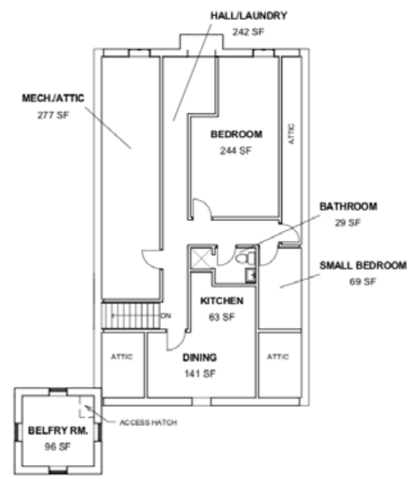
1800 Grand Avenue
Laramie, WY

SET/SHT

3.1



1 BASEMENT PLAN - EXISTING
1/8" = 1'-0"



2 FLOOR PLAN - SECOND LEVEL - EXISTING
1/8" = 1'-0"

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